Agon:

Poetry's Resistance to the Mathematisation of Reality

(1920s-1960s)

By

Anirudh Sridhar



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Abstract

The thesis examines the interactions between British and American poetry and mathematics, in their various forms, from the late 1920s to the 1960s. The period bears witness to an unprecedented engagement with mathematics, principally in the forms of poetic images and metaphors, ranging from responses to mathematical physics to mathematical philosophy to pure—what has recently come to be known as 'modernist'—mathematics. The thesis investigates the complex ways in which mathematical terms function in the meaning-making procedures of poems and explores the wider intellectual and cultural forces animating the phenomenon.

The first chapter explores references to mathematics by an earlier generation of poets. Their poems retain an almost pre-Victorian faith in the transcendental perfection of numbers and shapes. The chapter also introduces the more sophisticated philosophies of mathematics of the time, which were based on latest developments in the various branches of mathematics. The thesis studies writers either trained in or intimately familiar with these developments and the discourses surrounding them. In various ways, mathematics comes to play a crucial role in the writings of these poets, namely, William Empson, Michael Roberts, Laura Riding, and Charles Olson. Nearly all the poems discussed, and by extension all the chapters, compare and contrast poetry and mathematics as ways of speaking about the world.

The second chapter, featuring Empson, is on the different modes of knowledge and experience in mathematics and poetry. I compare mathematical tensors with poetic images, mathematical with poetic paradoxes, mathematical limits with poetic metaphors, and non-Euclidean shapes with discursive prose. The third chapter, on Roberts and Empson, explores the fate of love and passion in the poetry of rational and technological civilisation. In his early poems, Roberts obsessively modifies the semantic fields of a particular set of words. Through semantic re-appropriation, words reduced to strict mathematical denotation are re-made as sensuous and full. Empson's "Letter V", on the other hand, tries to describe a lover in mathematical language, asking to be read as a symptom of alienation. The final chapter examines the connections between the word and truth in the poetry of Riding and Olson. For the early Riding, truth lies in the intellectual part, the definition, of words whereas for Olson, it lies in the physical part, the sound. To define their philosophies of language, Riding ironizes mathematical Platonism whilst Olson affirms the non-Euclidean geometry of Riemann. All the poets studied regarded mathematical poetry as essential to achieving their peculiar ends.

The thesis questions a broad consensus in the incipient field of modernism and mathematics, amongst both literary and mathematical historians, that literature and mathematics in the period undergo a 'convergent evolution', amiably informing one another. I argue that the greater issue at stake is in fact one of authority. Writing around the middle of the century, poets in this thesis generally recognise the master discourse of their time to be science and broadly agree it to be unwise to only regard as true a mathematical account of reality. Their poetry thus always acquires an implicit or explicit attitude of defence and shows their individual mode of truth-telling as unique and essential. Empson and Roberts are concerned mostly with the relationship between semantics and phenomenology; to Riding and Olson, the stakes are metaphysical.

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Last, I thank Hans—the general of my nightmares, still commanding the direction that each neuron fires.

Introduction

William Blake proclaims in a cryptic aphorism of *The Marriage of Heaven and Hell*, "Energy is the only life, and is from the Body; and Reason is the bound or outward circumference of Energy".[1] We may read into this a vision of poetry and mathematics as a marriage of antipathy. Taking 'energy' and 'reason' as animating poetry and mathematics, we see how they relate: beginning with an explosive declarative, 'is the only', the language of geometry—'circumference'—reins in the force of the aphorism's suggestion. 'Reason' and 'energy' assume their antique roles in Plato's allegory of human being, as the cantankerous drama between Eros, Thumos and Logos, the eternal struggle between steed and charioteer, ever generating anew the friction necessary for deliberate momentum.[2] As there cannot be a circle without radius and circumference, energy cannot find form without the deixis of poetry and the deduction of mathematics.[3] Poetry and mathematics thus come to seem almost as estranged cousins vying for a throne, dealing in precision, with laconic disdain for the discursive, demanding an almost patrician tribute, the total surrender of mind, before disclosing their high secrets. As John Livingstone Lowes said in *The Road to Xanadu*, they are "the creative endeavours through which human brains, with dogged persistence, strive to discover and realize order in a chaotic world".[4]

In this thesis, I study the clash between poetry and mathematics in the twentieth century: I argue specifically that modernist poetry's engagement with mathematics from the mid-1920s to mid-1960s had as its chief aim authority. This was not a self-interested authority sought through displays of erudition or cultivated obscurity. The period instead bears witness to a phenomenon in Anglophone modernism wherein formulae, shapes, and theorems are invoked in poetry to challenge the *discursive* authority of mathematics: that is, the widespread assumption that it is ultimately in numbers that a true picture of reality will emerge. The poems are designed to assert a rival truth-telling capability in the medium of poetry. The poets that engaged most with mathematics in this period are thus also interested in presenting, explicitly or implicitly, a defence of poetry; they are also the protagonists of this thesis—in order of chapters, William Empson, Michael Roberts, Laura Riding, and Charles Olson.

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[1] William Blake, *The Marriage of Heaven and Hell*, ed. Geoffrey Keynes (Oxford: Oxford University Press, 1985), p. xvi.
[2] From *Phaedrus* in Plato, *The Collected Dialogues*, ed. Edith Hamilton and Huntington Cairns, trans. Benjamin Jowett et al. (Princeton: Princeton University Press, 1961), p. 246a-254e.
[3] We are borrowing the ancient Greek sense of deixis as 'show' or 'display'.
[4] John Livingstone Lowes, *The Road to Xanadu: A study in the ways of the imagination* (New York: Houghton Mifflin Company, 1927), p. 433.

The criteria for selecting these poets are twofold: their familiarity with mathematical discourses of the time, and the importance of mathematics to their 'philosophies'—that is, how it helps realise the articulation of a weltanschauung. The grouping is admittedly untraditional; upon closer inspection, however, it begins to seem less strange. Michael Roberts and William Empson both studied mathematics at Cambridge during the same decade,[5] Empson's revolutionary critical method in *The Seven Types of Ambiguity* owes much to Riding's *A Survey of Modernist Poetry*, which she co-wrote with Robert Graves.[6] Riding and Roberts maintained a close correspondence throughout the 1930s, and expressed on various occasions, a mutual admiration.[7] Much of Empson's and Roberts's concerns about language and meaning in rational society during the 1920s and 30s is shared by Olson, as regards American society, in the 1940s and 50s. Grouping Riding's and Olson's philosophies of language, as in chapter five of this thesis, has precedent in Carla Billitteri's work, *The American Cratylus*.[8]

When discussing them as one, I shall refer to the poets using a rare moniker, 'second-generation modernist'. *The New Anthology of American Poetry* says, "both modernist generations produced poems and movements that were diverse, mutually entangled, and dynamic across time".[9] The term 'generation', relatively agnostic to content, generates spontaneous and concrete associations: the first generation, say, of "Pound and Eliot" and the second, of "[Langston] Hughes and [Hart] Crane".[10] By 'first-generation', I refer specifically to poets born in the late nineteenth century and by 'second-generation', to those born in the early twentieth. Partiality to these designations does not commit us to a corresponding definition or governing characteristic. The poems we discuss shall not themselves be bound to a particular decade—they range from the mid-20s to the mid-60s. The moniker simply demarcates certain attributes germane to the more immediate arguments of this thesis—namely, that the second-generation engages more with mathematics and modern mathematical philosophies than the first.

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[5] John Haffenden, *William Empson: Among the Mandarins* (Oxford: Oxford University Press, 2008), p. 104; Michael Roberts, *Michael Roberts: Selected poems and prose,* ed. Frederick Grubb (Manchester: Carcanet Press, 1980), p. 1.
[6] Muriel Bradbrook, 'Some Versions of Empson' in *William Empson: The man and his works*, ed. Roma Gill (London: Routledge, 1974): 2-12, p. 4.
[7] See Michael Roberts, item 36, 21 Letters and 3 postcards from 1930-40, *National Library of Scotland*, Acc. 13145/53; and Laura Riding, 'Michael Roberts Papers', in Laura Riding Collection of Papers, *New York Public Library Archives and Manuscripts*, call no. Berg Coll MSS Riding. The Berg collection mostly encloses discussions about the *Faber Book of Modern Verse*. But their connection pre-dates these exchanges.
[8] Carla Billiteri, *Language and the Renewal of Society in Walt Whitman, Laura (Riding) Jackson, and Charles Olson: The American Cratylus* (New York: Palgrave Macmillan, 2009).
[9] 'Introduction to Part 2: Second-Generation Modernisms', in *The New Anthology of American Poetry: Modernisms 1900-1950, vol. 2*, ed. Steven Gould Axelrod, Camille Roman, and Thomas Travisano (New Jersey: Rutgers University Press, 2005), p. 574.
[10] Ibid., p. 574.

Given that the field of literature-and-mathematics is at an incipient stage—as compared to, say, literature-and-science—the subject of second-generation modernist poetry and its impressive foray into mathematics remains effectively unstudied. Whole works on the subject of literature and mathematics began to be published not earlier than 2018,[11] with Andrea Henderson's *Algebraic Art: Mathematical Formalism and Victorian Culture*.[12] This was followed by Nina Engelhardt's *Modernism and Mathematics: Modernist Interrelations in Fiction*, and Baylee Brits's *Literary Infinities: Number and Narrative in Modern Fiction*.[13] In 2019, Joseph Jarrett wrote about the influence of mathematics on late Elizabethan drama;[14] and Jocelyn Rodal is currently working on a manuscript for a book called *Modernism's Mathematics: From Form to Formalism*.

Brits engages primarily, with exception of a chapter on the French symbolists,[15] with literary forms besides poetry: with the plays, short-stories and novels of Samuel Beckett, Jorge Luis Borges and J. M. Coetzee. Henderson involves poetic movements—*l'art pour l'art* and Symbolism—in her analysis,[16] but her research is set in the nineteenth century; Engelhardt studies only novelists—namely, Thomas Pynchon, Hermann Broch and Robert Musil. Rodal, who traces the influence of mathematical formalism on Eliot and Pound, is the only one in this group to navigate the twining currents of modernist poetry and mathematics—but even her work is circumscribed to the first-generation.[17] Tim Armstrong's recent essay, "'A Transfinite Syntax': Modernism and Mathematics" is rare in that it explores the interactions between second-generation modernism and mathematics, in the poetry of Riding and George Oppen.[18] It would seem dramatic from this to identify a lacuna in the field, so sparse as it is; but I shall note that poetry was where literature came most in contact with mathematics in the modernist period, particularly in the second-generation, and deserves, therefore, the extensive analysis undertaken for this thesis.

Engelhardt says, "scholarship on modernism is surprisingly underrepresented in literature and science studies, as the field continues to be dominated by a focus on Victorian literature".[19]

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[11] I am not counting works in other disciplines that discuss, however marginally, the relationship between literature and mathematics, such as Linda D. Henderson, *The Fourth Dimension and Non-Euclidean Geometry in Modern Art* (Cambridge: MIT Press [1985] 2013) and Amir R. Alexander, *Duel at Dawn: Heroes, martyrs, and the rise of modern mathematics* (Cambridge: Harvard University Press, 2010).

[12] Andrea K. Henderson, *Algebraic Art: Mathematical Formalism and Victorian Culture* (Oxford: Oxford University Press, 2018).

[13] Nina Engelhardt, *Modernism, Fiction and Mathematics* (Edinburgh: Edinburgh University Press, 2018); Baylee Brits, *Literary Infinities: Number and Narrative in Modern Fiction* (London: Bloomsbury, 2018).

[14] Joseph Jarrett, *Mathematics and Late Elizabethan Drama* (Cham: Palgrave, 2019).

[15] See chapter 1 of *Literary Infinities*.

[16] See chapters 1 and 2 of *Algebraic Art*.

[17] See Jocelyn Rodal's webpage: https://english.princeton.edu/people/jocelyn-rodal. (consulted: 21/4/20)

[18] Tim Armstrong, "'A Transfinite Syntax": Modernism and Mathemtatics', *Affirmations of the Modern*, 6.1 (August 2019): 1-29.

[19] Engelhardt, *Modernism*, p. 2.

Unlike literature-and-science, most texts in literature-and-mathematics, excluding Henderson's and Jarrett's, prospect primarily twentieth-century literature for signs of cross-pollination between the two cultures.[20] What seems most to have piqued the interest in modernism and mathematics is Jeremy Gray's seminal text, *Plato's Ghost: The Modernist Transformation of Mathematics* (2008).[21] Gray presents the tantalising idea that mathematics underwent a 'modernism' comparable to that in literature (as his theory is examined in the following chapter, I shall not elaborate as yet). Before Gray, a field of modernism and mathematics likely seemed to literary scholars fantastic. According to Whitworth, whose *Einstein's Wake* includes a chapter on non-Euclidean geometry, mathematics seems "removed from the conventional concerns of literature, allowing the fewest possibilities for metaphorical exchange".[22] Gray has I believe proven key in sparking the interest of literary scholars in the connections between literary and mathematical modernisms, including that of the present author. I have since, however, come to view the connection as being rather specious.[23] I shall in the first chapter argue why the field ought critically to examine the applicability of Gray's thesis to literature.

The spreading influence of 'mathematical modernism' has also meant that the nascent field has been rather limited in the mathematical ideas it feels licensed to explore. The studies are presently restricted almost entirely to the topics of infinities, particularly the writings of Georg Cantor, formalism, especially that of David Hilbert, and non-Euclidean geometry—these are all presented by Gray as seminal in the growing autonomisation, or 'modernism', of mathematics.[24] For instance, Peter Johnson's thesis is titled "'Presences of the Infinite': J.M. Coetzee and Mathematics", while Roberto Natalini has written a chapter on "David Foster Wallace and the Mathematics of Infinity".[25] Brits and Armstrong focus primarily on Cantor's theories of infinity, and Rodal is interested in mathematical formalism, especially the influence of Hilbert on high

[20] For nineteenth century accounts of literature-and-mathematics, see also Alice Jenkins's chapters: 'Mathematics' in *The Routledge Research Companion to Nineteenth-Century British Literature and Science*, eds., J. Holmes and S. Ruston (London: Routledge, 2017); and 'Genre and Geometry: Victorian mathematics and the study of literature and science' in *Uncommon Contexts: Encounters between Science and Literature*, eds., B. Marsden, H. Hutchison, and R. O'Connor (London: Pickering & Chatto, 2013).

[21] Jeremy Gray, *Plato's Ghost: The Modernist Transformation of Mathematics* (Princeton: Princeton University Press, 2008); I have ascertained this from conversations with Engelhardt and Rodal; the meeting and general discussion about the importance of Jeremy Gray to the new field took place at the conference, 'Mathematics and Modern Literature' (Manchester University, 3-4th May, 2018).

[22] Michael H. Whitworth, *Einstein's Wake: Relativity, Metaphor, and Modernist Literature* (Oxford: Oxford University Press, 2001), p. 198.

[23] I argue in the first chapter (1.2) why the field ought critically to examine the applicability of Gray's thesis to literature.

[24] Gray, *Ghost*, p. 5-8.

[25] Peter Johnson, "'Presences of the Infinite": J.M. Coetzee and Mathematics' (PhD dissertation: Royal Holloway, University of London, 2013); Roberto Natalini, 'David Foster Wallace and the Mathematics of Infinity' in *A Companion to David Foster Wallace Studies*, eds., Marshall Boswell and Stephen J. Burn (New York: Palgrave, 2013), p. 43-58.

modernism. Engelhardt explores a wide range of mathematical ideas and is yet restricted to those that Gray regards 'modernist'. Although the present thesis is deeply invested in modernist areas of mathematics, non-Euclidean geometry—particularly the ideas of Bernhard Riemann and Hermann Weyl—Hilbertian formalism, and to a lesser extent, modern theories of infinity, we shall not observe the relatively arbitrary restrictions imposed unwittingly by the history of mathematics field. I have been sent by the poets of this thesis to Pythagoras, Plato, Euclid, seventeenth century calculus, matrices, and modern mathematical logic—the last area, particularly the influence of thinkers like Frank Ramsey, Ludwig Wittgenstein, and Bertrand Russell,[26] is profound and remains entirely unexplored.

More than period, genre and range, the aspect of the present work that is most unusual is the methodological paradigm it follows. Gillian Beer noted in the late 1980s that the field of literature-and-science had until then been dominated by the 'interchange' model, wherein ideas were seen as transferred whole from one discipline to another.[27] In our own time, 'interchange' which respects relative parity between the disciplines, has been reduced almost entirely to 'influence'. Rachel Crossland, in *Modernist Physics* summarises contemporary approaches in the literature-and-science field to, roughly speaking, two models: zeitgeist and influence.[28] Alice Jenkins, finding within 'zeitgeist' two further distinctions, criticises works proceeding under the assumption that literature and science form 'one culture' or emerge from a 'common context' as utopian and unrealistic.[29] The idea that literary criticism should seek the interplay between the 'spirit of the age' and a literary work has in general gone out of favour in literature-and-science.[30] So "there is an ongoing bias within studies in literature and science which leads to more frequent and more detailed discussions of the influence of science on literature rather than vice versa […] There is an inequality here, a hierarchy which still grants science a special place within culture".[31] The question of discursive authority extends from modernist culture to the present criticism of it. The modernist defiance to the scientific conquest of culture is ill-represented in our critical works by treating writers as awaiting downstream the Olympian dictamina of science.

In the literature and mathematics field, perhaps because mathematical ideas are often not relayed in popular works that are easily available for scholarly tracking, there has been an interplay

[26] With respect to the latter two, I refer specifically to their ideas in mathematical logic, not the influence of their larger philosophies on modernism.
[27] Gillian Beer, 'Science and Literature' in *Companion to the History of Modern Science*, eds. R.C. Olby, G.N. Cantor, J.R.R. Christie, and M.J.S. Hodge (London: Routledge, 1990), 788-90.
[28] Rachel Crossland, *Modernist Physics: Waves, Particles, and Relativities in the Writings of Virginia Woolf and D. H. Lawrence* (Oxford: Oxford University Press, 2018), p. 5.
[29] Alice Jenkins, 'Beyond the Two Cultures: Science, Literature, and Disciplinary Boundaries' in *Oxford Handbook of Victorian Literary Culture*, ed. Juliet John (Oxford: Oxford University Press, 2016), p. 409-10.
[30] Crossland, *Physics*, p. 5-6.
[31] Ibid., p. 5.

between the zeitgeist and influence models. Contrary to Jenkins's hypothesis about literature-and-mathematics, that "mathematization of science is the classic enemy of the 'one culture' model",[32] Brits and Engelhardt, who attempt to trace ideas from modernist mathematics to their literary uses, resort often to stating that the ideas were popular and influential in the *zeit*.[33] Engelhardt has sought even to make mathematics a part of 'modernist culture',[34] in the way Einstein, for instance, is generally accepted to have been, amongst literary critics today.[35] Rodal's forthcoming monograph argues that "that literary formalism has structural and historical roots in mathematics".[36] In this thesis, I attempt, as far as possible, to find evidence for a poet's acquaintance with a certain topic in mathematics or mathematical physics. But I shall refrain from inferring *influence* from acquaintance—that is, a shaping or directing influence. As Beer suggests, I shall avoid seeking "a systematic representation of scientific ideas in works of literature", since "ideas do not remain static when they change context: science and literature transform rather than simply transfer".[37] I shall argue that the poet utilised mathematical ideas for personal purposes: that the algebraic or geometric image is submitted to work for the poem's intended meaning: even that the metaphorical use of mathematics is a mode of resistance to the conquest of various domains traditionally literary—the social, say, or psychological—by numbers. The model necessary to prosecute such an argument I shall term 'agonistic'.

I have chosen 'agon' to evoke both the playful nature and public consequences of the contest between poetry and mathematics in the period, recalling competitions between tragedians in Ancient Greece or strophic poets at the Ukaz; 'agon' also avoids the implication of incompatibility that comes with the phrase 'two cultures'. Whilst Harold Bloom applies 'agon' to intellectual disagreements with prior works or writers,[38] I extend the arena of conflict to other disciplines. The revolt, to term it dramatically, of poetry against mathematics may better be described as the reaction against *mathematisation*: against the abstract nature of the languages driving public life in the early twentieth century, from the thermodynamics that propelled material culture to the formal logic compartmentalising the modern mind. Many poets saw the modern world as a pallid reflection of its former self. W.B. Yeats, quoting Louis MacNeice, declares: "High on some

[32] Jenkins, 'Beyond', p. 414.
[33] Brits, *Infinities*, p. 8; Engelhardt, *Modernism*, p. 14.
[34] Engelhardt, *Modernism*, p. 2.
[35] See Crossland, *Physics*, p. 1-2, who cites *Einstein's Wake* and Alan J. Friedman and Carol C. Donley, *Einstein as Myth and Muse* (Cambridge: Cambridge University Press, 1985), p. 20.
[36] See Jocelyn Rodal's webpage: https://english.princeton.edu/people/jocelyn-rodal. (consulted: 21/4/20).
[37] Beer, 'Science', p. 796.
[38] See Chapter 18, 'Joyce's Agon with Shakespeare' in Harold Bloom, *The Western Canon: The Books and School of the Ages* (New York: Harcourt Brase and co., 1994), p. 14.

mountain shelf/ Huddle the pitiless abstractions bald about the neck".[39] It seemed to poets at the time that really the only acceptable way to think about the world was as tiny abstract units moving according to mathematical laws, observed by agents following the same formal laws of interaction. The view is summarised crisply by Lord Kelvin in his lecture on "Electrical Units of Measurement" (1883):

> I often say that when you can measure what you are speaking about, and express it in numbers, you know something about it; but when you cannot measure it, when you cannot express it in numbers, your knowledge is of a meagre and unsatisfactory kind; it may be the beginning of knowledge, but you have scarcely, in your thoughts, advanced to the stage of *science*, whatever the matter may be.[40]

Inherited from an age of the steam engine and The Great Exhibition, of truly grand scientific achievement, the immediate reasonableness of Kelvin's expectation is understandable. Despite the fact that we shall in the following chapter explore a history of philosophic, artistic, and, indeed scientific resistance to such a view, I shall argue that the motivation for poetic resistance was a perception that views such as Kelvin's were becoming too widely diffused in culture.

In *Science and the Modern World* (1925), Whitehead expresses the concern of many public intellectuals at the time,[41] as regards the culturally rooted hierarchy of primary and secondary qualities: "thus I hold that substance and quality afford another instance of the fallacy of misplaced concreteness".[42] Eventually codified as follows by Locke, the measurable aspects of matter—extension and motion—were appointed as its primary qualities whilst the others were relegated to secondary qualities of lesser note. Here is Galileo in *The Assayer* (1623): "I think that tastes, odours, colours, and so on are no more than mere names so far as the object in which we locate them are concerned, and that they reside in consciousness".[43] And Descartes says in *Principles of Philosophy* (1644) of those secondary qualities that "we are not aware of their being anything other than various arrangements of the size, figure, and motions of the parts of these objects which make it possible for our nerves to move in various ways".[44] The second-generation modernists I discuss assumed as in part their highest duty the elevation of secondary qualities to primary importance: to find for them expressions as accurate as science gave to size and motion.

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[39] W.B. Yeats, 'Preface', in *The Ten Principal Upanishads,* trans. Shree Purohit Swami and W.B. Yeats (1937), quoted in W.B. Yeats, *Later Essays,* ed. William H. O'Donnell (New York: Charles Scribner's sons, 1994), p. 174.
[40] Published in *Popular Lectures and Addresses, vol. 1: Constitution of matter* (Cambridge: Cambridge University Press, [1889] 2011), p 73.
[41] See J. W. Dunne, *An Experiment with Time* (London: A. and C. Black, 1927), p. 6-7; Martin Johnson, *Art and Scientific Thought: Historical Studies towards a Modern Revision of their Antagonism* (London: Faber and Faber, 1944), p. 137; See also discussion in 1.5.
[42] A.N. Whitehead, *Science and the Modern World* (New York: The Free Press, [1925] 1967), p. 52.
[43] Galileo Galilei, *Discoveries and Opinions of Galileo,* ed. Garden City (NY: Doubleday, 1957), p. 274.
[44] René Descartes, *Principles of Philosophy,* trans. Valentine Rodger Miller and Reese P. Miller (London: Kluwer Academic Publishers, 1982), p. 282.

To the poets, resistance to quantification meant, ironically, a profound engagement with mathematics. Like Dante peopling his Limbo with the great pagans of antiquity, Empson, Roberts, Riding, and Olson all, in this period, throng their poems with mathematical images, present and past. They did this partially from fear that the then-fashionable libel against reason and logic amongst first-generation modernists was leading to bucolic withdrawal or ivory tower obscurantism: that their predecessors, Eliot and Pound, had withdrawn to recondite classicism, and Yeats and D.H. Lawrence, to pure sensualism. T.R. Henn summarised the second-generation's fear when he said, "Very few poets have attempted any kind of 'liaison of vocabulary' between science and poetry. [...] The poets seem, on the whole, to look backward with some longing to the period before the break-up of Hellenic and Hebrew mythological knowledge".[45] The second-generation felt that to faithfully capture the lineaments of the lived world, and thereby assert poetry's imperishable role in furnishing its truths, the mathematical contours—both physical and psychological—of the post-industrial world could not be ignored, and must not be, if its critique was to rally muster.

Roberts said "Mr Empson's poetry is an important step toward the resolution of that conflict between the scientific and the aesthetic approach to the world which goes on in most of us to-day". And taking as given a general trend, he praised Empson's competent "use of scientific knowledge which nowadays replaces classical allusions".[46] Roberts argued that "the growth of industrialism should give rise to a 'difficult poetry'". But "because our thoughts have hitherto made use of images from rural life, our urban and industrial society leaves us uncomfortable and nostalgic". A conundrum faced modern poets, in which rural poetry seemed a "cowardly escape into the past" whilst urban poetry of the machine age seemed "abrupt, discordant, and intellectual".[47] Nevertheless, they felt that to register the image and rhythm of modern life, it would be "impossible for a man of reasonable intelligence and sensibility to ignore science".[48] I.A. Richards, in *Science and Poetry* (1926), argued that poetry, and our ideas about poetry, will have to adapt to the lightning shifts of the past half-century: "Man [...] has recently made a number of changes in his customs and ways of life, partly with intention, partly by accident. [...] His circumstances are not known to have ever changed so much or so suddenly before".[49] The belief in the unprecedented nature of the scale and velocity of change—that nearly all cultural critics

[45] T.R. Henn, 'Science and Poetry', *Nature*, 191.4788 (1961): 534-539, p. 535.
[46] Michael Roberts, 'A Metaphysical Poet [review of William Empson, *Poems*]', *The London Mercury*, 32 (August 1935): 387-9, p. 387.
[47] From Preface to *New Signatures: Poems by Several Hands* (1932), excerpted in Roberts, *Selected prose,* p. 63.
[48] Roberts, *Selected Prose*, p. 63.
[49] I.A. Richards, *Science and Poetry* (London: K. Paul, Trench, and Trubner, 1926), p. 1.

noted at the time—was likely an important factor in the extraordinary expansion to poetic diction in the period.

Recognising these concerns as amongst the central forces animating poetry's engagement with mathematics, the agonistic model has almost recommended itself to me. The model, however, acts more as paradigm than definition of method. As for the latter, I have wherever possible tried to follow Empson's advice that "you must rely on each particular poem to show you the way in which it is trying to be good".[50] For instance, the study of Roberts's poems is best facilitated by dividing his lyric corpus into semantic clusters, Empson's own dense poems demand a graduated, non-linear hermeneutics, Riding's philosophical poems require inferences and deductions of a syllogistic form, whereas it is only through melopoetic readings that Olson's projective verse can properly be received. These methods will be defended in the appropriate chapters, but they can loosely be summed as 'close-reading'; that is, formal and verbal analysis. The term has undergone many changes since the days of Richards, as has been assiduously traced in Joseph North's *Literary Criticism: A Concise Political History*.[51] North argues that the New Critical adoption of close-reading to make of a poem an unbreachable aesthetic whole has tinged it with a nostalgic idealism, preventing a return to its progressive uses by Richards and Empson, to what North calls the "heroic age of literary criticism".[52]

Although some practicing critics like Mathew Sperling and the poet J.H Prynne have revived line-by-line commentaries of entire poems,[53] full-poem close-readings—as in chapters 2 and 3—require separate apology given the present mores of literary criticism. Ryan Dobran characterises the recent renovation of commentaries as "a radicalized version of close reading that frames the poem as a locus of convergent and contradictory tendencies […] [T]he commentary retains its marginality by making the poem into a curriculum".[54] Close-reading, unlike the commentary, does not restrict itself to the margins: it believes the interpretive task to require a participation in—a writing into and around—meaning. The commentary and close-reading, however, agree on the place of poetry in criticism: that the poem is itself the central locus of a greater semantic conflux. They stand in this regard opposed to many disciplinary dogmas of the present.

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[50] William Empson, *Seven Types of Ambiguity* (London: Chatto and Windus, [1930] 1949), p. 7.
[51] Joseph North, *Literary Criticism: A Concise Political History* (Cambridge: Harvard University Press, 2017)
[52] Ibid., p. 3.
[53] See, for instance, Matthew Sperling and Thomas Roebuck, "'The Glacial Question, Unsolved": A Specimen Commentary on Lines 1-31', *Glossator: Practice and Theory of the Commentary,* 2 (2010): 39-78; J. H. Prynne, *They that haue powre to hurt; A Specimen of a Commentary on Shakespeare's Sonnet 94* (Cambridge: Privately printed, 2001).
[54] Ryan Dobran, "'The Review of Struggle to Fix the Sense": Speculations on commentary and J.H. Prynne', *Philological Quarterly*, 98.4 (2019): 389-407, p. 390.

After the age that Christopher Ricks described as belonging to "theory's empire",[55] literary studies has become deeply rooted in the cousin modes of empiricism and historicism. The more extreme versions of empiricism are found in the digital humanities and Franco Moretti's 'distant reading'. In an attempt to mimic the academic success of the sciences in the past century, many branches of literary studies have begun to assume axioms of its methodology. Empiricism is not fundamentally at odds with close-reading; Richards and Empson would not have seen themselves as outside the empiricist tradition. But there are crucial differences in its rather bloated modern avatar. Paul Fleming has argued that "an essential element of close reading relies not just on the quality of the reading performed, but also on the example chosen. It has to be the right example".[56] Moretti, however, assumes that the best means of finding the exemplary is through data mining for statistical recurrence, of words, concepts and themes. He adheres to a very strict definition of 'right': that what is right is merely what seems to occur most, taking literature to be little more than the inert subjects of a stable science. In his interpretation of Sonnet 94, Empson, without the wonders of modern machine power, identifies 4096 different movements of possible meaning:[57] without the close-reader, one wonders how among these, the meaning or purport of a sonnet maybe argued for. Recently, Jonathan Kramnick and Anahid Nersessian have repelled the assumption that data-mining automatically increases the prestige of secondary literature: "Moretti's point is mistaken to the degree to which he fails to see interpretation [...] as itself a variety of explanation. It is mistaken in other words when it cedes the ground of explanation entirely to the procedures, methods, and assumptions of another discipline (to computer science, for example)".[58] In our approach, wherever possible, we shall take Fleming's definition of close-reading seriously; rather than cramming in as many 'instances' as possible, we shall focus on individual poems and their meaning.

There has also been a flurry of resistance to what Derek Attridge calls "the strait-jacket of history" in literature departments.[59] Tom Eyers, with the tenor of fin-de siècle resistance to scientific positivism, says "[H]istory, instead of being a question to be answered, has threatened to become a catch-all explanans to be passively assumed, bringing with it an obfuscation of what

[55] Daphne Patai and Will H. Corrall, *Theory's Empire: An Anthology of Dissent* (New York: Columbia University Press, 2005), p. 1.
[56] Paul Fleming, 'Tragedy, for Example: Distant Reading and Exemplary Reading (Moretti)', *New Literary History*, 48.3 (2017), p. 437.
[57] William Empson, *Some Versions of Pastoral* (London: Chatto & Windus, 1935), p. 89.
[58] Jonathan Kramnick and Anahid Nersessian, 'Form and Explanation', *Critical Inquiry,* 43.3 (2017), p. 666.
[59] From the upcoming introduction to Derek Attridge, Anirudh Sridhar and Mir Ali Hosseini, eds., *Literary Studies and Close-Reading in the Twenty-First Century* (New York: Palgrave Macmillan, 2020).

makes literature, literature".[60] Historicism is also not at odds with close reading; Empson's *Using Biography* argues against the Southern critics', and especially W.K. Wimsatt's, anathema on historical contextualisation and authorial intention.[61] History and biography can often illuminate a poem and unveil meanings otherwise unavailable to analysis. However, what we in this thesis are primarily after is the meaning of the poems under study and what can be learnt from their workings; what they evince about their historical period will be noteworthy but a secondary concern. As Hayden White has shown, historical narratives are deliberately woven, much as works of literature themselves, by stitching together expedient details from a relatively neutral registry of available facts.[62] Attempts, especially in literary history, to offer causal explanations under grand narratives are also subject to White's critique—this appertains particularly to votaries of the influence model. North, however, notes that the "central logic that has dictated so much of the last three decades of literary study" is "the rejection of the project of criticism—aesthetic education for something resembling, in aspiration if not in fact, a general audience—and the embrace of the project of scholarship—the production of cultural and historical knowledge for an audience of specialists".[63] In this thesis, we have attempted to throw our lot in with the recent group of critics trying to challenge the historicist axiom and, with Aristotle, have taken poetry more seriously than history. What this means is that when meaning can be argued for through formal or verbal analysis, it is generally to be weighed more than, say, letters from an archive: the latter, in other words, will be treated as supplementary. History will still prove essential to drawing boundaries to the discursive arena of a poem—poems are, after all, written into a particular cultural world, however universal their aspirations may be. But the establishment of a historical fact, say, that Olson was acquainted with Quantum Theory, will not be assumed to determine the dynamics of the interaction in his writings, which may adapt, or even distort the science, to facilitate a pre-existing agenda.

Before we move to the verbal analysis of second-generation poems, some context can be found for the rather sudden and unprecedented practice of using mathematics in poetry. The first chapter shall attempt to set out two things which are as backgrounds important to the remaining: first, the attitudes to mathematics held amongst poets of a generation prior to our period of focus; and second, the shifts in thought about mathematics and mathematical science in the wider intellectual culture, roughly from 1880-1930, that we may treat, with Beer, as forming the "shared

[60] Tom Eyers, 'The Revenge of Form: Review of C. Levine's *Forms: Whole, Rhythm, Hierarchy, Network*', *Boundary 2*, Online. https://www.boundary2.org/2018/05/tom-eyers-the-revenge-of-form-review-of-c-levines-forms-whole-rhythm-hierarchy-network/
[61] William Empson, *Using Biography* (London: Chatto & Windus, 1984), p. vii and 104.
[62] Hayden White, 'The Historical Text as Literary Artefact' in *Tropics of Discourse: Essays in Cultural Criticism* (Baltimore: Johns Hopkins University Press, 1981), p. 81-100.
[63] North, *Literary Criticism*, p. 115.

discourse", expressing "the common anxieties of the time".[64] This is the only chapter in which we shall observe the side of the agon in which mathematics looks for authority in aesthetics.

The remaining chapters chronicle the 'other side'. We shall examine poetry and mathematics on the basis of how each yields knowledge or understanding of the world. It follows naturally that the second chapter is concerned with epistemology, and to some extent, ontology. We shall ask how, according to Empson, do poetry and mathematics varyingly involve the mind in its unquenchable thirst for knowledge; and by extension, the ways in which the issuing world-pictures differ. We shall proceed from broader questions of epistemology and ontology in the second chapter to concentrate on the ways in which the poetic and mathematical representations of love and being differ in the third. Chapter three focuses primarily on Roberts's arguments about the supremacy of poetry in giving accurate representation to the senses and sensuality, to embodied being and emotion. Whilst chapters two and three characterise poetry as modes by which many forms of obscured truths about the lived world may be accessed, the final chapter is interested in how poetry itself is a form of truth—particularly in the writings of Riding and Olson, for whom truth resided not in abstract representation but the word itself as it unfolds in the lines of a poem.

[64] Gillian Beer, 'Discourses of the Island' in *Literature and Science as Modes of Expression*, ed., Frederick Amrine (Dordrecht: Kluwer Academic, 1989), p. 18.

Chapter 1: Faith: The changing beliefs in mathematics

The first-generation modernists were largely unaffected by changing ideas about mathematics and the mathematical sciences in the greater intellectual community. Their use of mathematics—rare when compared to the second-generation's—seems to dwell on a Victorian, even pre-Victorian, faith in the transcendental perfection or truth of mathematical objects and theorems. Set against this, the second-generation's ironic, subversive, and often disputational attitude towards scientific realism and mathematical Platonism seems to pronounce an almost sudden generational shift.

But the faith in numbers—as the Victorians had held—to yield final and correct answers to all great questions was at the turn of the twentieth century dramatically waning amongst philosophers, artists, and even mathematicians and scientists. Whilst modernist poetry's attitude to mathematics may seem to change abruptly when traced within the art, a broader perspective shows a cultural zeitgeist already losing faith in abstract truths. This chapter will attempt to focus on the rich tapestry of events, from the late nineteenth to the early twentieth century that backgrounds the 'agon' ensuing in second-generation modernism.

1.1 Poetry of Perfection

> The region of pure reason is a calm,
> White moonlit night,
> All earthly forms appear
> Etched black against the light
> Mysterious, clear.
> Pure mathematics are a mirror
> Reflecting abstract truth for ever
> Through regions free from error[1]

These lines by the poet A. E Mackay (b. 1889) read as a manifesto to mathematical Platonism. The 'earthly forms appear', are cleared of detail, and their backlit outlines waver into regularity. Whatever is earthly about earth gives way to an essence purely abstract, unburdened by circumstance. To the poet seeking timeless truths beneath a vagrantly impetuous history, mathematical objects can seem a condition of reverence, even envy; it has affected this poet, seeking to be "for one brief moment in eternity", just so.[2]

By the late 1920s, when this poem was composed, faith in the existence of mathematical objects would have seemed to a scientifically literate reader antiquated. Not half a century prior had Gottlob Frege, a leading mathematician of his day, asserted the truth and existence of

[1] A. E. Mackay, *The Garden of the Gods, and Other Poems* (London: Grant Richards, 1931), p. 14-15.
[2] Ibid., p. 14

mathematical objects and theorems.[3] In the interim, it is clear something enormous had come over European philosophy for these age-old beliefs to appear suddenly as callow—tracing this transition shall become our task in the subsequent sections. But as regards the poem's exaltation of 'reason', that would have seemed dated long before these tumultuous events. An anonymous writer says, in a rather severe review (1931) of the poem,

> That is a view of reason and mathematics which no philosopher would accept to-day, and although the logical truth of a poem often has nothing to do with its value, in this case the use of false premises is disastrous, and Miss Mackay's 'poeticizing' of scientific terminology hints that something is wrong.[4]

Presented with any of the poems discussed in this subsection, the author's judgment would likely have been similar: that a literal-minded philosopher contemporary to its writing will find in the poem premises either unacceptable or anachronistic. Of course, as the author admits, this will not guarantee the poem's failure; but it will often betray a certain second handedness in emotion. The poet might have come by their view of mathematics in a commentary on the ancients, say, or heard it expressed eloquently at dinner table, but will not have experienced the opinion immersed in the subject. The nature of cross-disciplinary influence, especially between science and literature, is fraught, as has been demonstrated by Joe Moran and Gillian Beer:[5] but we are discussing here merely that sense of falseness in the balance of a scientific or mathematical metaphor—whereof asserted anachronisms are often the identifiable sign. It is of course possible that a poet highly literate in modern mathematical philosophy will nevertheless finish a Platonist: but in the expression of that exaltation, the author argues, there will be more sophistication than in Mackay's:

> [H]er emotion does not arise with the thought, but from thinking about the thought. The philosophy is, as it were, not first hand. A poet, thinking to the best of his ability and with immediate emotion, may, though he be demonstrably mistaken, possess dignity: the same poet, contentedly admiring error, does not.[6]

The Georgian poet Walter Turner, for instance, retains this dignity whilst rejecting modern science with almost Blakean abandon. The poets of the first-generation who dabbled in mathematical imagery tend to lie between the didactic end of Mackay and the despairing end of Turner, with

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[3] William Demopoulos, *Logicism and its Philosophical Legacy* (Cambridge: Cambridge University Press, 2013), p. 19; My argument is complicated on two counts: (1) Platonism was still present amongst major mathematicians contemporary to Mackay, most prominent amongst whom was Gödel: but his espousal, based on logical grounds, is far more subtle than Mackay's pre-Victorian ideas (Charles Parsons, 'Platonism and Mathematical Intuition in Kurt Gödel's Thought', *The Bulletin of Symbolic Logic*, 1.1 (1995): 44-74); (2) Some have questioned whether Frege can be described as a naïve Platonist: see Erich H. Reck, 'Frege on Numbers: Beyond the Platonist Picture', *The Harvard Review of Philosophy*, 13.2 (2005): 25-40.

[4] Anon. reviewer, "The Garden of the Gods", *Poetry Review*, 22.4 (July-August 1931): 314-15, p. 314; Michael Whitworth (in personal conversation) attributed the review to Michael Roberts. Based on the style and tone of the prose, I agree with the attribution.

[5] See Joe Moran, *Interdisciplinarity* (London: Routledge, 2002), chps. 2 &5; and Beer, 'Science', p. 788-90.

[6] Anon., 'Garden', p. 314.

whom we shall bring this section to close.[7] In general, most mathematical poems of the first-generation do not meet the standard, tending to dogma, imposed implicitly in the anonymous reviewer's critique—which to some extent represents the views of the second-generation's 'scientific poets'—namely, that poems engaging with a technical subject, even when adopting a critical stance, must bespeak a sincere engagement with the discourse.

Edna St Vincent Millay's (b. 1892) sonnet, "Euclid Alone has Looked on Beauty Bare", is another first-generation poem with statements as sweeping as Mackay's but whose emotion comes across as more ardent.

> Euclid alone has looked on Beauty bare.
> Let all who prate of Beauty hold their peace,
> And lay them prone upon the earth and cease
> To ponder on themselves, the while they stare
> At nothing, intricately drawn nowhere
> In shapes of shifting lineage[8]

The attraction for poetry in mathematics has perhaps never been summarised so perfectly as here in her modernist resignation: that fallen art has no longer the claim to ideal beauty. Allan Burns says the poem dwells "on beauty without mentioning art. Millay's sonnet stresses the elusive nature of beauty"[9]—it resides now in that other world, to whose perfect forms the mathematician alone remains privy. Soul wearied in this veil is purified through straight lines and regular shapes, like Plato's decrepit philosopher at the summit of his intellectual ascent.

Millay is nowadays hardly read, but this poem was by far her most celebrated in days of fame;[10] the plethora of commentary on the poem in the 1930s and 40s is neatly summarised in Walter Steven Minot's thesis.[11] The debate revolved mostly around the phrase 'shifting lineage',[12] as to whether the reference is to artistic ancestry or geometric lines. For our purpose, we shall sidestep the issue and focus instead on the phrase, 'beauty bare'. Assuming the phrase to be straight-forward, critics have not noted the nuance in emotion which emerges when read as the culmination of her sonnet cycle.

In a previous sonnet, the poet had said, "Love is not blind. I see with single eye/ Your ugliness and other women's grace./ I know the imperfection of your face".[13] Love does not in the

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[7] Pound, when he attempts in prose to generalise his analogies between mathematics and poetry, would likely extend the spectrum further in Mackay's direction; but we are only discussing poetry in this chapter.
[8] Edna St Vincent Millay, *Collected Poems*, ed. Norma Millay (New York, Harper, 1956), p. 605 (From *The Harp-Weaver and Other Poems*, 1923).
[9] Allan Burns, *Thematic Guide to American Poetry* (Westport: Greenwood Press, 2002), p. 4
[10] Walter Stephen Minot, 'Edna St. Vincent Millay: A critical revaluation' (PhD Thesis: University of Nebraska, 1970), p. 95.
[11] Ibid., p. 95-103.
[12] Ibid., p. 97-99.
[13] Millay, *Poems*, p. 586. (Collected as Sonnet xxvi)

poet exalt her lover's imperfections to oblivion, as it appears to when possessing others.[14] She seems to grasp conceptually the 'blindness of love', but feels no empathy for poets 'who prate of beauty' in an amorous fog: "Well I know/ What is this beauty men are babbling of;/ I wonder only why they prize it so".[15] Incapable of an elevated appreciation of sexual beauty, the poet says, "Still will I harvest beauty where it grows:/ In coloured fungus and the spotted fog […] In empty tins; and in some spongy log/ Whence headlong leaps the oozy emerald frog".[16] When the sense of beauty comes not naturally but in seeking, there is little that determines one's path to it. That is why, in "Inert Perfection" (from a previous collection), Millay had affirmed the disinterested appreciation of beauty: she states, if beauty "be bound by Function, that it be/ Less than Perfection".[17] Continuing in *The Harp-Weaver*, the poet laments, "Pity me that the heart is slow to learn/ What the swift mind beholds at every turn".[18] It is rare that a poet should try so earnestly to emote so conspicuous a lack of feeling. One not given to spontaneous overflows of powerful emotion might have been content in more abstract pursuits—but the poet has elected instead to record this paradoxical emotion in a sonnet: it is this realisation that adds pathos and weight to the line, 'Euclid alone has looked on beauty bare'. The stress is on 'bare'. Whilst she glimpses the pure symmetry of mathematics with much the same rapture as Actaeon espying Diana bare, when that beauty is enfleshed, it retains little of interest to the intelligent poet.[19]

Despite the sincere confession that leads to her consolations in Euclid, the poem exhumes for its emotion a religious attitude to mathematical truth not in agreement with the philosophy of the times.[20] This moralising energy of Platonism is more directly evoked in the later poetry of Marianne Moore (b. 1887). In a poem titled "Icosasphere" (after the platonic solid icosahedron), the poet says,

> 'In Buckinghamshire hedgerows
> the birds nesting in the merged green density,
> weave little bits of string and moths and feathers
> and thistledown,

[14] Take Isabel Archer, for instance, who debates whether she ought not fix upon the outward flaws of a supplicating gentleman: "She had reminded herself more than once that this was a frivolous objection to a person of his importance; and then she had amended the rebuke by saying that it would be a frivolous objection only if she were in love with him. She was not in love with him and therefore might criticise his small defects as well as his great" (Henry James, *Portrait of a Lady* (Raleigh, Freebook Publisher [1881] 2020), p. 86).
[15] Millay, *Poems*, p. 586.
[16] Ibid., p. 603 (Collected as Sonnet xliii)
[17] Ibid., p. 376. (From collection, *Huntsman, What Quarry?* (1939))
[18] Ibid., p. 589. (Collected as Sonnet xxix)
[19] I use the word 'intelligent' differently than Pound, who classed the poetry of Marianne Moore and Mina Loy as logopoeia, or the "dance of the intellect among words" (Ezra Pound, *Literary Essays of Ezra Pound*, ed. T.S. Eliot (Norfolk: New Directions, 1954), p. 25)—Millay is not given to word-play of their kind.
[20] Elissa Zellinger, however, has recently argued Millay's "conservative poetic convention" away as a self-conscious affectation of an old "poetess tradition" that allows for sharper expression of "emotional insight" (Elissa Zellinger, 'Edna St. Vincent Millay and the Poetess Tradition', *Legacy*, 29.2, (2012): 240-62, p. 240.)

in parabolic concentric curves'
and, working for concavity, leave spherical feats
of rare efficiency;
whereas through lack of integration,

avid for someone's fortune,
three were slain and ten committed perjury,
six died, two killed themselves, and two paid
fines for risks they'd run.[21]

The sphere was to Plato the most tempting shape for the universe's ultimate design, "for as the universe is in the form of a sphere, all the extremities, being equidistant from the centre, are equally extremities, and the centre, which is equidistant from them, is equally to be regarded as the opposite of them all".[22] He saw in regular solids of ever-increasing sides a tendency to the perfect sphere—of which, of course, the Earth has no instance.[23] Polyhedrons of greater sides, the dodecahedron and the icosahedron, seemed as if gradually softening to a sphere, and to thus also acquire the latter's harmony and proportion.[24] The 'spherical feats of rare efficiency' in the poem similarly describes the icosasphere as smoothening—there being less tumult between the sides than in fewer-sided, more angular, polyhedra. The 'integration', or unity, amongst the individual triangles circumnavigating its surface, is lost to a flawed humanity that perjures and murders. Thus, against the sordid conduct of mankind is set the divine justice of geometry:

But then there is the icosasphere
in which at last we have steel-cutting at its
summit of economy,
since twenty triangles conjoined, can wrap one

ball or double-rounded shell
with almost no waste, so geometrically
neat, it's an icosahedron.

Linda Leavell says, "like other Moore poems, 'The Icosasphere' equates geometric perfection with moral perfection".[25] In a letter to Marie Boroff, discussing the poem, Moore wrote: "One does not

[21] Marianne Moore, *Collected Poems* (New York: Macmillan, 1951), p. 142.
[22] Plato, (*Timaeus*) *Dialogues*, p. 1186.
[23] Ronald F. Kotrč, 'The Dodecahedron in Plato's "Timaeus"', *Rheinisches Museum Für Philologie*, 124.3/4 (1981): 212-22, p. 215.
[24] Moore does not seem to observe the traditional association of the icosasphere in Plato's cosmogony with the element water (Kotrč, "Dodecahedron", p. 212).
[25] Linda Leavell, 'Kirkwood and Kindergarten: A modernist's childhood' in *Critics and Poets on Marianne Moore: 'A Right Good Salvo of Barks'*, ed. Linda Leavell, Cristianne Miller, and Robin G. Schulze (Lewisburg: Bucknell University Press, 2005), p. 36; For an exposition on the rhythmic quality of Moore's syllabic structure, see Robert Beloof's article, rather ineptly named as 'the mathematics of Marianne Moore' ('Prosody and Tone: The "Mathematics" of Marianne Moore', *The Kenyon Review*, 20.1 (1958): 116-23.)

break the moral laws with impunity; transgress the laws of science and you don't get results".[26] The overstepping of mathematical reason into laws of ethics and aesthetics, to which Moore's poetics seems implicitly to acquiesce, was observed with grave distrust by the second-generation—we shall see this especially in Empson and Roberts.

In some poems of the first-generation, however, there isn't a furtive doctrine glinting in thickets of metaphor. In E. E. Cummings's (b. 1894) "The Surely" (1931), the poet uses mathematical imagery to describe the process by which an idea progresses from vague intuition to definite knowledge:

> Concentric geometries of transparency slightly
> joggled sink through algebras of proud
>
> inwardlyness to collide spirally with iron arithmetics[27]

Indefinite forms hover in the atmosphere of the imagination; they are 'joggled', or adapted, to formula—as, say, when a^2 comes to represent the imaginary square—in their passage to understanding. Once 'inwardly' secure in algebraic form, as abstract thought digested, the object comes up against 'arithmetics'—'iron', because arithmetic deals in constants rather than the variables of algebra. The spiral collision may be between idea and body or thought and instinct. To symbolise this adventure of cognition, the poet has employed what is apparently a common-sense notion of the relations between the three branches of mathematics. Although the intuitive invocation of higher and lower mathematics sparingly involves idealism, the poem in general propounds minimally on the nature of mathematics.

Unlike the relatively neutral tone of Cummings, there are poets of the first-generation whose stance is deliberately askance to modern philosophy. With Blake, they declared, "I must create a system or be enslav'd by another man's".[28] It would be inane to observe in Yeats's mathematical poems an unwillingness to display the temperament of his times—for their meaning drives purposefully elsewhere. There also remains little to be said of "The Statues", a poem that for years has been showered with exegesis.[29] Its interpreters, however, have not noted the prevalence of the idea in art criticism of the 1920s, that during the sixth century B.C., the mystical

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[26] Found in *The Explicator Cyclopedia: Modern poetry*, *vol. 1*, eds. Charles Child Walcutt, and J. Edwin Whitesell (San Antonio: Quadrangle Press, 1966), p. 226.
[27] E. E. Cummings, *ViVa*, ed. George Firmage (London: Liveright, [1931] 1997), p. 3.
[28] From William Blake, 'Jerusalem', in *The Complete Writings of William Blake: With Variant Readings*, ed. Geoffrey Keynes (London: Oxford University Press, 1966), p. 382.
[29] See, for instance, A. Norman Jeffares, *A Commentary on the Collected Poems of W.B. Yeats* (London: Macmillan, 1975), p. 490; Hazard Adams, 'Yeatsian Art and Mathematic Form', *The Centennial Review of Arts & Science*, 4.1 (1960): 70-88; Kathleen Raine, "Blake, Yeats and Pythagoras" in *Homage to Pythagoras: Rediscovering Sacred Science*, ed. *Christopher Bamford* (Hudson: Lindisfarne, 1994); Daniel Albright, *The Myth against Myth: A Study of Yeats's Imagination in Old Age*, (Oxford: Oxford University Press, 1972), p. 129; and James Olney, *The Rhizome and the Flower: The Perennial Philosophy, Yeats and Jung*, (Berkeley: University of California Press, 1980), p. 63.

beliefs about numbers propagated by the Pythagoreans augured a revolution in Greek sculpture; one sees it repeated across popular works such as Hulme's *Speculations* and Rhys Carpenter's *The Esthetic Basis of Greek Art of the Fifth and Fourth Centuries B.C*[30]—these texts, or the spreading influence of their ideas, likely confirmed to Yeats the fundamental relation between art and mathematics.[31]

> Pythagoras planned it. Why did the people stare?
> His numbers, though they moved or seemed to move
> In marble or in bronze, lacked character
> But boys and girls, pale from the imagined love
> Of solitary beds, knew what they were,
> That passion could bring character enough,
> And pressed at midnight in some public place
> Live lips upon a plummet-measured face.
>
> No! Greater than Pythagoras, for the men
> That with a mallet or a chisel modelled these
> Calculations that look but casual flesh, put down
> All Asiatic vague immensities,
> And not the banks of oars that swam upon
> The many-headed foam at Salamis.
> Europe put off that foam when Phidias
> Gave women dreams and dreams their looking-glass.[32]

The grand old poet seems to have been fascinated with the story that the Greek discovery of geometric proof set off the invention of humanism in art.[33] The events clash remarkably well: according to the vague dates with which we are forced to make do in the study of ancient history, Phidias was born five years before the death of Pythagoras. Yeats, who studied Pythagorean philosophy in Burnet's *Early Greek Philosophy* looked carefully for its imprint in the plastic arts of Ancient Greece.[34]

In Doric art, as fidelity to natural form is first discovered as an artistic principle, realism and idealism come to mean the same. The sculptor wished to imbue his creation with the reality

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[30] T. E. Hulme, *Speculations: Essays on Humanism and the Philosophy of Art*, ed. Herbert Read (London: Routledge & Kegan Paul, 1924); Rhys Carpenter, *The Esthetic Basis of the Greek Art of the Fifth and Fourth Centuries B. C.* (Bryn Mawr: Longmans, 1921).

[31] Yeats says in a letter dated 22 May, 1933 to Olivia Shakespear, "My two sensations at the moment are Hulme's *Speculations* and *Lady Chatterley's Lover*" (W. B. Yeats, *The Collected Letters of W.B. Yeats*, *Unpublished Letters (1905-1939)*, ed. John S. Kelly (Charlottesville: InteLex Corporation, 2002), online edition.— "The Statues" is published in 1940, so Hulme had digested in Yeats for a few years by then. There is no evidence that Yeats read Carpenter although he was often reviewed in the *North American Review* in the 1910s and 1920s (K.G.W. Cross and R.T. Dunlop, *A Bibliography of Yeats Criticism 1887-1965* (London: Macmillan, 1971), when Carpenter was regularly publishing his poems there ('Bibliography of Rhys Carpenter', *Hesperia: The Journal of the American School of Classical Studies at Athens*, 38.2 (1969): 123-32, p. 123).

[32] W. B. Yeats, *The Collected Poems of W.B. Yeats* (London: St. Martin's Press, 1958).

[33] Albright, *Myth*, p. 129.

[34] Olney, *Rhizome*, p. 63.

beneath the flux of subjective perception and to do so, he had to discover the ideal laws of the universe. Carpenter expresses this seeming paradox as follows:

> Since all the elements of his work were ultimately man-devised and man-perfected, what possible guarantee of their objective fitness could there be, or what sanction for their claims to be the best type? That is a question which the Greek must have asked himself. He found the answer just where we to-day might wish to find it in science, though of course it was the science of his day and generation and consisted mainly of geometric theory.[35]

The tension between the realism of flesh and the idealism of form is the driving energy of the poem. The stark numbers, though animated in marble, lacked 'character', the messy traits of individuals.[36] In *On the Boiler*, Yeats says: "There are moments when I am certain that art must once again accept those Greek proportions which carry into plastic art the Pythagorean numbers, whose faces which are divine because all there is empty and measured".[37]

Unlike Mackay or Moore, there is ambivalence in Yeats's analogy between mathematical and artistic perfection, expressed through the alliterative and assonantal groupings of opposites—"passion, press" and "plummet-measured", "calculations" and "casual flesh". Carpenter says,

> In the statue of Herakles the right angles in which the lines and masses meet do not in themselves represent anything, any more than a geometric theorem represents actual objects (however much actual objects may exemplify and embody geometric theorems). […] They are an abstract schema into which representational matter may be fitted, as the kneeling man is fitted into the abstract pattern of lines.[…] any one may experiment on himself to see whether he derives any emotion from contemplating such a pattern.[38]

Wary of this perennial tendency to abstraction, Yeats balances intricately the role of geometry in his greater system of art. "Measurement began our might:/ Forms a stark Egyptian thought, / Forms that gentler Phidias wrought".[39] Mathematics set off one of the greatest revolutions in the history of art but mathematization, when overwrought, begins to sap vitality. This is taken to its extremes in "Byzantium", where the mosaics "of the dancing floor/ break bitter furies of complexity".[40] The geometric shapes that in Byzantine floor mosaic represented figures both human and divine marked to Yeats the culmination of the Doric experiment with geometry in

[35] Carpenter, *Esthetic Basis*, p. 120.
[36] Albright, *Myth*, p. 127.
[37] W. B. Yeats, *The Major Works*, ed. Edward Larrissy (Oxford: Oxford University Press, 2001), p. 451.
[38] Carpenter, *Esthetic Basis*, p. 31.
[39] Yeats, *Collected Poems*, "Under Ben Bulben".
[40] Ibid., "Byzantium".

art.[41] Mosaic became in his system an art for old men and ghosts, not those "upstanding men/ that climb the streams".[42]

In the final letter of his life, Yeats declared, "man cannot know the truth but can only embody it".[43] Plato and Pythagoras became for the later Yeats a symbol for all ghostly intellectualism that withdraws man from the joy of living. Despite this singular philosophy, Yeats remained devoted to the Platonist poet Turner (b. 1884): he regarded Turner "as the first poet to read a mathematical equation; a musical score, a book of verse, with an equal understanding; he seems to ride in an observation balloon, blue heaven above, earth beneath an abstract pattern".[44] When reading Turner invoking the behaviour of electrons or the theory of relativity in verse, one never doubts the poet has grasped the concept and followed it to far-off conclusions. "What a triumph for the physicists/ Who say the 'universe is finite and unbounded'/ And give no reason why one should not walk around it"[45]: the stanza draws from the dictates of modern physics the same dark absurdities one finds in the early poems of Empson. Turner's Platonism, however, is not straightforward. He is capable in the same stanza of a striking description of sensuous emotion and lofty praise of divine order. Yeats says that as "a musician, he [Turner] imagines Heaven as a musical composition and a mathematician, as a relation of curves".[46] Turner's idealism reached its pinnacle in his 1923 collection, *Landscape of Cytherea*, with its unapologetic series of poems titled, "Ideal", "Real", "Apparition", "Vision", "Rhapsody", and "Secrecy of Beauty".[47] By the time he came to write a Platonic dialogue, *The Aesthetes* (1927), however, there had seeped into his tone the conscious polish of satire.[48]

Between these collections was an intriguing long-poem called *The Seven Days of the Sun*. It is a rather gloomy and apocalyptic series that uses mathematical metaphors throughout to pave the poet's retreat from phenomena. The cycle sets out with a peculiar task of defending a rigid

[41] All critics have read the bird in the poem as one of the figures on the ceiling mosaic and offered an interpretation with that picture in mind (see summary of criticism in Jeffares, *Commentary,* p. 296). Katherine M. Dunbabin, *Mosaics of the Greek and Roman World* (Cambridge: Cambridge University Press, 1999), p. 30 & 254) says that the sectile of the floor of Byzantine churches consisted of allegories told through birds and geometric forms, which agrees more closely with the birds of the poem's mosaic. Also, Otto Demus (*Byzantine Mosaic Decoration: Aspects of Monumental Art in Byzantium* (Boston: Boston Book & Art Shop, 1955), p. 24) says the floor of Byzantine churches were referred to as 'pavements' securing further our interpretation of the "Emperor's pavement".

[42] "The Tower", in Yeats, *Collected Poems*, p. 189; the idea that geometry took over the arts of a people discomforted by existence was put forth first by Worringer, whose ideas animated Hulme's meditations on the subject (Wilhelm Worringer, *Abstraction and Empathy: A Contribution to the Psychology of Style*, trans. Michael Bullock (Chicago: Ivan R. Dee [1908] 1997), p. 19-20).

[43] Richard Ellmann, *Yeats: The Man and the Masks* (New York: Macmillan, 1948), p. 285.

[44] W.B. Yeats, *Later Essays*, ed. William H. O'Donnell (London: Charles Scribner's Sons, 1994), p. 462.

[45] W. J. Turner, *The Seven Days of the Sun: A Dramatic Poem* (London: Chatto & Windus, 1925), p. 33.

[46] Yeats, *Essays*, p. 463.

[47] W. J. Turner, *Landscape of Cytherea: Record of a Journey into a Strange Country* (London: Chatto & Windus, 1923).

[48] W. J. Turner, *The Aesthetes* (London: Wishart & Co., 1927).

epistemology: "A geometric illusion.// But an illusion and a concept are the same thing".[49] A 'concept', in the Kantian system, is a generalisation from a set of particulars; concepts are in this sense like the formulae of geometric shapes intuited from many imperfect Earthly copies. It follows from this that, according to the poem, our beliefs about concrete reality, enshrined in the form of concepts, are no more secure than idealized abstractions. The poet later states more explicitly, "But now that I know that the solar system and the constella-/tions of stars/Are contained within me,/ Nothing exists outside me". And with the next line, "Outside me everything is the same but I do not exist",[50] he domesticates solipsism to a more refined 'romanticism'—to be understood here in a limited sense as the doctrine that credits ego with creation.

I "have felt the whiteness of a lily/Upon my palate;/And the solidity of their slender curves/Like a beautiful mathematical proposition/In my brain"[51]: the poet thus designs to refract all sensuous experience against the lofty orderings of mind. He finds different species of joy in perception and apperception:

> In the innumerable curves of the Universe
> I have focused the peace that passeth all understanding,
> In the curves of music
> And all the modulations of numbers.
>
> When I look upon a beautiful body
> And rapidly make an *Abstract*
> I tingle with pleasure at the deviations and aberrations
> Of the *Real*.
> I become alive through a series of shocks.
>
> My heart thunders as I race along this asymptote ever-
> Lasting
> Which is my life among other bodies.
>
> […]
>
> The curve of misery is asymmetrical
> I would close joy in a perfect circle.[52]

Remaining within the Kantian frame, 'understanding' can be read as forming only in minds structured to innately apprehend physical nature—i.e., space and time. The idea that music together with mathematics—as in the harmony of the spheres—lies beyond or beneath 'understanding', and thereby the phenomenal world, is Pythagorean. Phenomena seem to the poet 'deviations' and 'aberrations' from the Real, towards which the mortal coil unwinds as an

[49] Tuner, *Sun*, p. 11.
[50] Ibid., p. 28.
[51] Ibid., p. 26.
[52] Ibid., p. 29.

'asymptote'—we shall see the same image in Empson's "The World's End"[53]; the term 'asymptote' suggests that mind will never merge with reality; although one gets the impression there is nothing more the poet would like.

The unreconstructed Platonism in the idea of 'closing joy in a perfect circle' seems nonetheless to avoid anachronism by sheer force of insistence. In the lines, "It will be desperate agony/ For a man and a woman to come together./ […] Their desire will be in many parabolas/ About a point distant from their spheres/ And only the slow drift of their suns/ Can bring a momentary coincidence",[54] the poet revives Donne's post-Copernican equation of planets with lovers; but with his gyrating parabolas and moving suns, he tosses the reader further back into the Ptolemaic world: through a knowingly asserted naivete—"I do not believe the earth rotates,/ or circles the Sun"[55]—the poem canvasses for a reception outside historical considerations. It is thus with trepidation that I weave Turner's mathematical Platonism into a narrative about first-generation modernism.

It has been our task in this section to gather the recognisably 'mathematical' poems of first-generation modernism. We have identified in these poems two prevailing characteristics: they retain faith, in kind or degree, in mathematical Platonism; and their views seem not to indicate critical engagement with contemporary discourses on mathematics. We shall move now to a discussion of what those discourses propounded. But before doing so, I must insist again that my observations about first-generation works are not evaluations of the poems discussed. This section is but a historical preliminary necessary to assessing the distinguishing characteristics of second-generation modernism.

1.2 Mathematical Modernism?

> You treat world history as a mathematician does mathematics, in which nothing but laws and formulas exist, no reality, no good and evil, no time, no yesterday, no tomorrow, nothing but an eternal, shallow, mathematical present.—Hermann Hesse[56]

What Hesse—who Jeremy Gray observes, "seems to get so much right about modern mathematics"[57]—implies about mathematics would seem to contradict the twentieth century's

[53] See 2.1
[54] Tuner, *Sun*, p. 46.
[55] Ibid., p. 6.
[56] Hermann Hesse, *The Glass Bead Game* (London: Pan Books & Cape, [1949] 1987), p. 168.
[57] Qtd from personal email correspondence (Jeremy Gray, interviewed by Anirudh Sridhar, 23/04/2016)

rising faith in a mathematical account of phenomena.[58] But the debate surrounding scientific realism, whose chequered history we shall explore in section 1.4, is distinct from that on the foundations of mathematics. The philosophy of mathematics underwent a revolution in the late nineteenth and early twentieth centuries, which resulted from a disturbance to the faith in mathematical truth.

The faith had rested on a de facto identification of mathematics with physics. Contemporary scholarship on the history of mathematics, beginning with Herbert Mehrtens, maintains that mathematicians of the 'modernist' period had begun to see their subject, that is to say, the operation of mathematical objects, as exceeding mere application to physical objects. Although physics was becoming increasingly mathematical, and we shall see the philosophical consequences of this in 1.4, new developments in mathematics were arising independently from concerns in physics. Because the rise of early modern science was coeval with mathematics, by the end of the eighteenth century, the two subjects had come to be viewed as one.

> Mathematical research in calculus and differential equations went hand in hand with work in the mathematical sciences of mechanics, astronomy, fluid mechanics, acoustics, and others. There was no such thing at the time as separate fields of pure and applied mathematics, although distinct areas of mathematics did start to separate from physics as the century wore on.[59]

The schism between mathematics and physics that followed has been characterized as mathematical modernism, whose peak was coterminous with high modernism in the arts, between 1890 and 1930.[60] Gray characterises his thesis as follows:

> Taken together, all the changes in mathematics (during this period) and the connections to other intellectual disciplines that were then animated constitute a development that cannot be described adequately as progress in this or that branch of mathematics (logic and philosophy) but must be seen as a single cultural shift, which I call mathematical modernism.[61]

A simple historical factor that explains the modernist shift was the growing autonomy of the academic profession of mathematics in the nineteenth century.[62] Gray, however, argues that "the

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[58] See Theodore M. Porter, *Trust in Numbers: The Pursuit of Objectivity in Science and Public Life* (Princeton: Princeton University Press, 1995); It is a comprehensive account of the rise of public and political faith in mathematical accounts of reality, in science, technology, economics and social policy.

[59] Calvin Jongsma, 'Mathematization and Modern Science' in *Mathematics in a Postmodern Age: A Christian perspective,* ed. Russell W. Howell and James Bradley (Grand Rapids: Wm. B. Eerdmans, 2001), p. 184.

[60] Gray, *Ghost*, p. 2.

[61] Ibid., p. 4.

[62] For an account of the professional separation between mathematics and physics in Germany, see Jeremy Gray, 'Anxiety and Abstraction in Nineteenth-Century Mathematics', *Science in Context*, 17.1-2 (2004): 23-47. For an account of the effects of the French Revolution on this process, see Helene Gispert and Renata Tobies, 'A Comparative Study of the French and German Mathematical Societies before 1914' in *L'Europe mathématique: Histoires, mythes, identités*, ed. Catherine Goldstein, Jeremy Gray, and Jim Ritter (Paris: Editions de la Maison des Sciences de l'homme, 1996).

professional situation of mathematicians, in particular their relative autonomy from scientists, did not cause modernism to happen, but it enabled it and it promoted it".[63]

The mathematics of the period was first styled 'modernist' by Herbert Mehrtens, for the following reasons: "The two common traits of the various modernisms that I identify as central are, first, the autonomy of cultural production and, second, the departure from the vision of an immediate representation of the world of experience".[64] These spheres of relative autonomy include developments in formalism, analysis, and non-Euclidean geometry, among others. This severance from practical affairs instilled deep insecurities amongst mathematicians. The doubt as to the origins of mathematics was expressed at the time by Russell: "mathematics may be defined as the subject in which we never know what we are talking about, nor whether what we are saying is true".[65] But unlike the arts, they were worried not for cultural authority but origins, coherence and correctness. Once the physical world was no longer a justifiable foundation for mathematical knowledge, there emerged logic, as an alternative ground, posited first by Gottlob Frege in 1884, and championed later by Russell. Hilbert attempted to bring all mathematics into an internally consistent, self-contained system dubbed formalism; and Leopold Kronecker tried to rein mathematics in from infinities in the clouds to a position he labelled 'finitism', which laid the foundation for L. E. J. Brouwer to locate the origin and continual source of mathematics in human intuition.[66] The specific distinctions between these philosophies will not be relevant to the present work: it is only important to note that these second-order exercises were set off by an anxiety that the new mathematical discoveries brought, and they have been woven, in one way or another, into the narrative of 'mathematical modernism'. The idea that the philosophies of modern mathematics were responding to a crisis of internal faith was introduced by Morris Kline, who described the history of modern mathematics as a *Loss of Certainty*.[67] A striking example, one that paved the road to the loss of faith in the twentieth century, is the discovery of non-Euclidean geometry in the nineteenth.[68]

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[63] Gray, *Ghost*, p. 5.

[64] Herbert Mehrtens, 'Modernism vs Counter-Modernism, Nationalism vs Internationalism: Style and Politics in Mathematics, 1900–1950' in *L'Europe mathématique*, p. 521.

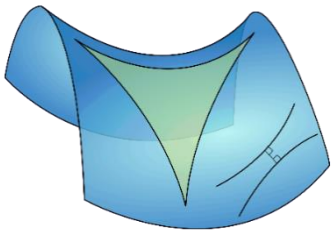
[65] Bertrand Russell, 'Recent Work on the Principles of Mathematics', *International Monthly* (1901). Reprinted in *Bertrand Russell: His Works, vol. 3: Towards the 'Principles of Mathematics' 1900-02* (New York: Routledge, 1994), p. 84.

[66] "Three traditionally important views on the nature of mathematics: logicism, intuitionism, and formalism" (Paul Benacerraf and Hilary Putnam, ed., *Philosophy of Mathematics: Selected Readings* (Cambridge: Cambridge University Press, [1964] 1983), p. 1) See also the collection of essays in Part I. The Foundations of Mathematics, p. 41-65; Also see the three chapters (5. Logicism, 6. Formalism, and 7. Intuitionism) on "Mathematics and its Foundation" in David Bostock, *Philosophy of Mathematics: An Introduction* (Oxford: Wiley-Blackwell, 2009).

[67] Morris Kline, *Mathematics, the Loss of Certainty* (Oxford: Oxford University Press, 1980), p. 79.

[68] For origins of NEG, see Jeremy Gray, 'Gauss and Non-Euclidean Geometry' in *Non-Euclidean Geometries: Janos Bolyai Memorial Volume*, eds. A. Prekopa and E. Molnar (New York: Springer, 2003), p. 61-80; Gray argues that

In this new geometry, space was no longer assumed flat. It became in some renditions the curved form of a saddle.



69

This vision of space not only diverges from our immediate experience but disagrees with the Newtonian world-picture, which was based in a Euclidean framework.[70] Geometry, meaning 'measurement of the Earth' in Greek, had begun to flout its conventional role of affirming our intuitive knowledge of the physical world.[71] The mathematician Gauss declared that the consequence of the new discovery was "to make the truth of geometry doubtful".[72] And Henri Poincaré brought together a generation's anxiety about the new discovery in a terse phrase: "If several geometries are possible, they say, is it certain that our geometry is the one that is true?"[73]

Although the idea that mathematics underwent a modernism comparable to the history of art has been around since the 1980s,[74] it has recently begun to gain popularity in literary circles, which we are now able to critically analyse. There have been sympathetic references to Gray and Mehrtens in Engelhardt's and Brits's recent works and Rodal's upcoming monograph.[75] Although the term 'modernist' is relatively new to the field, there was already a sense of an 'autonomous' view of mathematics, in rough terms, expressed by Northrop Frye in *Anatomy of Criticism*. Frye describes a process by which mathematics becomes his version of 'modernist':

> Mathematics appears to begin in the counting and measuring of objects, as a numerical commentary on the outside world. But the mathematician does not think of his subject so: for him it is an autonomous language, and there is a point at

Gauss was still operating within a Euclidean idea of space which makes his claim to being the founder of NEG weaker than Bolyai's and Lobatchevsky's.

69 Image distributed under a CC-BY 2.0 license.

70 Solomon Marcus, 'Starting from the Scenario Euclid—Bolyai—Einstein', *Synthese*, 192.7 (2015): 2139-149, p. 2145.

71 Eddington makes a similar argument in Arthur S. Eddington, *The Nature of the Physical World* (Cambridge: Cambridge University Press, [1928] 1948), p. 80-81.

72 George Bruce Halsted, 'The Non-Euclidean Geometry Inevitable', *The Monist*, 4.4(1894): 483-93, p. 486.

73 Henri Poincaré, *Science and Hypothesis*, trans. J. Larmor (London: The Walter Scott Publishing co., [1902] 1905), p. 56.

74 Moritz Epple, 'Kulturen der Forschung: Mathematik und Modernität am Beginn des 20. Jahrhunderts' in *Wissenskulturen: Über die Erzeugung und Weitergabe von Wissen*, ed. Johannes Fried and Michael Stolleis (Frankfurt am Main: Campus, 2009), 125–58, p. 129.

75 Engelhardt, *Modernism*, p. 11; Brits, *Infinities,* p. 7; Manuscript title: *Modernism's Mathematics: From Form to Formalism.*

> which it becomes in a measure independent of that common field of experience which we call the objective world.[76]

He then applies modernist mathematics as analogy to literature, to secure a formalist conception of the latter: "Just as in mathematics we have to go from three apples to three, and from a square field to a square, so in reading a novel we have to go from literature as reflection of life to literature as autonomous language".[77]

T. R. Henn, on the other hand, rejects this analogy in "Science and Poetry" (1961):

> I do not […] suggest that there is any difference in kind in the potential or the sensibility of, let us say, the mathematician as contrasted with the arts man in forming these value-judgments. What divergence there is seems to me to arise because of the manner in which the arts student is brought into continual contact with historical, political, philosophical and religious problems (however tangential or partial they may appear) that are refracted through the material which he studies.[78]

Henn's implication is that unlike the 'arts man', the mathematician does not have historical or political concerns. This idea, implicit in the concept of 'modernist mathematics', deserves scrutiny on two grounds. First, on the use of the term 'modernist', and second, through competing narratives about mathematics from the modernist period.

We must question the use of the term modernist to mean 'autonomous'. Looking at the complete abandonment of mimesis by Mondrian or the diatonic scale by Schoenberg, there is some truth in the popular understanding of modernism as autonomy from representation, of a certain stifling Victorian sort. The New Critical notion of the work of art as ethereal whole is, however, by now, obsolete. Critics like Valentine Cunningham and Benjamin Kohlmann have erected a firm backdrop of exigent historical and political motivation behind 1930s verse.[79] Eysteinsson has traced a long history of resistance to defining modernism out of history, as far back as to Lukacs (1934) and Kermode (1966).[80] Even the legacies of high modernism that are most remembered, the poetic image and the objective correlative, observed carefully, betray a desire to ground poetry in the reality of sensual experience.

Cross-disciplinary definitions of concepts are in general apt to become loose; that is, when accommodating too much, nominative nuance is sacrificed. For instance, Amir Alexander, defining romanticism as an escape from existence, characterizes early nineteenth century mathematics in much the same way as Mehrtens has, modernist mathematics.

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[76] Northrop Frye, *Anatomy of Criticism* (Princeton: Princeton University Press, 1957), p. 350.
[77] Frye, *Anatomy,* p. 351.
[78] Henn, 'Science', p. 538.
[79] See Valentine Cunningham, *British Writers of the Thirties* (Oxford: Oxford University Press, 1988) and Benjamin Kohlmann, *Committed Styles* (Oxford: Oxford University Press, 2014).
[80] Eysteinsson, *Modernism*, p. 14-16.

> At the same time a new story of genius and martyrdom, drawn from the discourse of High Romanticism, legitimized and allowed for a new type of mathematical knowledge: impractical, self-referential, irrelevant to worldly life, and judged only by its purity, its truth, and its beauty. […]
> The new mathematicians turned away from the Enlightenment focus on analyzing the natural world to create their own higher reality—a land of truth and beauty governed solely by the purest mathematical laws.[81]

In section 1.5 of this chapter, and indeed the remainder of this thesis, we shall argue that unlike romanticism, modernism is to be understood as involved in a profound effort to ground the poetic word to the world; that, particularly to second-generation modernists, the adequacy and accuracy of words to reality is what mattered most. Given the romantic propensity for flight, especially as characterised in Alexander's work, we may ask why the 'autonomy' of modern mathematics does not agree more closely with romanticism. In the draft of his upcoming essay in *Modernism in the Sciences*, Leo Corry similarly questions the application of preconceived modernist characteristics to mathematics.[82]

Joan Richards, in *Mathematical Visions*, argues that Victorian mathematicians, both Christian and idealist, rejected non-Euclidean geometry for undermining the transcendental truths of science—but in her epilogue, argues that an acquiescence to the new geometries in late Victorian culture led inevitably to a 'modernist' surrender to formalism.[83] In a similar vein, Rodal argues that formalism is a trait common to mathematics and poetry of the early twentieth century. She compares literary formalism with Hilbertian formalism, which swept the question of ontology in mathematics aside and made the proof of its correctness, or consistency, the chief end of mathematical philosophy. In favour of Rodal's thesis, one might point to Eliot's essay on 'Ben Jonson', in which he compares the world created by Jonson to that of non-Euclidean geometry, "because they have a logic of their own"; but the hint of formalism is also qualified in the following line: "this logic illuminates the actual world".[84]

Despite compelling narratives on the autonomisation of mathematics, fin-de siècle culture was not monolithic in the view it took of mathematics. Beyond questioning the application of the term 'modernist' to mean 'autonomy' in mathematics, we may ask whether mathematics was itself unanimously considered 'autonomous' in the modernist period. Melanie Bailey has recently argued

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[81] Alexander, *Duel*, p. 12.
[82] Leo Corry, 'How Useful is the Term "Modernism" for Understanding the History of Early Twentieth-Century Mathematics?' in *Science as Cultural Practice: Modernism in the Sciences, ca. 1900–1940*, ed. Moritz Epple and Falk Mueller (Berlin: Akademie Verlag, forthcoming 2020)—he explicitly states that the essay is not meant to be quoted from so we shall refrain from expanding on his points; See also Solomon Feferman, 'Modernism in Mathematics', *American Scientist*, 97.5 (2009): 417-20, p. 420, who is largely in sympathy with Corry's stance.
[83] Joan L. Richards, *Mathematical Visions: The Pursuit of Geometry in Victorian England* (Boston: Academic Press, 1988), p. 231.
[84] T.S. Eliot, 'Ben Jonson', *TLS* (November 1919), p. 637-38.

that the more bizarre events and spatial deformations in Alice's wonderland were Carroll's way of satirising the new beliefs in mathematical autonomy.[85] Whether or not Carroll's novels were received as such, soon after their publication, Friedrich Engels furnished a more direct critique of 'autonomous' mathematics, in a tract called *Anti-Duhring*, in which he refutes the views of Eugen Duhring:

> Pure mathematics deals with the space forms and quantity relations of the real world—that is, with material which is very real indeed. The fact that this material appears in an extremely abstract form can only superficially conceal its origin from the external world. […] Before one came upon the idea of deducing the form of a cylinder from the rotation of a rectangle about one of its sides, a number of real rectangles and cylinders, however imperfect in form, must have been examined. Like all other sciences, mathematics arose out of the needs of men: from the measurement of land and the content of vessels, from the computation of time and from mechanics.[86]

Engels's views have been written out of 'modernist' narratives of mathematical history—mainly because his views were not consequential to the development of mathematics. But this does not preclude the influence it had on a wider modernist culture. It is true that the more prominent debates on the foundations of mathematics, and indeed the ones remembered by posterity, have been between the logicist, formalist and intuitionist schools; and these were interested in a purely intellectual answer to what is after all a metaphysical question of mathematical ontology. But critics like J.D. Bernal, J.B.S. Haldane and Lancelot Hogben formed a formidable clique of resistance to Edwardian mathematical idealism.[87]

These thinkers—generally of Marxist persuasion—recognized that recent developments in mathematics were perhaps the most pressing philosophical challenge to committed scientific research: "The basis of mathematics has itself been shaken by the controversies on axiomatics and logistics".[88] One viable strategy they employed in defence was to mould the history of mathematics into the Hegelian framework so that its ramifications began to resemble that of dialectical materialism: "With regard to the dialectical development, it can be summed up fairly simply. You discover a rule in mathematics. You next proceed to break the rule, and you then modify your original definitions in such a way as to make the breach legitimate".[89] But the dialectical method applies just as easily to a sublation of ideas within the discourse of mathematics. The re-definitions

[85] Melanie Bailey, 'Alice's adventures in algebra: Wonderland solved', *New Scientist*, 16/12/2009.
[86] Friedrich Engels, *Anti-Dühring: Herr Eugen Dühring's Revolution in Science* (Moscow: Foreign Languages Publishing House, 1959), p. 60.
[87] For the moment, we shall regard formalism and idealism together, as having in common an opposition to historicism and materialism.
[88] J.D. Bernal, *The Social Function of Science* (London: Routledge, 1939), p. 2.
[89] J.B.S. Haldane, *The Marxist Philosophy and the Sciences* (London: Routledge, [1938] 2016), p. 53.

of Euclidean axioms in hyperbolic space, for instance, fit the template of ideal *aufhebung* almost perfectly. And this fact made the Marxist critics uneasy.

Lancelot Hogben's *Mathematics for the Million,* published in 1936, influenced a generation of mathematicians and was widely praised by his contemporaries, such as Haldane and Bernal, and even Einstein.[90] Hogben hangs the development of mathematics until the nineteenth century on the same timeline as that of history, particularly, the lived worlds of past epochs. He resists idealism by saying, "our studies in mathematics are going to show us that whenever the culture of a people loses contact with the common life of mankind and becomes exclusively the plaything of a leisure class, it is becoming a priestcraft".[91] This association of formalism with aestheticism will be discussed further in the following sections.

The idea of mathematical modernism is intriguing, and certainly compelling; but literary critics would do well to continue research in this area with a wider range of views—including ones such as Hogben's that may not be consequential to foundational debates within mathematics—in mind. Although the poems analysed in this thesis interact with many mathematical ideas Gray regards modernist—transfinite sets, non-Euclidean geometry, formalism—I have tried not to overly emphasise the gulf between mathematics and science and history. Certainly, no poet studied in this thesis accepted the idea of 'autonomy' uncritically.

1.3 Aesthetic Autonomy

This section will examine the conscious attempt, mainly amongst mathematicians of the late nineteenth and early twentieth centuries, to establish mathematics as a natural occupant of the aesthetic sphere.

Rachel Crossland, as we discussed, has recently criticised the de facto acceptance of hierarchy in the field of literature and science, which has largely operated within the 'influence' model that regards literature as awaiting eagerly the latest revelations of science.[92] As stated in the introduction, the present work aims to step outside the influence-zeitgeist dichotomy by demonstrating an agonistic dynamic that prevailed between poetry and mathematics in the modernist period. The nascent field of literature and mathematics, however, has relied considerably on the influence model; Andrea Henderson's *Algebraic Art*, for instance, goes so far as to suggest that Victorian artists and novelists conceptualised even their idea of aesthetics after the fashion of nineteenth century mathematical formalism. In this section, I shall argue that

[90] Einstein even said of it that it "makes alive the contents of the elements of mathematics" (Lancelot Hogben, *Mathematics for the Million* (New York: W.W. Norton, 1937), p. 654.)
[91] Ibid., p. 23.
[92] Crossland, *Physics*, p. 4-5.

mathematical modernism, or the wish for release from the fetters of physics, can more profitably be studied in our field by analysing a reverse current: a deliberate attempt to remake mathematics in the image of art.

Summarising their intersections in the past century, Worringer says, "we frequently find the, at first sight, astonishing idea put forward by modern art theoreticians that mathematics is the highest art form; indeed it is significant that it is precisely Romantic theory which, in its artistic programmes, has come to this seemingly paradoxical verdict".[93] Henderson's premise is correct—namely, that the triangulation of art, mathematics, and autonomy is a nineteenth century phenomenon; but her narrative choice seems a result of the cache that the influence-framework has in the literature-and-science field. There are many simple counterexamples to her narrative. The legend most closely associated with poetry, that the poet is but a conduit to ideas revealed by the spirit or the muses, is adopted by William Kingdon Clifford in his 1868 lecture: "There is no scientific discoverer, no poet, no painter, no musician, who will not tell you that he found ready made his discovery or poem or picture—that it came to him from outside, and that he did not consciously create it from within".[94] We shall look more closely at Ernst Mach's attempt to rid mathematical theories of metaphysical assumptions in the following section; but for the moment, note that the impulse which drove Mach was an aesthetic one—that Newtonian theory should be condensed and made elegant. He demands of his followers that "all metaphysical elements are to be eliminated as superfluous and as destructive of the economy of science".[95]

Beyond vague Victorian attempts—as Alexander would term it—to 'romanticise' the sciences, I would like in this section to discuss a theoretical effort in the modernist period to characterise mathematics in the philosophical language of aesthetics. This occurred because once mathematics is no longer working from concerns in physics, it becomes sensible to establish its value elsewhere, and aesthetics was the most agreeable option available: it is the realm with which mathematics has even had past philosophical relation. Brits points out that today, we have forgotten that mathematics historically allied with the arts much more than the practical activities of scientists.[96] R.G. Collingwood, for instance, argued that in *The Republic*, by describing art as imitation of imitation, Plato had unwittingly created the field of aesthetics;[97] although designated to a lower plane, art was ontologically separate from the Earth, as much so as geometry, although the latter occupied a distinctly higher plane. It is, however, the legacy of German aesthetics that

[93] Worringer, *Abstraction*, p. 19.
[94] William Kingdon Clifford, *Lectures and Essays, vol 1*, ed. Leslie Stephen and Frederick Pollock (Cambridge: Cambridge University Press, [1879] 2011), p. 99.
[95] Mach, *Mechanics*, p. xxxviii.
[96] Brits, *Infinities*, p. 2-3.
[97] R. G. Collingwood, 'Plato's Philosophy of Art', *Mind*, 34 (1925):154-172.

perhaps best explains the attraction for modern mathematicians. It is difficult to streamline the game of cause-and-effect in historiography: Henderson herself admits that "Kant's aesthetic form sounds remarkably like the Victorian ideal of 'pure mathematics'".[98] If we are to fix on a source for the idea of 'aesthetic autonomy', the idea that the appreciation of art is a *disinterested* one and that art is itself useless found its first rigorous justification in Kant's third critique. Kant explicitly severed judgment of beauty from earthly interests of the individual and disentangled the uses to which a work of art is put from the work itself, which, he maintained, appeals without agenda—in his words, has "purposiveness without purpose".[99] Kant's critique straddled the continental and British traditions of aesthetics: whilst David Hume defined taste subjectively as the accretion of aesthetic experience, Baumgarten made the aesthetic deducible from objective principles of beauty.[100] Kant combined the two into a theory of beauty as subjective judgement about which one can nonetheless argue—without the use of concepts, of course—and seek agreement.[101]

It is remarkable how similar Poincaré's assessment of the aesthetic in mathematics is to that of Kant. He balances the subjective and objective nature of beauty in almost the same fashion. In her definitive article on Poincaré's aesthetics, Milena Ivanova states,

> Aesthetic judgements are not simply emotional responses, differing between individuals with different tastes and preferences. Nor are they objective, since they do not refer to or reflect an objective property of a theory. It is reasonable to suppose that for Poincaré aesthetic judgements are objective in that there is intersubjective agreement between beings like us who share the same intellectual capacities.[102]

Poincaré, in a chapter on "Mathematical Discovery", claims that "[t]his harmony is at once a satisfaction of our aesthetic requirements, and an assistance to the mind which it supports and guides".[103] He also goes to great lengths to stress that the ultimately useless nature of science is its salvation in an age that saw science as a weapon of utilitarianism: "The scientist does not study nature because it is useful; he studies it because he delights in it, and he delights in it because it is beautiful".[104] He states, "the distinguishing feature of the mathematical mind is not logical but

[98] Henderson, *Algebraic Art*, p. 11.
[99] Immanuel Kant, *Critique of Judgment*, trans. Werner S. Pluhar (Cambridge: Hackett Publishing, [1790] 1987), p. 73.
[100] David Hume, *Four Dissertations* (London: A. Millar in the Strand, 1757); Alexander Gottlieb Baumgarten, *Aesthetica* (Hildesheim: G. Olms, [1750] 1961).
[101] Kant, *Judgement*, p. 100.
[102] Milena Ivanova, 'Poincaré's Aesthetics of Science', *Synthese*, 194.7 (2017): 2581-94, p. 2588.
[103] Henri Poincaré, *Science and Method*, trans. Francis Maitland (London: Thomas Maitland and Sons, [1908] 1914) p. 38.
[104] Henri Poincaré, *The Value of Science: Essential Writings of Henri Poincaré*, ed. Stephen Gould (New York: Modern Library, [1908] 2001) p. 368.

aesthetic".[105] Poincaré wished to make explicit his use of terminology from aesthetics. The Kantian estimation of the useless, of disinterested speculation, the purposefulness with which an artwork calls upon its beholder to abandon purpose, were all held as gospel by the followers of Pater in the *l'art pour l'art* movement, which we shall discuss in the subsequent section. Poincaré even borrowed their notorious phrase when he argued, "intellectual beauty is sufficient unto itself, and it is for its sake".[106]

It is clear that aesthetic sensibility had become an important criterion for mathematicians by the twentieth century. But the beauty of their creation was not seen as one of sensation but of form: symmetry and order were to be the governing features:

> Of course I do not here speak of that beauty which strikes the senses, the beauty of qualities and of appearances; not that I undervalue such beauty, far from it, but it has nothing to do with science; I mean that profounder beauty which comes from the harmonious order of the parts and which a pure intelligence can grasp.[107]

A decade on, Russell made a similar argument about the higher beauty of mathematics. He not only compared mathematics to poetry but employed that other carefully crafted term of aesthetics, the sublime. Through the works of Kant, Burke and Schopenhauer, amongst others, beauty had come to be associated with fineness and prettiness whilst the sublime, with the majestic and awe-inspiring. The latter was what knifed the ego most, as to behold the tempests of Turner or the infinities of mathematics was to have the realization of one's own insignificance come crashing with joy. Russell says,

> Mathematics, rightly viewed, possesses not only truth, but supreme beauty—a beauty cold and austere, like that of sculpture, without appeal to any part of our weaker nature, without the gorgeous trappings of painting or music, yet sublimely pure, and capable of a stern perfection such as only the greatest art can show. The true spirit of delight, the exaltation, the sense of being more than Man, which is the touchstone of the highest excellence, is to be found in mathematics as surely as poetry.[108]

He is developing a firmly established idea in Kantian aesthetics that some mathematical concepts like infinity awaken in us the instinct for the sublime.[109] Russell's idea that mathematics was a cold beauty unlike the hot nudes of the canvas lasted for a time. G.H. Hardy, who popularised mathematical aestheticism—which stoked much Marxist ire at the time—is surprised to find that "[e]ven Professor Hogben, who is out to minimize at all costs the importance of the aesthetic

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[105] Qtd in Tommy Dreyfus and Theodore Eisenberg, 'On the Aesthetics of Mathematical Thought, For the Learning of Mathematics', *EPDF,* 6.1 (1986): 2-10, p. 2.
[106] Henri Poincaré, *The Choice of Facts*, trans. G. B. Halsted, *Monist,* 19.2 (1909): 231-239, p. 237.
[107] Poincaré, *Facts*, p. 237.
[108] Bertrand Russell, *Mysticism and Logic: And Other Essays*, (London: Allen & Unwin, 1917), p. 60; We shall see a similar association between mathematics and sculpture in Michael Roberts's poem "Perspective" in section 4.1.
[109] See chapter, 'On the Mathematically Sublime', in Kant, *Judgment*, p. 103.

element in mathematics, does not venture to deny its reality. There are, to be sure, individuals for whom mathematics exercises a coldly impersonal attraction".[110] Hardy compared mathematics to the poetry of Housman, who became something of a friend in later life. He argued for a monumental yet useless view of art. That is, he wished to tie art to the old Horatian, or even Shelleyan, notion that beyond the rise and fall of civilizations, art is what prevails. He quotes Housman to say, "What shall I build or write/ Against the fall of night?/ Tell me of runes to grave/ That hold the bursting wave,/ Or bastions to design,/ For longer date than mine".[111] Upon thus suggesting the lasting, or even eternal truth of mathematics, he calls it useless, and with the nineteenth century aesthetician, says what is of ultimate value is never of immediate service: "Is mathematics 'useful', directly useful, as other sciences such as chemistry and physiology are? This is not an altogether easy or uncontroversial question, and I shall ultimately say No".[112] Hardy characterised mathematics much as Ruskin did a painting by Titian: that not a stroke exists which could be done without and not a pigment more imagined without destroying perfection; that the finest works of art give the impression that they could have been no other way. In Hardy's criteria for mathematical beauty, he lists "inevitability', "unexpectedness", and "economy".[113]

The mathematically literate poets of this thesis are also at times prone to aestheticize mathematics in such modern ways. As regards 'economy', Roberts said,

> The true mathematician instinctively aims at rigour and economy of argument […] These preferences are ultimate, they cannot be explained, but they are widespread, and the solution of a problem which satisfies these preferences gives an intense satisfaction to the solver: a satisfaction which, mathematicians claim, is indistinguishable from that produced by certain works of art.[114]

And as regards the tension between inevitability and unexpectedness, Empson said, "the aesthetic value of a mathematical process lies in a […] perpetual slight surprise, which on the next moment's consideration is turned to a richer acceptance, was what Aristotle found most fundamental to exalted beauty. This pleasure is inherent in the method of mathematics"[115]—that is, when unexpectedness comes paradoxically from the recognition of inevitability.

It is repeatedly argued that the unexpectedness of mode by which one is delivered to the inevitability of form is at the heart of the aesthetic leap in doing mathematics. Hardy believed the aesthetic criterion to be of highest importance when assessing the virtue of theory: "The

[110] G. H. Hardy, *A Mathematician's Apology* (Cambridge: Cambridge University Press, 1940), p. 14.
[111] Ibid., p. 10.
[112] Ibid., p. 8.
[113] John Ruskin, *The Two Paths: Being Lectures on Art and its Application to Decoration and Manufacture Delivered in 1858-59*, ed. Christine Roth (West Lafayette: Parlor Press, 2004), p. 32 & 43; Hardy, *Apology*, p. 29.
[114] Michael Roberts, *Critique of Poetry* (London: Jonathan Cape, 1934), p. 107.
[115] From Empson's diaries (1925), recorded in Haffenden, *Mandarins*, p. 105.

mathematician's patterns, like the painter's or the poet's must be beautiful; the ideas like the colours or the words, must fit together in a harmonious way. Beauty is the first test: there is no permanent place in the world for ugly mathematics".[116] So with inevitability, unexpectedness and economy, and the given criterion of rightness, the appreciation of mathematics could be judged by any Ruskinian who subscribed to the idea that "*there is but one right way of doing any given thing required of an artist"*. [117]

The development of a cogent doctrine of aesthetics in pure mathematics also spread to mathematical theories in the sciences. Herbert Read discusses the rising aestheticism of major figures in science: "scientists like Mach, Poincaré, and Karl Pearson have agreed in defining science as the economy of thought. But this is also a good working definition of art".[118] J.W.N. Sullivan took a similar position to Hardy on aesthetics when nominating it as the ascendant characteristic of scientific theory: "The measure of success of a scientific theory is, in fact, a measure of its aesthetic value [...] The measure in which science falls short of art is the measure in which it is incomplete as science".[119] Unlike the pure aestheticism of Hardy, however, there were many thinkers who held that aesthetics was not the raison d'être of theory but the ultimate test of its truth. Read continued from his observation about economy to say, "with Professor Eddington, 'I cannot reject the hope that theory [and, I would add, art] is by slow stages leading us nearer to the truth of things".[120] Heisenberg, in Keatsian style, went a step further in equating beauty with truth: "[i]f nature leads us to mathematical forms of great simplicity and beauty we cannot help thinking that they are 'true', that they reveal a genuine feature of nature".[121] Paul Dirac similarly attributed a crucial epistemic role to beauty in mathematical prospecting: "one has a great confidence in the theory arising from its great beauty, quite independent of its detailed successes".[122] Hermann Weyl occupied a position between these tendencies—between beauty as truth or an indicator of it—when he said, "my work always tried to unite the true with the beautiful, but when I had to choose one or the other, I usually chose the beautiful".[123]

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116 Hardy, *Apology*, p. 14.
117 Ruskin, *Two Paths*, p. 32.
118 Herbert Read, 'Readers and Writers', *The New Age*, 22 (December 1921): 67-8, p. 68.
119 J.W.N Sullivan, 'The Justification of the Scientific Method', *Athenaeum*, 4644 (1919): 274-275, p. 275; To justify his hypothesis, Sullivan quotes Poincaré (p. 275); Eddington quote taken from *Space, Time and Gravitation: An Outline of the General Relativity Theory* (London: Cambridge University Press, 1920), p. 25.
120 Read, 'Readers', p. 68
121 Werner Heisenberg, *Physics and Philosophy: The Revolution in Modern Science* (London: Allen & Unwin, 1959), p. 68.
122 Paul Dirac, 'The Excellence of Einstein's Theory of Gravitation' in *Einstein: The first hundred years*, ed. Maurice Goldsmith, Alan Mackay and James Woudhuysen (Oxford: Pergamon Press, [1980] 2013): 41-46, p. 44.
123 Qtd in S. Chandrashekar, *Truth and Beauty: Aesthetics and motivation in science* (Chicago: University of Chicago Press, Chicago, 1987), p. 52.

The conscious aesthetic reimagining of mathematics and mathematical science that occurs at the turn of the century and continues throughout the 'modernist' period of mathematics shows greater forces at play than accounted for in the naïve association of modernism with formal autonomy. Mathematics became useless, sublime, for its own sake, unexpected, and even 'right'. If indeed it was the case that the new mathematics had renounced earthly concerns, it does not immediately follow that it must be beautiful or sublime, that it must be useless in precisely the way that art was thought to be.[124] Whilst the remainder of this thesis argues that poetry in the early twentieth century borrowed from the language and discourse of mathematics to regain lost authority, it is important to note, as we have learnt from these last sections, that the process was not entirely unidirectional; and that the two-sidedness of the agon was rather intricate.

Mathematics might have tried to get free from the muck of circumstance through aesthetic autonomy, but in the next two sections, we shall see that simultaneous to this process was a whole philosophical and literary enterprise to free reality from the grimness of numerical description.

1.4 Loss of Faith

Accompanying these flights to eternity was a steady loss of faith in the objective truth of science. Although the thesis is concerned more with mathematics, we cannot ignore the debate surrounding scientific realism for two reasons. First, physics, after the revolutions of Einstein and quantum mechanics, was beginning to be conceived almost entirely as mathematical: this, we shall see, was the principal reason for the debate on its veracity.[125] Next, most of the poets discussed in this thesis, although engaging with 'modernist' mathematics, did not observe a strict boundary between mathematics and physics. In fact, part of their critique can be viewed as a response to the mathematical nature of physical laws.

This section is by no means an exhaustive or accurate—that is, to the standards of formal logic—account of the debate on scientific realism during the modernist period. Our purpose is merely to draw attention to the pressing concerns of a wider scientific and philosophical community that as backdrop are important to the stances taken and ideas explored in the poems we are to discuss.[126] In our brief overview, we shall not list all the actors, architects, and events

[124] Henderson argues that Victorian mathematicians modified Kant's aestheticism by grounding their metaphysics outside the Euclidean world, but the idea of disinterested appreciation does not depend on a Euclidean premise (Henderson, *Algebraic Art*, p. 43).
[125] Paul Dicken, *A Critical Introduction to Scientific Realism* (London: Bloomsbury, 2016), p. 28.
[126] I have relied heavily on select recent works, principal amongst which is Paul Dicken's *Introduction to Scientific Realism*. This is the clearest exposition on the causes of and responses to the debate on realism. An excellent compendium of extracts from primary texts seminal to the development of realism is *Philosophy of Science: An Anthology*, which comes with a series of quirky introductions by the editor, Marc Lange (Marc Lange, *Philosophy of Science: An Anthology* (Malden: Blackwell, 2007)).

involved in the rise of doubt. Alberto Coffa says, "few topics have elicited more heat and less light among philosophers during the past two centuries than the subject of realism".[127] Barry Gower notes a "bewildering variety of scientific realisms and anti-realisms confronting us".[128] Thus, in view of the argument forwarded by this thesis, I shall focus only upon ideas dealing centrally with the issue of correspondence between mathematical and experienced reality.

In the early twentieth century, physics had begun to seem, to scientist and non-expert alike, a series of mathematical interrelations increasingly remote from the world of physical appearance. Dicken states, "The issue was ultimately a problem of coordination between the abstract mathematical language of our scientific theories, and the concrete physical world they attempted to describe".[129] In other words, how can the numbers and formulae of the page claim to represent adequately the matter and motion of phenomena? The question, resembling roughly this form, was first approached by Kant in the *Metaphysical Foundations of Natural Science.*[130] If one consensus emerges in contemporary scholarship, amidst what Gower calls a 'bewildering variety', it is that the story of the philosophy of science begins with Kant,[131] who makes the first serious attempt to answer the problem of 'coordination'. In *Foundations*, the question is tackled specifically within the strictures of Newtonian physics.[132] Newton had himself swerved the issue by not proclaiming crude 'reality' for his theories: only that they seem to work well, given all the available data.

> Hitherto we have explained the phaenomena of the heavens and of our sea, by the power of Gravity, but have not yet assign'd a cause of this power […] hitherto I have not been able to discover the cause of those properties of gravity from phaenomena, and I frame no hypotheses.[133]

With the famous phrase, 'I frame no hypothesis', Newton left his metaphysically inclined successors clamouring over the reality of his theories. Kant, however, abandoned the pursuit to

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127 Alberto Coffa, *The Semantic Tradition from Kant to Carnap: To the Vienna Station*, ed. Linda Wessels (Cambridge: Cambridge University Press, 1991), p. 94.
128 Barry Gower, 'Cassirer, Schlick and "Structural" Realism: The philosophy of the exact sciences in the background to early logical empiricism', *British Journal for the History of Philosophy*, 8.1 (2000): 71-106, p. 71.
129 Dicken, *Realism*, p. 32.
130 Immanuel Kant, *Kant's Prolegomena and Metaphysical Foundations of Natural Science,* ed. Ernest Belfort Bax (London: George Bell, [1786] 1883)
131 It is difficult to cite a consensus. But we shall note his importance in the fact that Kant's claim to have inaugurated a Copernican Revolution in philosophy by grounding Newtonian physics in psychology is generally accepted till today (Michael Friedman, *Kant's Construction of Nature* (Cambridge: Cambridge University Press, 2015), p. 41)
132 Dicken, *Realism*, p. 10.
133 Isaac Newton, *Newton's Principia*, *The Mathematical Principles of Natural Philosophy* (New York: Daniel Adee, 1846), p. 392.

identify mathematical theory with the physical universe on absolute terms, and tried instead to derive Newton's laws from the basic structures of mind and perception.[134]

> He argued that some branches of our knowledge—geometry, mathematics and the fundamental principles of Newtonian Mechanics—are simply descriptions of the way in which we structure the objects of our knowledge, and so can be known with certainty merely through the introspection of our own cognitive faculties.[135]

In so doing, Kant undergirds his model of the human mind with Euclidean and Newtonian premises. The idea that our cognitive faculties structure reality became thereby dependent upon a set of laws that were to face demise in the coming century. That is, with the advent of non-Euclidean geometry and Relativity, the Kantian justification for realism would remain no longer tenable.[136] And it was certainly difficult to adapt the Kantian idea—that is, to maintain the correspondence between the structures of experience and science—to a non-Euclidean and Relativistic world[137]—we perceive neither space nor spacetime as being curved.

After the discovery of non-Euclidean geometry—whose implications, if fully accepted, annul the Kantian foundation of physics in psychology—, the first step in closing the gap between theory and experience was to manage and limit the purely theoretical elements of Newtonian science. In this endeavour, the most influential figure of the nineteenth century was Ernst Mach. The central tenets of Mach's programme were to abolish the need for Absolute Space,[138] and to base the concepts of motion and inertia using only what is empirically observable.[139] Because he circumscribed the aims of science to shorthands and elegant summaries of the empirically observable, leaving grander 'explanations' to the metaphysicians, Mach and his followers have been described as the 'descriptionist' school.[140]

Mach's influence extended well into the twentieth century. But the problem grew two new faces with the arrival of relativity and quantum mechanics—of quantity and quality: both formed

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134 See Michael Friedman, who identifies the revolutionary step as being Kant's insight that "the synthetic a priori representation of space, along with the synthetic a priori science of geometry, plays a crucial role in making experience or *empirical* knowledge first possible" (*Kant's Construction,* p. 4)

135 Dicken, *Realism*, p. 32.

136 Clark Glymour, 'Realism and the Nature of Theories' in *Introduction to the Philosophy of Science* (Indianapolis: Hackett Publishing, [1992] 1999), p. 114.

137 Lange, *Philosophy*, p. 4.

138 Absolute space was a hypothetical entity conceived by Newton; it was a space that "remains always similar and immovable" (Newton, *Principia*, p. 77), on this imagined plane, all his mathematical laws would remain absolutely true (see John D. Norton, 'Philosophy of Space and Time' in *Introduction to the Philosophy of Science*, p. 180-82).

139 Dicken, *Realism*, p. 44; For a discussion of Relativity in Mach, see Gereon Walters, 'Phenomenalism, Relativity and Atoms: Rehabilitating Ernst Mach's Philosophy of Science' in J.E. Fenstad, I.T. Frolov, and R. Hilpinen, eds., *Logic, Methodology and Philosophy of Science VIII*, (Proceedings of the Eighth International Congress of Logic, Methodology and Philosophy of Science, Moscow) (Amsterdam: North Holland, 1987), 641–660.

140 J. L. Heilbron, 'Fin-de-Siecle Physics' in Carl Gustaf Bernhard, Elisabeth Crawford, and Per Sorbom, eds., *Science, Technology and Society in the Time of Alfred Nobel*, Nobel Symposium, 52 (Oxford: Pergamon, 1982), p. 51-73.

recurrent fodder for second-generation modernism's critique. As regards quantity, scientific descriptions had begun to contain a high ratio of 'unobservables': to know of events far into the cosmos or deep inside the atom required a surrender of faith to the instruments of science that yielded information about purported entities far beyond the realm of empirically verifiable experience.[141] The information, despite its mediated acquisition, formed an indispensable part of the new scientific theories. As regards quality: because data about the notional entities being described came almost exclusively in numerical form, the resulting theories were almost purely mathematical:[142] the old scientific models, billiard balls for gasses, say, became a relic of Victorian science[143]: Eddington expresses this concern best: "The pure mathematician, at first called in as servant, presently likes to assert himself as master".[144] A repeated critique that we shall observe amongst the poets of this thesis points likewise to the distance between mathematical representation and experience of the senses in relativity and quantum theory. It is thus important to see how this problem was dealt with by scientists and philosophers of the time.

The purely mathematical theories of reality had reinvigorated the problem of correspondence which had briefly seemed solved by Kant. There were various attempts to countenance the complications; we shall focus on the thinkers that were most influential on poets of this thesis, Frank Ramsey and Bertrand Russell. Both were highly influential in Cambridge at the time Empson and Roberts were undergraduates there, and when Riding was developing her models for close-reading, which, it has been argued, was in part influenced by then-recent discoveries in logic:[145] Ramsey and Russell helmed two schools of the philosophy of science that have been retroactively labelled as logical empiricism and structural realism.

The logical empiricist argued that scientific theories were not limited by the structures of mind, as Kant had maintained, but rather by the structures of language.[146] In other words, scientific theories were true to the extent that the semantic field of their vocabulary comprehended the objects of shared experience. The issue thus became manageable, and science was brought into the realm of linguistic analysis—a crucial step for poetry to be able to question the former's authority.

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141 Lange, *Philosophy*, p. 4-5.
142 Dicken, *Realism*, p. 28 & 32.
143 Mary Hesse expressed the anxiety about the growing obsolescence of mechanical models through a fictionalised persona of the real physicist N. R. Campbell in *Models and Analogies in Science* (Notre Dame: University of Notre Dame Press, [1966] 1970), p. 7-56.
144 Eddington, *Physical World*, p. 52.
145 See Rebecca Porte, 'An Agreement with Reality: The Poetry of Logical Modernism' (PhD Dissertation: University of Michigan, 2014), p. 31-33.
146 Glymour, 'Realism', p. 117.

The logical empiricist, rather than pondering over cognition or being tripped up by psychology, saw the philosopher's task as simply to make theoretical vocabulary intelligible to observation.

> The idea is that while some of the terms of our scientific theories are well understood and grounded in our everyday experience, others are introduced in the process of our scientific investigations and need to be somehow connected with our everyday experiences in order for us to make sense of them.[147]

Ramsey and his colleagues like Rudolf Carnap worked with the premise that theoretical elements, though expedient to the construction of new theories, are ultimately grounded in past experiments. The job of the philosopher would thus become the archaeology of experimental and observational origins of each theoretical premise in a newly ratified scientific theory, until an unwieldy version of the initial theory emerges—one that brooks no unobservables.[148] It was thus by tinkering with language that mathematical science could pretend to realism.[149]

As for the second concern, namely, that theories were becoming purely mathematical—a concern that both Empson and Roberts will later be shown to share[150]—the most influential response was structural realism. Structural realism held, in Kantian fashion, that science tells nothing of things-in-themselves;[151] it also proscribes knowledge of true causation.[152] The argument proceeded instead by inferring from functional mathematical theory an aspect of reality which is mathematical, namely, its structure. Dicken describes the tenets of structural realism as follows: "For Russell, […] the nature of our scientific knowledge is best understood as a claim about the abstract, logico-mathematical relationships that hold between the objects of the external world, rather than specific claims about those objects themselves".[153] Russell argued that we must be satisfied in the knowledge of abstract second-order relations between objects in the world without burdening science with first-order alchemical ambitions: of the search for substance and cause. All that is known from science is that *some* mathematical relations obtain in the universe. The epistemic limit to scientific description is thus drawn by the structuralist at the very surface of phenomena.

The logical empiricist and the structural realist defined different boundaries to scientific knowledge: both had the potential to bolster the claim of artists to a share in the description of reality and embolden poets to resist scientific imperialism on philosophical grounds. The logical

147 Dicken, *Realism*, p. 36.
148 Ibid., p. 61.
149 Coffa, *Carnap*, p. 234.
150 See 2.2 and 3.1.
151 Gower, Cassirer, p. 74.
152 Dicken, *Realism*, p. 159-60; On causation, see also Anjan Chakravartty, 'The Structuralist Conception of Objects', *Philosophy of Science*, 70 (2003): 867–78.
153 Dicken, *Realism*, p. 144.

empiricist revealed the extent to which the deliverances of physics were divorced from experienced reality and dependent on measuring apparatuses. The structural realist limited scientific knowledge to the mathematical relations between things, leaving the remaining aspects of reality open to alternate modes of representation.

1.5 Totality of Impressions

These technical critiques of realism were prefigured by nineteenth century philosophy and paraphrased in popular scientific texts of the early twentieth. Whilst some poets like Empson and Roberts were intimate with the progress of mathematics and science, the works we shall discuss in this section were more accessible to other poets of second-generation modernism.

Whereas the philosophy of science was concerned principally with the issue of correspondence between the mathematical and observational elements of physical theory, the wider debate on realism saw limitations more fundamental to the scientific method. Eddington says, "In most subjects, exact science goes a little way and then stops, not because of the limitations of our ignorance, but because we are dealing with something which includes both metrical and non-metrical aspects".[154] J.W.N Sullivan, in a book tellingly titled *Limitations of Science*, says,

> Scientific method [...] began by quite consciously and deliberately selecting and abstracting from the total elements of our experience. From the total wealth of impressions received from nature these men fastened upon some only as being suitable for scientific formulation. These were those elements that possess *quantitative* aspects. Between these elements mathematical relations exist.[155]

We shall argue in this section that a novel characteristic of literary modernism is a desire to fasten language to those other 'impressions' left un-investigated by science: that second-generation modernism, particularly, may be understood in its effort to ground the medium of poetry in accuracy and truth to whole experience. We mentioned the Poundian image and the objective correlative as signalling this emerging characteristic. Of course, as seen in section 1.1, the inclination to idealism and romanticism was not entirely clipped in twentieth century poetry. However, J. Hillis Miller, in *Poets of Reality,* "question[s] the assumption that twentieth-century poetry is merely an extension of romanticism" and states that "a new kind of poetry has appeared in our day, a poetry which grows out of romanticism but goes beyond it [...] toward a poetry of reality", allowing Wallace Stevens to define that elusive word for him as follows:[156] "Reality is not

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[154] Arthur Eddington, 'The Domain of Physical Science' in *Science, Religion and Reality*, ed. Joseph Needham (London: Sheldon, 1925), p. 200.
[155] J.W.N. Sullivan, *Limitations of Science*, (London: Chatto & Windus, 1933), p. 197; See Whitworth, *Einstein's Wake*, chapter 1, for a description of the dense nexus between popular science works and larger culture.
[156] J. Hillis Miller, *Poets of Reality: Six Twentieth-Century Writers* (Cambridge: Harvard University Press, 1965), p. 1.

that external scene but the life that is lived in it. Reality is things as they are".[157] More recently, Oren Izenberg has argued that modernist poetry denotes a "shift of emphasis, from 'poems' as objects or occasions for experience to 'poetry' as an occasion for reestablishing or revealing the most basic unit of social life".[158] Whilst Izenberg is interested in demonstrating how modernists "reground[ed] the concept and the value of the person",[159] I shall argue in this thesis that 'the person' was merely a small part of larger booty—of reality and being itself—that poets eyed with unction. By collapsing the eminent position of some 'special senses', the revolutionary new structure of 'reality' would be able, they hoped, to offer more diverse employment.

The modernist desire to legitimate the 'total wealth of impressions' had an overture in philosophy. Mary Ann Gillies traces it to the French philosopher Henri Bergson.[160] This is because Bergson, phrased reductively, rejected science's view of space, absolute or otherwise, as stable backdrop for the adventures of matter, in favour of time, as the dynamic through which reality unfurls. *Time and Free Will*,[161] argues Gillies, posited a vital conception of reality that the old materialisms had not allowed, which in part induced modernists like Hulme, Eliot, Woolf, and Lawrence, to treat literature as a retelling—even extension—of reality.[162]

Helen Thaventhiran, on the other hand, regards William James's theory as more immediate to modernism.[163] James dissolved many remnants of metaphysics in science, particularly the subject-object distinction; he esteemed lived experience above dispassionate observation. According to James, there is "no aboriginal stuff or quality of being, contrasted with that of which material objects are made, out of which our thoughts of them are made".[164] His was neither a doctrine of idealism nor of materialism: it was, in some ways, a sublation of the two into a philosophy that has come to be known as "radical empiricism".[165] James argued that there is "only one primal stuff or material" from which all reality issues, and that is "pure experience".[166] 'Experience' "has no inner duplicity" between the active subject and inert object; science is but a second-order exercise that is made possible because the "immediate flux of life […] furnishes the

[157] Wallace Stevens, *The Necessary Angel: Essays on Reality and the Imagination* (New York: Alfred A. Knopf, 1951), p. 25-26.
[158] Oren Izenberg, *Being Numerous* (Princeton: Princeton University Press, 2011), p. 1-2.
[159] Izenberg, *Numerous*, p. 1.
[160] Mary Ann Gillies, *Henri Bergson and British Modernism* (London: McGill-Queen's University Press, 1996).
[161] Henri Bergson, *Time and Free Will: An Essay on the Immediate Data of Consciousness* (London: Allen & Unwin, [1889] 1910); See chapter 2 for Bergson's philosophy of mathematics and its relation to spatial construction.
[162] Gillies, *Bergson*, p. 13.
[163] Helen Thaventhiran, *Radical Empiricists: Five modernist close-readers* (Oxford: Oxford University Press, 2015), p. 4.
[164] William James, 'Does "Consciousness" Exist?', *The Journal of Philosophy, Psychology and Scientific Methods* 1. 18 (1904): 477-91, p. 478.
[165] Thaventhiran, *Empiricists*, p. 4.
[166] James, "Consciousness", p. 478.

material to our later reflection".[167] It could then be construed as the task of art to recognise and recoup those primal relations that first permitted scientific reflection.

Bergson's ideas are renewed in another philosopher of great importance to modernism, A.N. Whitehead.[168] Whitehead gave mathematical rigour to Bergson's woolly concept of duration. Whitehead described 'duration' as our immediate discernment of a certain whole in nature: "The general fact is the whole simultaneous occurrence of nature which is now for sense-awareness. This general fact is what I have called the discernible. But in future I will call it a 'duration"'.[169] Science, operating through stable and partial mathematical representation could not fully contend with the dynamic whole that is nature in the throes of event. "Nature", said Whitehead, "is a process. As in the case of everything directly exhibited in sense-awareness, there can be *no explanation* of this characteristic of nature. All that can be done is to use language which may speculatively demonstrate it [emphasis mine]".[170] The idea appealed immensely to modernist poets who felt summoned to the task of 'demonstrating' nature. Although his influence on English modernists such as Herbert Read and Virginia Woolf was significant,[171] he found considerably more success in America.[172]

If the modernist ambition was to demonstrate reality on its terms, the first task was to privilege time and experience over space and measurement. Philosophies that supported this reversal, such as Bergson's or Whitehead's, had profound impacts on modernist theory. George Whalley was a poet and critic whose main essay on poetics, *Poetic Process*, was deeply influenced by Whitehead. In trying to define art, he concocts an equation, 'x=z', to mean the work of art, 'x', tells something accurately about the world, 'z'. But as the symbol '=' implies a static view of reality, as needing scientific description, Whalley performs upon the first equation a series of modifications until he arrives at a satisfactory formulation, namely, $X_z = Z_x$, "where X is a function of Z and Z is a function of X. And the solution lies, not in seeking fuller knowledge of a Z independent of X, or fuller knowledge X independent of Z, but in a series of simultaneous dynamic approximations to both",[173] because art does not explain the world but "bodies forth reality".[174]

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[167] Ibid., p. 480.
[168] Whitehead's ideas have also been traced to William James; see Steven Meyer, 'Prefiguring Whitehead: Reading Jamesian Pragmatism with Stengers and Latour' in *Thinking with Whitehead and the American Pragmatists Experience and Reality*, eds., Brian G. Henning, William T. Meyers, and Joseph D. John (London: Lexington Books, 2015), p. 57-76.
[169] A.N. Whitehead, *The Concept of Nature* (Cambridge: Cambridge University Press, [1920] 1964), p. 53.
[170] Ibid., p. 54.
[171] For influence on Woolf, see Holly Henry, *Virginia Woolf and the Discourse of Science: The Aesthetics of Astronomy* (Cambridge: Cambridge University Press, 2003); for influence on Read, see Michael H. Whitworth, 'Physics and the Literary Community: 1905-1939' (Unpublished Oxford D.Phil. thesis, 1994), p. 213-16.
[172] See 4.2 for a discussion of Olson's ideas about events.
[173] George Whalley, *Poetic Process: An Essay in Poetics* (Cleveland: Meridian, [1953] 1967), p. 4.
[174] Ibid., p. viii.

Before Olson (who took Whitehead almost for a saint), one finds the ideas of dynamism and simultaneity in William Carlos Williams—a poet deeply concerned with the poetic image of an event. Robin Blaser says, "Williams' early interest in science [is] reflected in his poetry, as a means to gain objectivity and emotional accuracy".[175] Williams wrote in his copy of *Science and the Modern World* (which he read in 1926) that it was a "milestone surely in my career, should I have the force and imagination to go on with my work".[176] We may observe its immediate effects, for instance, in "The Young Sycamore" (1927):

> I must tell you
> this young tree
> whose round and firm trunk
> between the wet
>
> pavement and the gutter
> (where water
> is trickling) rises
> bodily
>
> into the air with
> one undulant
> thrust half its height-
> and then
>
> dividing and waning
> sending out
> young branches on
> all sides-
>
> hung with cocoons
> it thins
> till nothing is left of it
> but two
>
> eccentric knotted
> twigs
> bending forward
> hornlike at the top[177]

Of note is the energy with which the poem immediately strikes the reader, who is forced to take in the whole spectre of the tree in one pulsating breath. Hugh Kenner remarks that the poem has "no full stop because no termination for the tree's energies; [...] the poem, an eye's upward scan,

[175] Robin Blaser, *The Fire: Collected Essays of Robin Blaser*, ed. Miriam Nichols (Berkeley: University of California Press, 2006), p. 201
[176] Ibid., p. 201.
[177] William Carlos Williams, *The Complete Collected Poems of William Carlos Williams, 1906-1938* (Norfolk: New Directions, 1938).

is over".[178] The tree becomes present in the now for it has neither beginning nor end in consciousness; despite the physical termination of its branches, "the terminal episode still secretes hidden force: 'bending forward/hornlike at the top'".[179] The absence of a preposition in the first stanza is crucial to the poem's doings; it saves the event of the tree from mere representational objectification. "I must tell you/ *of* a tree" would have negated the force with which "this young tree" declares itself to us. The use of the narrative device "I must tell you" serves, nonetheless, to telegraph the bell curve of a saving experience. 'Bell curve' is used here to depict the character of event the poem holds: from the rainy past that wet the pavement to the watery future whereto the gutter tends, amidst which the young Sycamore glistens, limned by the flow of time; a paroxysm in flux captured perfectly by the haunting phrase of Whitehead: "What we perceive as present is the vivid fringe of memory tinged with anticipation".[180] And Whalley might agree that this is how the poem and the tree, art and reality, tumble forth into being.

Besides a privileging of time, the distinguishing feature of modernism we have identified is its ambition to exalt the full ambit of sensual experience: that is, once experience has been esteemed above representation, to find 'accurate' expression for it in poetry. Perhaps the ultimate source of reverence for the particular characteristics of a 'moment' was Walter Pater. Through the works of thinkers like Arthur Symons, Pater became a major influence on first and second-generation modernists.[181] Peter Nicholls traces the modernist obsession with sensual accuracy to Pater's defence of Impressionism.[182] Pater countered the academic orthodoxy that had for hundreds of years held fast to mimesis by arguing that an art divined from more senses than the ocular hegemony of the scientific world does not drive immediately to the razzle of decadent indulgence. Pater's dicta in *The Renaissance*, that we should be free "from all partial doctrine which does but relieve one element of our experience at the cost of another" and in *Marius the Epicurean*, that art requires "the intellectual powers at work serenely", can be seen as forming a model for the modernist who approached poetry with the temperament and tenacity of a scientist.[183]

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178 Hugh Kenner, *The Pound Era* (Berkeley: University of California Press, 1973), p. 403.
179 Kenner, *Pound*, p. 403.
180 Whitehead, *Concept*, p. 73.
181 See Karl Beckson, and John M. Munro, 'Symons, Browning, and the Development of the Modern Aesthetic', *Studies in English Literature, 1500-1900*, 10.4 (1970): 687-99.
182 Peter Nicholls, *Modernisms: A Literary Guide* (Basingstoke: Palgrave Macmillan, 2009), p. 67-68; For a discussion of Pater's philosophy and Impressionist art, see Wolfgang Iser, *Walter Pater: The Aesthetic Moment* (Cambridge: Cambridge University Press, 1987), p. 36-37; Editing the OUP's 1935 collection of modernist poetry, Yeats chose as its beginning—to signal the beginning of modernism—Pater's ekphrasis of the Mona Lisa (A. Walton Litz, 'Walter Pater and Modernism', *The Sewanee Review*, 103.2 (1995): 313-16, p. 314).
183 Walter Pater, *The Renaissance* (New York: The Modern Library, 1873), p. 198; Walter Pater, *Marius the Epicurean: His Sensations and Ideas* (London: Macmillan and co., [1885] 1888), p. 412; Although *Marius* is not to be read as enshrining a doctrine, Pater decided not to publish the conclusion to *The Renaissance* in its second edition out of fear that his prescriptions would be confused for mere hedonism and in the third edition (1888), was careful to direct the reader to *Marius* for a fuller account of his meaning (Pater, *Renaissance*, p. 196).

The seemingly professional temper, in which the task of writing correctly about the world was undertaken, particularly amongst second-generation modernists, can be viewed as a legacy of these developments in philosophy, mathematics and science. Michael Roberts is the best example of their kind. In *The Modern Mind*, he argued that poetry was no longer called upon for accuracy because lexical currents had been artificially diverted by a uniquely English linguistic history, coterminous with the rise of material science and mathematics. He saw the privileging of scientific virtues and then of mathematical abstraction by English theorists and philosophers as regimenting certain unhealthy semantic groupings.

> It may be hard to speak clearly of the world of religion and poetry and all that is called 'subjective', but that world is none the less real, and needs to be discussed. To assume that the world of the outer senses is more fundamental or more real than any other, merely because the language which deals with it is easier to master, is obviously fallacious, and it is still more fallacious to assume that the world of abstraction is more real than either material or spiritual experience.[184]

Roberts maintained that the scientist and poet are essentially involved in one greater responsibility with varying tasks. "The scientist uses words with sharper and sharper definition, the poet uses them with more and more complex associations, and together they make it possible to give a more precise description of experience".[185]

In Roberts, we see both James's and Whitehead's reverence for whole experience, and Pater's, for sensual precision. In the 1920s and 30s, the core premise found in these idiosyncratic philosophies, that mathematical description omits the obvious facts of lived reality, had become a regular refrain in the wider intellectual community. John Middleton Murry argued that "science claims to worship the natural, but the natural which it worships is only an incomplete natural—a natural from which the specifically and instinctively human is arbitrarily excluded".[186] In *Time and Western Man*, Wyndham Lewis called for a new art that would fill the void of materialism, and posit "something *alive* in place of mechanism", "organism in place of matter".[187] Empson, in his usual matter-of-fact tone, says science "is a product of the mind; a product too of the universe"; in other words, "a closed system of pointer-readings about what is measureable", or what can be mathematized.[188] He observes that scientists "were forced into adopting the materialist scheme because it was the only one which ordered [reality] adequately".[189] In other words, materialism, or

[184] Michael Roberts, *The Modern Mind* (London: Faber & Faber, 1937), p. 5.
[185] Michael Roberts, *Elizabethan Prose* (London: Cape, 1933), p. ii.
[186] John M. Murry, 'Science and Nonsense', *Adelphi*, 7.3, (1933).
[187] Wyndham Lewis, *Time and Western Man* (London: Chatto and Windus, 1919), p. 166.
[188] William Empson, *Argufying: Essays on Literature and Culture*, ed. John Haffenden (London: Chatto & Windus, 1987), p. 528; see Susan Stebbing, *Philosophy and the Physicists* (London: Methuen, [1937] 2018), part II, for a history and analysis of the term 'pointer-reading', especially its various uses in Eddington.
[189] Empson, *Argufying*, p. 529.

the exclusive consideration of sense-data prescribed by empiricism, is not adopted by science from a faith in the empiricist doctrine, but rather because doing so sorts best with the rigours of mathematics.

The resistance to scientific imperialism that flowers around the triumph of mathematics and physics at the turn of the century thus has clearly identifiable characteristics: privilege to time and experience, and an empirical accuracy that comprehends a wider array sensual information. These are just some amongst the many ways in which a broader intellectual culture of philosophers, writers and poets participated in and sought to take advantage of the gradual loss of faith amongst scientists and mathematicians, in the exceptionalism of mathematical description. We shall study the more sustained amongst such efforts in detail in the remaining chapters.

1.6 Conclusion

The cultural backdrop of second-generation modernism reveals that the latter was in agreement with much mathematical discourse of the time. Although, as we have argued, the characterisation of a zeitgeist is ill-fitted to the exegesis of a poem, a chapter such as this nevertheless serves two important purposes. First, it helps set the discursive context for specific usages—in this case, of mathematical diction in poetry. Prevailing ideas of the time suggest the knowledge and attitudes that poets might expect from their readers. In other words, historical and biographical contexts help establish the discursive arena of a poem. We will see that whilst first-generation poems did not expect an engagement with or awareness of modern philosophy when evoking mathematics, the second-generation was rather demanding in this regard.

Second, instead of individual poems, mathematical poetry, seen as a broad trend, can certainly be situated within a historical zeitgeist. That the new theories of relativity and quantum mechanics were less grounded in direct empirical observation and more mathematical in form seems to have exercised many outside the sciences, and widely shaken faith in science's purchase on reality. Russell's conclusion that science must be viewed as a limited description of the logical and mathematical relations obtaining in the natural world seems to have had votaries across disciplines. Particularly in philosophy, novel theories emerged granting primacy to temporal and sensual experience over observations rendered in a mirage of pointer-readings. These are events of the time that undoubtedly coloured the character of mathematical poetry—one that above all, as we will see, expressed defiance.

Thus, a glance at the zeitgeist in fact furthers the case for an agonistic rather than convergent paradigm. Instead of focussing on Gray, who defines modernism in art and mathematics as an "autonomous body of ideas, having little or no outward reference [to the] day-

to-day world",[190] a more gainful area of inquiry to the mathematics-and-modernism field will be the attempts amongst poets to reclaim the virtues of precision and accuracy from science and amongst mathematicians, to fashion their subject anew in the language of aesthetics. Despite the fact that the remaining story will be told from poetry's perspective, this chapter shows how from both sides, poetry and mathematics interacted in a spirit of competition, with an eye towards authority.

[190] Gray, *Ghost*, p. 1.

Chapter 2: Epistemology: Knowledge of Being in William Empson's poetry

We have in the previous chapter caught a glimpse of how mathematics vied with art over the concepts of the beautiful and the sublime. We turn now to the other side, of poetry challenging mathematics over the concepts of reality and truth. To demonstrate the 'agon', all chapters hereon shall compare poetry and mathematics as modes of world-building; and in the present chapter, as modes of knowing: for when seeking representational authority, a language must first establish how through it, knowledge of the world is uniquely acquired. We therefore begin by contrasting the epistemological procedures by which poetry and mathematics transport mind to understanding. Empson is the principal character to study in this regard because his poetry is concerned centrally with questions of difference between mathematical and artistic knowledge, knowing and acting, and the limits to knowledge itself.

In the first section, we shall identify the main philosophical themes in Empson's poetry with an eye to how they inform the knowledge of being. We trace the influences of Buddhism, utilitarianism, nominalism, and the Shakespearean fool on Empson's mathematical poems. The second section shall be devoted to a close-reading of "Doctrinal Point", a poem that draws on logical paradoxes from early twentieth century philosophies of mathematics to set firm limits to scientific reason. A discussion of epistemology in this context also demands a foray into ontology: how we learn about reality also determines the picture of existence that issues. Both sections shall thus attempt to characterise the rather bleak vision of being that emerges from Empson's poetry.

Empson's literary uses of mathematics have not been taken in whole and considered in conjunction with the greater questions of his poems. There are unprofitably general statements like John Haffenden's, that Empson "was concerned to formulate a definition of the power of mathematics under the rubric of aesthetic value".[1] We shall soon see that 'aesthetic value' is not relevant in his uses of mathematical metaphors. There are praises of "Empson's easy familiarity with scientific and mathematical terms, his pervasive use of them in the early poems, and his manner of frequently making them functional parts of the whole",[2] but these do not go much further in revealing their purpose in his poems. Jonathan Bate, continuing the panegyric tradition, calls Empson "Modernism's Einstein among literary critics",[3] but also attempts to ascertain why Empson reached for mathematical analogies in the first place, suggesting that the "seventh-type

[1] Haffenden, *Mandarins*, p. 105.
[2] J. H. Willis, *William Empson* (New York: Columbia University Press, 1969), p. 26.
[3]Jonathan Bate, *The Genius of Shakespeare* (London: Picador, [1997] 1998), p. 316; In an earlier article, Bate had traced Empson's knowledge of quantum mechanics to Dirac and Eddington (Jonathan Bate, 'Words in a Quantum World', *TLS*, 4919 (1997): 14-15).

Empsonian ambiguity is the literary-critical equivalent of quantum mechanics".[4] Hoping to delve further than these gestures in the present work, we shall give the next section over to bringing Empson's interest in mathematics more into the society of his whole intellectual world. I shall in other words attempt to characterise his peculiar system of beliefs and explain how mathematics formed an essential part.

2.1 Value is in Activity

F.R. Leavis once said of Empson that "he has the courage of his lack of convictions".[5] When reading him, one constantly gets the feeling that more is meant than what is said and more is felt than what is meant. In the *Seven Types of Ambiguity*, Empson argues, when Marlowe's Faustus says "Ugly Hell gape not: come not, Lucifer", he really means to accept both Hell and Lucifer into his life; Faustus "is willing to abandon his learning" for he is "going to a world where knowledge is immediate; […] he has abandoned his effort to organise his preferences, and is falling to the devil like a tired child".[6] In the second edition of *Seven Types*, Empson remarks in a footnote,

> A critic said that my interpretation here is wrong because the actor is meant to scream with horror not sound like a tired child. […] But the more the actor screams the stressed words the less the audience hears the unstressed words 'not' 'not'.[7]

In his rebuttal, Empson believes he has clinched his first argument, namely, that as a matter of scansion, the 'not's in the line are unstressed and so Faustus's actual meaning is quite opposite to his ostensibly apotropaic words. But Empson has foregone his reading of tone—that of a tired child—and in an almost promiscuous manner, accepted the critic's view just as well as his own to make his initial point. One can already see Empson lauding this style of argument in an early review in *Granta* (1927) when discussing Russell's fractured syllogisms:

> He [Russell] […] is subtle only where it seems interesting, and is not pained by crudity elsewhere. This is the English way of thinking which seems so unscrupulous to the Continental; it has great virtues; it gives great resilience to the thinker, never blurs a point by too wide a focus, is itself a confession of how much always must be left undealt with, and is beautifully free from verbiage.[8]

Empson observes in this review how Russell seems unaffected by the panic most writers feel, when criticised, to rebut every insignificant challenge.[9] This refinement in the philosopher, the

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[4] Bate, *Shakespeare*, p. 315.
[5] F. R. Leavis, 'Cambridge Poetry', *Cambridge Review* (1929): 317-318, p. 318.
[6] Empson, *Seven Types*, p. 206.
[7] Ibid., p. 206.
[8] William Empson, *The Book, Film & Theatre Reviews of William Empson: Originally Printed in the Cambridge Magazine Granta, 1927-1929* (Kent: Foundling Press, 1993), p. 60; Empson began work on *Seven Types of Ambiguity* in 1928 (Haffenden, *Mandarins*, p. xviii.)
[9] One can hear this style live during Russell's famous BBC debate against Frederick Copleston on the existence of God in 1948 (printed in Bertrand Russell, *Why I Am Not a Christian* (London: George Allen & Unwin, 1957)).

almost confessional act of incompleteness, seems to have inspired Empson's own critical style. His arguments are replete with half-rebuttals; he often enters a dispute somewhere between a long line of premises, makes a caustic remark by way of refutation, and moves on as if unwedded in the slightest to his initial stance. As regards 'freedom from verbiage', if he knows a thing cannot be articulated, he is never compelled by custom: he manages, for instance, to write an entire treatise on pastoral poetry,[10] "acknowledged to be the most brilliant study of its subject", without proffering even a cursory definition of 'pastoral'.[11] This mixed attitude of total detachment, an almost obsessive concern over minutia, and rank disdain to the idea of completeness, is what defines the critical and poetic works of Empson, more so than any doctrine he may briefly have seemed to espouse in a long career.

Mathew Bevis begins the introduction to *Some Versions of Empson* with an extended paean to Empson's elusiveness, warning never to place him in a school:

> Empson frequently refuses to co-operate: left-wing yet posing serious obstacles for 'any Marxist appropriation of his work'; a keen reader of Freud and of unconscious intentions but wary of psychoanalytic criticism; a precursor of certain forms of deconstruction, yet at odds with what he perceived to be a negative and suspicious hermeneutics; theoretically inclined yet opposed to some aspects of the rise of Theory. It is hard to place him, but then, 'It is not human to feel safely placed', and the longevity of his criticism owes much to the fact that he rarely plumped for the safe option.[12]

Bevis, however, offers no hint of the depths to which the whirl and flux of Empson's ceaseless denials ran—this we shall attempt to plumb in the present section. John Constable says "the question of manner recurs in nearly every review or essay written about Empson"[13]—although style is what first strikes the reader of Empson's poetry and prose, few have thought to accommodate it into an analysis of his ideas. It is a rather tricky task to characterise Empson's commitment to ignorance without making it sound in itself a doctrine. We shall thus approach the question obliquely, via other ideas that Empson passed through in his intellectual development, which manage to leave a trace, and modify the mixed attitude that finally issued.

The epistemology of Buddhism is one such. The first published version of the collected poems (1935) opens with Empson's translation of the Fire Sermon of the Pali Canon. In it,

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[10] William Empson, *Some Versions of Pastoral* (London: Chatto and Windus, 1935).
[11] Paul Alpers, 'Empson on Pastoral', *New Literary History*, 10.1 (1978): 101-23, p. 101.
[12] Mathew Bevis, 'Introduction: Empson in the Round' in *Some Versions of Empson*, ed. Mathew Bevis (Oxford: Oxford University Press, 2007), p. 3; References are to Terry Eagleton, *Against the Grain: Essays 1975-1985* (London: Verso, 1986), p. 165; Paul de Man, *Blindness and Insight: Essays in the logic of contemporary criticism*, *2nd ed.* (Minneapolis: University of Minnesota Press, 1983), p. 234-41; Christopher Norris and Nigel Mapp, eds., *William Empson: The Critical Achievement* (Cambridge: Cambridge University Press, 1993); and William Empson, *The Complete Poems*, ed. John Haffenden (London: Penguin, 2000), p. 85.
[13] John Constable, *Critical Essays on William Empson* (Aldershot: Scholar Press, 1993), p. 3.

Bhikkhus, like Faustus, becomes disillusioned with the world of phenomena; the wise man "becomes weary of the knowledge of the eye, he becomes weary of the visible, he becomes weary of the knowledge of the visible, […] he becomes weary of the ear […] weary of the body […] weary of the mind". Unbidden by any feature of his being he can conceivably conscript to a "self", he becomes "empty of desire. When he is empty of desire, he becomes free".[14] The attitude in these lines animates much of Empsonian thought: a kind of stoic rejection of the comfort in knowing. Seeing the germ in the Fire Sermon of Empson's 'poetic philosophy', many critics, such as A.E. Rodway and David Simpson, suggested that Empson had taken it for *his* text.[15] This rumour, peddled by more theoretically minded critics, spread so much that Empson had to push back against the notion that he was proselytising for Buddhism.

> It [The Fire Sermon] is said to be one of the earliest sermons of the Buddha, and carries the unearthliness of his system as far as is conceivable. One should realise that it denounces not only all existence on earth but all existence recognisable as such, even in the highest heaven.[16]

Empson did not draw from the recognition that the world is Maya—and, as the Buddha maintained, overwhelmingly sorrow[17]—a Manichean indifference. Faced with the same sense of futility in knowledge that enveloped Faustus and Bhikkhus, Empson responded instead with a mixture of intense curiosity and dark humour. The Gardners come close to identifying his spirit when they say "such an attitude, a courageous pessimism, is basic to Empson".[18] Whilst he related to the Buddhist commitment to doubt, Empson could not follow through on the conclusion that sought to diminish the value of earthly life. Empson thought the Sermon ultimately wrong but "fascinating […] as one extreme of the range of human thought".[19]

The other extreme fascinated him equally. He says the Buddhist cast of mind is "as important as the belief in the value of life and the love of activity for its own sake which is common among Europeans".[20] As much as the tone and presence of Empson's works resoundingly announce the austere detachment of the author, he cannot help but admire the spirit of his fellow Englishman who is "satisfied with some such rule of existence as having a good time, or playing

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[14] Empson, *Poems*, p. 3.
[15] A. E. Rodway, 'The Structure of Complex Verse: Review of *Collected Poems*', *Essays in Criticism* 6.2 (1956): 232-40; David Simpson, 'Everything, Beggars, is on Fire', *Arrows,* New Year Edition (1957), 5-6.
[16] William Empson, 'Everything, Beggars, Is on Fire', *Arrows* (1957), p. 5.
[17] T. W. Rhys Davids, trans. from the Pâli, *Dialogues of the Buddha (The Dîgha-Nikâya)* (London: Oxford University Press, 1899), p. 94.
[18] Philip Gardner and Averil Gardner, *The God Approached: Commentary on the Poems of William Empson* (London: Chatto &Windus, 1987), p. 44.
[19] William Empson, 'Mr Empson and the Fire Sermon', *Essays in Criticism,* 6.4 (1956): 481-82, p. 481.
[20] William Empson, *The Face of the Buddha*, ed. Rupert Arrowsmith (Oxford: Oxford University Press, 2016), p. 109.

the game, or doing his duty".[21] This almost Yeatsian reverence for the salvific powers of activity is peppered throughout Empson's poems.

Empson's biographer Haffenden stated that he "heeded throughout his career" the modified Benthamism of I.A. Richards which the latter called a 'Theory of Value'.[22] Haffenden's rather exaggerated phrasing here may be because Empson defends this doctrine wholeheartedly in a riposte to Richards's critic, John Sparrow.[23] But this defence, with half-argument and condensation of thought, very much in the dash of Empsonian style, is less interested in adopting a personal stance than showing Sparrow to be misguided. Although Empson did not really heed anything throughout his career, the value which he placed in activity can in fact be traced to what Richards made of impulses in his popular works. Richards dispensed with the term 'pleasure' in his version of the utilitarian calculus and substituted it with "appetency", or positive impulse.[24] He believed the good life consisted in "the systematisation of our impulses",[25] which was best done by poetry—and poetry was in turn somewhat circularly defined as the consequence of a systematisation of impulses that the poet imparted on the reader.[26] The rather crude Benthamite addition of pleasure points is replaced by an aesthetic notion of order amongst impulses, such that even pain, when in the service of a more holistic experience, manages to find place in this system. Reviewing Richards's *The Foundations of Aesthetics,* Empson says, "I am never sure that I have not missed a divine revelation lying about somewhere".[27] Beneath the characteristic slyness, it seems that Empson was forced to take Richards's theory more seriously than he had been expecting to.

When invoking the value theory, however, Empson is always drawing it closer to his interests in activity and diverting the drift of calculation. The theory of value is, in some ways, an adaption of Pater's dicta in *The Renaissance*—of packing via art as many sensations as possible into a finite life—to a utilitarian scheme, and it was not the utilitarianism that interested Empson.[28] Reviewing John Laird's *An Enquiry into Moral Notions*, Empson stated, "whether or not the values open to us are measurable, we cannot measure them, and it is of much value merely to stand up between the forces to which we are exposed".[29] To Empson, the theory was, amongst other things, a means to frustrate the tide of scientific positivism that was bursting into modern life. He states quite plainly that "the usefulness of the thing is chiefly to show that the scientific picture of the

[21] Empson, *Buddha*, p. 109.
[22] Haffenden, *Poems,* p. 143.
[23] William Empson, 'O Miselle Passer!', *Oxford Outlook* 10 (1930): 22-34.
[24] I. A. Richards, *Principles of Literary Criticism* (New York: Routledge, 2001), p. 43.
[25] Ibid., p. 222.
[26] Richards, *Science*, p. 15-16.
[27] William Empson, 'Chronicles: A Doctrine of Aesthetics', *Hudson Review,* 2.1 (1949), p. 94-97.
[28] See Chapter 1.3.
[29] William Empson, 'Three Ethics', *Spectator* (November 1935), p. 912.

world is not necessarily at loggerheads with the aesthetic one".[30] Whilst with the Buddhist, Empson was willing to brush aside the veneer of certitude, he did not disdain worldly knowledge. He approached the 'external world' with a characteristic fervour unmatched even by those who may be said to have had a greater stake in it. He laboured to promote the idea that the emotional account of a thing or an event in the 'external world' should be regarded as equally valid as the scientific factual account. For instance, he analyses the factual "belief that Julius Caesar was stabbed" and the attendant morals and lessons of martyrdom and sacrifice that it has historically inspired.[31] He concludes that all these beliefs—including the factual—and beliefs about the beliefs, ultimately reside on the same plane:

> The more you let my moral feelings form a coherent logical structure, the closer you draw the parallel to the structure of my feelings about historical fact. By the time you have put in the necessary reservations, it seems to me, the 'emotive' account of ethical judgements is on exactly the same footing as the logical-positivist or behaviourist accounts of beliefs about the external world.[32]

The placing of emotion, albeit a more refined version of the term than is meant by common parlance, *pari passu* with empirical fact, in turn serves to appreciate the value of balancing impulses and the poetry that can bring this equilibrium about. Thus, to Empson, the value theory was held in balance with Buddhism, each working, in its own way, to destabilise metaphysical confidence in knowledge: Buddhism through rejection and the value theory through affirmation. In 1950, Empson made this explicit when he found Buddhism, "the great historical antagonist" of "the Richards Theory of Value"[33]—but never in the past had he subscribed to either. The value theory in itself, though making no claims absolute, as on occasion we see in Buddhism, was not a complete answer: "what satisfied the most impulses might turn out to be the same as what was to the glory of God or even as what tended to Nirvana".[34] He thus demonstrates how, when held as a doctrine, the very lassitude of the value-theory makes it transitive to other, more dogmatic doctrines; in other words, "any serious attempt at establishing a relativity turns out to establish an absolute; in the case of Einstein [it is] the velocity of light".[35] This is not entirely fair to Richards, but the circularity of a seeming opposite bending round to its antithesis is something Empson would have indeed delighted in.

During his verbal analyses, Empson's intense dedication to finding the truest meaning available to wit despite the ultimate meaninglessness he so acutely recognised is perplexing. For

[30] Empson, 'Aesthetics', p. 95.
[31] William Empson, *Structure of Complex Words* (London: Chatto & Windus, 1951), p. 416.
[32] Ibid., p. 416.
[33] Ibid., p. 424-25.
[34] Ibid., p. 425.
[35] Empson, 'Aesthetics', p. 95.

Pater or Richards, one must be actively disposed to the world because value ultimately resides in beautiful experience. But it is very difficult to identify an absolute value or purpose in the writings of Empson. Such conviction to ignorance, I believe, ultimately shows Empson for a fool, or at least what the Elizabethans made of a fool: for "the wise man is modest and cowardly, the fool tries".[36] Empson seems to have been in awe of Shakespeare's doings with the word "fool" in *King Lear* and the clown principle embodied earlier in Falstaff.[37] It is not inconceivable to think that Empson may have been consciously or unconsciously inspired to favour the gamble that "by being […] a complete fool", one becomes "in some mystical way superlatively wise".[38] There is a striking image of such a twist in Empson's translation of his friend, Chiyoko Hatakeyama's poem, "The Fool" (1940): Empson's version introduces the lines, "Wisdom's the charger mounts him above shade,/ Hanged by suspense and eternally delayed".[39] Wisdom, like Biblical Death,[40] mounts the fool and steers his vulgar tongue to an accidental reckoning: one that for Empson, of course, is eternally delayed.

The foolishness that Empson embraced did not consist in being obstinate or dense but in simply getting on with being and loving in the face of darkness and oblivion. It is a theme that animates much of his poetry. The Elizabethan fool, with his mercurial disdain for circumstance, embodies, in some ways, both the Buddhist detachment from worldly affairs and the European commitment to living, whilst his most recognisable distinction is a dark humour which, without his intention, rolls out as mysterious wisdom. Empson's mathematical poems, his use of mathematical metaphors, seem marshalled to work a balance between these epistemologies, always with a wry step outside them all.

2.1.1 Paradoxes and Limits

One idea that we know transfixed the undergraduate Empson was that of contradictory meanings co-inhabiting a verbal unit. This is the seventh-type ambiguity that Bate compared to quantum mechanics, where "the two meanings of the word, the two values of the ambiguity, are the two opposite meanings defined by the context, so that the total effect is to show a fundamental division in the writer's mind".[41] The real possibility of such primordial antinomies seems to have been bubbling in the young poet's mind for a few years until brought to boil in the *Seven Types.* Reviewing M. Carta Sturge's *Opposite Things* in 1927, Empson says, "extremely often, in dealing with the world,

[36] Empson, *Complex Words*, p. 106.
[37] William Empson, *Essays on Shakespeare* (Cambridge: Cambridge University Press, 1986), p. 72.
[38] Empson, *Complex Words*, p. 157.
[39] Empson, *Poems*, p. 71; see Peter Robinson, 'C. Hatekeyama and W.E.' in *Some Versions of Empson*, p. 64-8, for a discussion of their relationship and an English version of the original poem.
[40] *Revelations* 6:8, *KJV*.
[41] Empson, *Seven Types*, p. 192.

one arrives at two ideas or ways of dealing with things which both work and are needed, but which entirely contradict one another"; we see it in "the practice of scientists, recent mathematical logic, primitive languages, the doctrine of the Trinity, the corresponding Eastern ideas, and, in fact, out of anything of any importance".[42] The seventh-type seems thus to cut across most areas of Empson's interest. We already caught a glimpse of this when Faustus suppressed the breath by which he uttered 'not', accepting Satan reluctantly into his soul. Indeed, before embarking on his discourse on the final ambiguity, Empson himself calls upon the fallen angel as muse, "to cast upon the reader something of the awe and horror which were felt by Dante arriving finally at the most centrique part of earth, of Satan, of hell".[43]

In fact, in one of his poems, "The World's End", faced with the prospect of paradox, "blind Satan's voice rattles the whole of Hell" [8].[44] The Devil here is responding in a sensible way to the condition of the universe as is revealed by modern mathematical science:

> Alas, how hope for freedom, no bars bind;
> Space is like earth, rounded, a padded cell;
> Plumb the stars' depth, your lead bumps you behind; [4-7]

Because "the curvature [of space] actually leads to a complete bending round and closing up of space",[45] the 'hope for freedom', to escape the world, is ultimately rendered futile. Even Milton's hell held in it the possibility of escape, of cavalier rebellion, but the hell fashioned from modern mathematics needs no bars to bind its subjects; here they are immured by paradox alone.

Einstein casually remarks that "the great charm resulting from this consideration lies in the fact that *the universe of these beings is finite and yet has no limits"*.[46] The poem that begins with an entreaty to a lover to fly away with him to the world's end quickly turns dark when the structure of that world begins to dawn on them. Empson, explaining the predicament, says, "the finite but unbounded universe, popularized by Eddington […] makes flight seem useless for the lovers".[47] The curtain of futility which, as discussed, fell over much of Empson's world can be vividly seen in this poem. Take the couplet in the next stanza,

> Each tangent plain touches one top of earth,
> Each point in one direction ends the world. [15-16]

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[42] Empson, *Granta*, p. 46.
[43] Empson, *Seven Types*, p. 196.
[44] Empson, *Poems*, p. 13.
[45] Arthur S. Eddington, *The Expanding Universe* (London: Harmondsworth, 1940), p. 39. This text was written after the writing of the poem, but has a terse phrasing of the longer exposition on the curvature of space-time in *The Nature of the Physical World* (1928), the publication of which was the immediate of occasion for the poem being analysed (Haffenden, *Poems,* p. 162).
[46] Albert Einstein, *Relativity*, trans. R.W. Lawson (London: Methuen, [1916] 1920), s. 31.
[47] Empson, *Poems*, p. 162.

The meaning seems snugly curled in line 16. There is a sense of frantically scurrying after some end made pointless by relativity—each point is essentially an end, a vertex, in the spherical relative world, as if Percival found the Holy Grail at every step of the journey, voiding his quest in its perpetual completion. But despite the macabre subject, for the poem implies a kind of sadistic malice at the heart of the universe, the conjunction in the first line, "Fly with me to all's *and* the world's end" [emphasis mine] is suggestive of the Falstaffian humour in the face of tragedy that we have already outlined. All's (everyone's) end is temporal, whereas the physical world's end is spatial; that all's and the world's end, though different in kind, co-inhabit one vanishing point, implants the idea that this doomed flight of lovers is about to take place in Einstein's universe of space-time. But the line also evokes Shakespeare's "all's well that ends well", a cliché that offers a rather light-hearted consolation, unbefitting the seriousness of the situation, and showing Empson's impudence towards the tragic subject-matter of his mathematical poems.

Empson is often trying to draw a connection between mathematical paradox and the delusion at the core of any quest, particularly the one for knowledge. We have already alluded to the germ of this equation in the first three stanzas of "The World's End", masked somewhat by the histrionics of its pitch; but it is made explicit in "Dissatisfaction with Metaphysics".[48]

> Adam and Eve breed still their dotted line,
> Repeated incest, a plain series.
> Their trick is all philosophers' disease. [8-10]

The two opposite meanings in the image of our ancestry as a 'dotted line' is of perpetual progress in each succeeding generation, signified by a divergent series, 1, 2, 3, 4, ..., and repeated incest from a common ancestry, to be taken as mad repetition of the same thing. The context in line 1 of time standing 'still' around Mohammed's corpse at Mecca might make us read the 'still' of line 8 to mean the progress of the human race is an illusion because time itself is, dignifying the 'sameness' of peoples with a Parmenidean repudiation of time and change. But a more careful gloss of the mathematics in the line tells us that the poet actually means to depict humans in a kind of plebeian sameness. Roughly speaking, humans breed in geometric progression, from 2 to 4 to 8 to 16, and so on. But the poet gives this progression the name 'plain series', which suggests that the total sum of Adamite extraction at any interval, whether the population be 64 or 512, does not by its increased aggregate signify an appreciable difference, or *change*, from the last; they are ultimately to be denoted by a single ordinal, 6 or 9, in the series[49]—that is, the 6^{th} or 9^{th} generation from Eve. This meaning is carried forth into line 10, when he calls the 'dotted' line of their brood a 'trick'.

[48] Ibid., p. 17.
[49] After the 6^{th} and 9^{th} generation, the population would consist of $2^6=64$ and $2^9=512$ members respectively, subtracting those who in the process had perished.

'Dotted', here, can also mean spotty or sordid. There might even be latent in 'dot' a suggestion of the disreputable practice of dowry, as in Mina Loy's phrase, "Virgins without dots".[50] These senses of 'dotted' compound the poet's scorn for the entire stock, which entertains, in the replaceable members of its simple series, the dangerous illusion of growth, both spiritual and mimetic. The final connection between mathematical analogy and the idea that knowledge is nugatory is made by calling this trick, of making the same seem progressively different, 'all philosophers' disease'.[51]

In this poem, Einstein's theory comes as comfort rather than shock. Empson characteristically undermines the ghastly feeling he attached to relativity in "The World's End", with the line: "New safe straight lines are finite though unbounded" [11]. It could be that the poet has come to terms with the paradox that defines the new universe: at least this new paradigm rests the old chase on a treadmill for truth (the 'philosophers' disease) by impressing finitude, closing the universe upon itself; and by virtue of being circular, the unbounded universe can perhaps set us free from our entrenchment in rigid corners of dogma. The philosophers' dis-ease, the guilt and anxiety from a restless repetition of the same numbers, hoping each time for a different and better sum, is eased in the Einsteinian world by replacing progression with distension, serialised search for infinity with unbounded exploration of what *is*.

The positive spin on this metaphor precesses into later poems. The poet says of an old lady that "she reads a compass certain of her pole; confident, finds no confines on her sphere" [18-19]. The reversal of meaning in the paradox, 'finite but unbounded', from infernal imprisonment to the highest liberty, is completed in "To an Old Lady". Empson, in his notes, says, "the unconfined surface of her sphere is like the universe in being finite but unbounded".[52] This is what was meant by 'replacing progression with distension': the old lady does not seek answers; she but curiously observes the unfolding of events. Jacob Bronowski, Empson's co-editor of the periodical *Experiment* explains the metaphor:

> The heart of the metaphor comes from mathematics: it is the theorem that a surface can be finite in extent and yet have no boundaries, no confines [...] if you or the old lady walk all over it you will never meet any boundary and will seem to be going on to infinity.[53]

In the new universe, the old lady is thus set free to glide as she pleases along the sphere's smooth surface.

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[50] Mina Loy, 'Virgin Plus Curtains Minus Dots (1915)' in *Modernism: An anthology*, ed. Lawrence Rainey (Malden: Blackwell Publishing, 2005), p. 417.
[51] The original title of the poem was 'Disillusion with metaphysics', *Experiment*, 1 (1928), p. 48; this supports our reading of material and spiritual growth in the poem as an illusion.
[52] Empson, *Poems*, p. 193.
[53] Jacob Bronowski, 'The Imaginative Mind in Science' in *The Visionary Eye: Essays in the arts, literature, and science*, eds. Jacob Bronowski, Piero E. Ariotti, and Rita Bronowski (Cambridge: MIT Press, 1978), p. 27.

The changing application of this metaphor takes us back to our earlier discussion of Empson rejoicing at each impasse to Truth—the equation in the metaphor between paradox and freedom perfectly captures this attitude of the poet. It also leads to a second-order equation that forms across the poems, "The World's End", "Dissatisfaction with Metaphysics" and "To an Old Lady". If the same mathematical paradox at the heart of our universe is charged with confining and emancipating, there is a more horrifying reconciliation of opposites between imprisonment and freedom—this is the kind of seventh-type ambiguity that sent the young Empson off into a Dantean mood. Despite the ghastliness in the suggestion, in a letter to Maxwell-Mahon, Empson characterises "Dissatisfaction of Metaphysics" as "quite a jolly little poem"; that "it is trying to laugh off the fright of being caught on the flypaper".[54] We are, according to Empson, simply to giggle at this unfortunate fate, of being flies trapped in resin at the mercy of some twisted creative force. Very early on in *Granta*, Empson draws a necessary connection between holiness and mirth: "I believe myself poetry is written with the sort of joke you find in hymns" (1927).[55] He naturally does not mean to imply that poets are trivial. What he means in creating and identifying such seventh-type ambiguities is that poetry is written with a kind of inhuman laughter at the calamity in which all existence inheres, like Zarathustra howling at eternal recurrence. The recognition is Buddhist, the response is not.

At moments when the equation is under construction, we must be careful to distinguish madness from the fool—for, ever and again, amidst a jocular strain, appears an unmistakable glint of madness. And likewise, the fool peeks, as if uninvited, into a storm of rage: "Do thy worst, blind Cupid, dark amid the blaze of. Woe/ to the crown of pride, and Phineus prophets old,/ did cry To-whoo To-whoo, and the sun did shine so".[56] Journeying into the "Frankensteinian monster"—as Hugh Haughton calls it[57]—of a poem, through the Bible, Milton and *Lear*,[58] suddenly the fool peers and cries, 'To-whoo To-whoo'.

"The World's End" and "Dissatisfaction with Metaphysics" dwell on the margins of the fool and madness: the poet countenances his discovery with humour, demonstrating a degree of fatalism only found in the Elizabethan clown, possessed of the belief "that you ought to accept the actualities of life courageously even if rather unscrupulously, and not try to gloss over its contradictions and the depths that lie under your feet".[59] Courage requires madness, the lack of

[54] Haffenden, *Poems*, p. 170.
[55] Empson, *Granta*, p. 56.
[56] From "Two centos" (Empson, *Poems*, p. 8).
[57] Hugh Haughton, 'Alice and Ulysses's Bough' in *Some Versions of Empson*, p. 170.
[58] For the full range of quotations in the poems, see Haffenden, *Poems*, p. 8-9.
[59] Empson, *Complex Words*, p. 124.

scruples, foolishness. A fool's reaction to the world is, in other words, the only plausible one: rather than being indignant, it seems more sensible simply to go mad.

Through the shifting uses of 'finite' and 'unbounded', Empson manages to use paradox to paint our epistemological tragedy: as beings always searching for something new whilst wading in sameness, all of us, decrepit old philosophers playing an endless game with a battered old pack of cards. But the horror of being trapped in this divine plan is best evoked by a purely mathematical image. The final stanza of "The World's End" uses a metaphor from differential calculus; essentially, the philosopher here is Everyman and his disease, Original Sin itself.

> Apple of knowledge and forgetful mere
> From Tantalus too differential bend.
> The shadow clings. [13-14]

Since Adam first fell to his urge, the appetite for knowledge has clung like a shadow to all human desire. We shall settle either in knowing Truth or forgetting everything and ebbing into the river of oblivion. As time marches, both the millenarian and prelapsarian fantasy come agonizingly close to satisfaction, like two asymptotes racing to the zero of their axes, never meeting them but at infinity. 'Differential' expresses how this futility is of our own making: to take the conceit of the relative universe, for instance, we may say that the march of science, in destroying its own discoveries to erect new ones—Einstein for Newton, say—defers our final satisfaction. Differentiation operates by abandoning both the notions of an exact moment in time and the exact slope of a curve. It approaches an instant through smaller and smaller intervals of time and finds the slope of a curve by measuring its adjoining tangents—in short, by ingenious approximation. Apart from presenting a hypnotic image adequate to mankind's suspension, the metaphor thus works on a literal level: calculus seeks perfect knowledge by a method of approaching that which cannot be reached—the actual moment in time. Satisfaction is only to be found at mythical infinity.

2.1.2 Mathematical Fictions

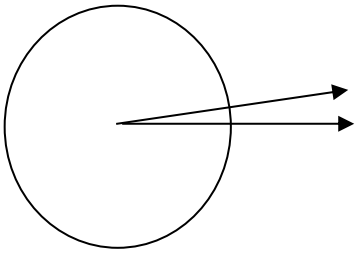
This brings us to the other important type of mathematical image in Empson's works, mathematical fictions or fictions of mathematics. Fiction is not meant here as untrue; it refers to elements of a story used to help us grasp something that may actually defeat understanding. Take, for instance, Mill, who said, "the elements of algebra […] are as full of fictions as English law".[60] Empson sometimes uses mathematical images to critique convenient fictions—in law, say, or mathematics—peddled in society. These fictions are thus not restricted to any one field—they refer to anything that causes a departure from the firm foundations of experience simply to accommodate a holistic story or theory. Take, for instance, the legal fiction that "ownership of

[60] J. S. Mill, *Utilitarianism* (Kitchener: Batoche Books, [1861], 2001), p. 5-6.

land extends above and below ground";[61] Empson shows the absurdity of the law in a poem, "Legal Fiction",[62] by depicting the property as an infinitely extending conic section:

> Your rights reach down where all owners meet, in Hell's
> Pointed exclusive conclave, at earth's centre
> (Your spun farm's root still on that axis dwells);
> And up, through galaxies, a growing sector. [9-12]

The bourgeois landowner eyes an endless tract of space above his property, which expands with our 'discovery' of further regions in space. But ultimately, upon death, "your dark central cone/ wavers, a candle's shadow, at the end" [15-16]: when his body sinks to the roots of his plants, the interred gentleman will find that the cone vanishes to a point where all landowners have collective "short stakes" [1]. I.A. Richards, in a lecture, made a drawing of the image in the poem.[63]



Through this picture of a potentially endless domain of private property, the poem seems to ridicule the greed that would demand such a law by its ironic end in a collectivist farm of the dead.

The main purpose of Empson's mathematical images in these cases is to use the tendency in mathematics to veer from reality, or what mind can readily perceive, even conceive, to posit a conceptual fiction that makes some equation or theorem work.[64] This plays into the larger themes of Empson's poems, of being content without perfect answers and solutions: which when reached, are of needs fictions in themselves. For instance, one of the trends in literary criticism that irritated Empson was the resort to the unconscious, and Freudian terminology in general, to interpret works of literature. He thought the interpretations that the 'unconscious' allows had become too-low-hanging-fruits but were used, nonetheless, to make far-fetched, unsupportable claims. In *Seven Types*, Empson argues that to understand the creativity of the punned references to cannonry in Satan's speech to the fallen angels, we must put ourselves in the minds of the Devil's vanquished audience. We must do this, he says, by focusing on the "conscious part of the effect" rather than

[61] From Empson's notes to the poem (Empson, *Poems*, p. 229).
[62] Ibid., p. 37.
[63] I. A. Richards, 'How does a poem know when it is finished?' in *Parts and Wholes,* ed. Daniel Lerner (New York: Free Press of Glencoe, 1963), p. 169.
[64] This mirrors closely the exigent concerns of the philosophers of science in the early twentieth century that we discussed in 1.4, namely, of a physics increasingly grown mathematical (and less observational).

the characters' unconscious feelings; "for one must continually feel doubtful about antitheses involving the idea of 'unconsciousness' which, like the infinities of mathematics, maybe a convenient fiction or a product of definition".[65] By a 'product of definition', he means that the description of a thing, a law in physics, say, or a piece of exegesis, may be wound a certain way as to hang together only by the introduction of a piece of fiction like the unconscious or infinity—a *deus ex machina* that does not offend logic.

This attitude that can be found in most of Empson's philosophical poems seems almost an apotheosis of a historically English, even nominalist, suspicion of unverifiable abstractions.[66] This is not to be confused with anti-intellectualism or the "pride fed by the newspapers in the common-sense 'intuition' relied on by all true Englishmen".[67] It is closer to the English scientist who distrusts abstract mathematical theories—favoured by the Continental—that supersede simple models and provisional analogies.[68] It comes directly from the long shadow of the nominalists over English philosophy, and most contemporaneously from Richards, for whom "abstractions, universals, concepts" were often "verbiage or word magic".[69] This suspicion of abstract and well-rounded theories accords well with the traces of Buddhism in Empson's work which we have discussed. Empson regarded Gautama with reverence for having rejected the abstract questions of his day: about the world's beginning, the soul's relation to body, and the rewards of heaven: the Buddha dismissed these—as one imagines Empson doing—as "the jungle, the desert, the puppet-show, the writhing, the entanglement, of speculation".[70] Whether it is the unattainable "Doctrinal Point" or a "Dissatisfaction with Metaphysics", the poems, 'weary of the knowledge of the mind' and intent to release the energy of living, seem an intense meditation on the Fire Sermon—so central was this 'weariness' to Empson that the Fire Sermon became the chosen text to be read at his funeral.[71]

The poem "High Dive", says Christopher Ricks, "is Empson's elaboration of the need to act".[72] In the poem, the poet stands atop a diving board, and forgetting for a moment his bodily predicament, pauses to construct a mathematical model of the swimming pool. In his notes,

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[65] Empson, *Seven Types*, p. 103.
[66] I do not treat English empiricism as distinct from or disconnected to nominalism: I have preferred the latter term to describe Empson because his scepticism towards abstraction does not come with a theory of psychology that appends empiricist metaphysics.
[67] Empson, *Granta*, p. 45.
[68] Hesse, *Models*, p. 1-3.
[69] John Paul Russo, 'I. A. Richards in Retrospect', *Critical Inquiry,* 8.4 (1982): 743-60, p. 744.
[70] Buddha, *Dialogues*, p. 186.
[71] Arrowsmith, *Buddha*, p. lii.
[72] Christopher Ricks, 'Empson's Poetry' in Gill, *Empson*, p. 186.

Empson says the poem is about being forced from "a godlike state of contemplation [...] into action which cannot wholly foresee its consequences".[73]

> Holding it then, I Sanctus brood thereover,
> Inform *in posse* the tank's triple infinite
> (So handy for co-ordinates), chauffeur
> The girdered sky, and need not dive in it [5-8]

The word 'chauffeur' takes this figure who fancied himself a god atop the spring board, or at the very least a prophet who will inform us of divine things—the trinity of the infinite, say—and brings his person into the society of a domestic Edwardian figure who rarely leaves the house or car. And 'girdered sky' placates this figure, still with a teasing tone, using celestial imagery for his suspended diving-board. Veronica Forrest-Thomson reads lines 6-7 as follows: "mathematically the expression is 'triple' because it describes the water's movement in terms of the three axes of the system of Cartesian co-ordinates, just as it is 'infinite' because a potential function takes no account of boundaries".[74] The mind, in other words, can achieve a kind of total comprehension—that is, it can understand and encompass—an entity so that the body 'need not dive in it'; but the quasi-divine workings of the inert brain also finds its total annulment in action: simply from "the splash and eddy made by the diver",[75] the triply fictitious formula describing the pool comes to naught.

In "Letter I", we move to another mathematical fiction, non-Euclidean geometry. Whilst "High Dive" sets mathematical abstraction and physical activity in conflict, "Letter I" makes an anthropological point about being in the world, or space, to be precise, and the destabilising effects that modern mathematical descriptions may have on it.

> Only, have we space, common-sense in common,
> A tribe whose life-blood is our sacrament,
> Physics or metaphysics for your showman,
> For my physician in this banishment?
> Too non-Euclidean predicament. [15-19]

Non-Euclidean geometry, which is meant here to stand as contrast to our experience of space, is also implicitly opposed to common-sense because in line 15, space is connected to common-sense to the extent that they are almost synonyms. These connections and implications are densely packed, but the animating feeling would have been quite familiar at the time. The loss of common Euclidean space makes the surroundings inconceivable to common sense.[76] At least the old space as defined in the first stanza, as "that net-work without fish" [3], could be grasped by geometry—

[73] From Empson's notes to the poem (Empson, *Poems*, p. 188).
[74] Veronica Forrest-Thomson, *Poetic Artifice: A theory of twentieth-century poetry* (New York: St. Martin's Press, 1978), p. 233.
[75] Empson, *Poems*, p. 188.
[76] See 1.2 and 1.4 for longer expositions on NEG and its effects on Kantian constructions of human perception of space.

Empson notes, "the network without fish is empty space which you could measure, lay an imaginary net of co-ordinates over, opposed in verse 3 to the condition when two stars are not connected by space at all".[77] The image in the first stanza, that "the system of stars is floating in an ocean", was immediately available to Empson from Eddington's *Stars and Atoms*.[78] The point here is only that 'measureability' in the pre-Einsteinian world mutually signified familiarity, the basic requirement for communication. We shall, however, recall from "High Dive" that being able to measure something does not make it recognisable to embodied experience. So, on a gradation of alienation, "Letter I" takes the poet even further than the very basic grip of familiarity that he, perched on the diving board, had enjoyed.

Our ability to do physics and metaphysics is a reminder that the world is at base legible. F.M Cornford, in *Religion and Philosophy,* says "primitive religion assumed a fusion of Nature (external nature as revealed through the senses) and the supernatural, so allaying our troubling modern split between physics and metaphysics: 'The Nature' of which the first philosophers tell us with confident dogmatism is from the first a metaphysical entity".[79] The poem, pointing to a time before this 'troubling modern split', lumps physics and metaphysics together as a form of consolation that used to be available to our desperately curious and compulsively social species. It argues that society has hung together by extrapolating from the mutual understanding between members of a tribe a belief about the rationality of the world. In other words, to understand one another, we must share experience of the world; this requires that the world not be irrational but bound by certain intuitive laws, which in turn means that our endeavour to mutually understand one another and do geometry—literally, measure earth—have been inextricably bound. This state of affairs changes in the world of Einstein which is rendered in non-Euclidean terms. Taking the tribal connection as a premise, the poem deduces that in a non-Euclidean world which does not correspond to our common-sense perception of external reality, communication also becomes difficult.

The idea that after the *ancien regime,* new mathematics brings about a fundamental split in the thought and existence of western man is replete in the poems. As Willis has noted, "Empson's analogies from mathematics are usually post Newtonian and are used to explore modern man's predicament in a non-Euclidean universe".[80] As we discussed in the first chapter, philosophers of

[77] Empson, *Poems*, p. 211.
[78] Arthur S. Eddington, *Stars and Atoms* (Oxford: Oxford University Press, 1927), p. 67 [as has been noted by Haffenden].
[79] F.M. Cornford, *From Religion to Philosophy: A study in the origins of Western speculation* (New York: Longmans, Green & co., 1912), p. 123; Cornford is mentioned as a direct inspiration for this poem in his notes (Empson, *Poems*, p. 211).
[80] Willis, *Empson*, p. 25; This idea is also explored in more detail in Katy Price, 'Flame Far Too Hot: William Empson's Non-Euclidean Predicament', *Interdisciplinary Science Reviews*, 30.4 (2005): 312-322.

science and mathematics in the early twentieth century—at Cambridge, Russell and Ramsey—critiqued the highly mathematical language of new theories in physics, which described a world not in agreement with the structures of experience—which in the Kantian sense had to remain Newtonian. As we shall see in the following section, Empson's poems deeply avow such critiques; but simply on the grounds of its formal nature, Empson was unwilling to exempt physical theory from signifying historical prophecies. The fact that the universe was found to be finite and unbounded would put a stopper to the grand speculations of philosophy. But the new world would sever and isolate human bonds—as it was for Tantalus, there will be no fleeting fantasy of dissolution: a spirit time-worn from a world hostile to its attempts at knowing it does not seek escape in a mathematical universe alien even to experience. This seemingly unavoidable durance, hauntingly pictured in "The World's End", seems a curse attending the very act of truth-seeking. In a review of Richards's 'Theory of Value', Empson adopts an uncharacteristically stern tone, declaring that "the idea of an absolute Goodness or Beauty", following the differential curve between apple and lake, "mankind can in varying degrees approach but must not claim to have attained".[81]

In "Dissatisfaction with Metaphysics", the idea that our consciousness—perhaps to cope with this permanent alienation—projects a hollow world onto reality is visualised with,

> Two mirrors with Infinity to dine
> Drink him below the table when they please. [6-7]

The two mirrors facing each other will reflect one another infinitely many times. But these reflections begin not from substance but reflection itself. There is neither origin nor end; each feeble reflection leads to a smaller image of emptiness. This is the "self-conscious mind", according to Empson's notes.[82] As consciousness becomes reflexive and then further reflexive upon its own reflexivity, it wanders far off from immediate circumstance. The perceiver of this immediacy, who actually *is*, cannot be *known* without setting off this infinite regress of self-reflection upon reflection (symbolised by the two mirrors). In reality, the poem shows, the perceiver is simply a part of an event;[83] no amount of reflection can reveal this entity as is when caught up in the swell of activity, having forgotten its 'self'. This is suggested by the second line where the physical mirrors drink Infinity—the set of all reflections they produce—below the table. In other words, they sink conscious reflection out of sight and allow the deeper urges sway. The injection of activity in the verb 'drink' followed by an ambient suggestion of a drinking contest at a raucous pub creates an

[81] Empson, "Aesthetics", p. 97.
[82] Empson, *Poems*, p. 170.
[83] Although there is no evidence to prove that Empson read Whitehead, we have discussed in Chapter 1 that the philosophical conception of reality as events rather than objects and subjects was an important trope in the modernist period.

atmosphere both galvanising and obliviating. The reflective mind is induced to drunken merriment until the fictitious character of Infinity slouches and falls from view—once again, the fool prevails.

The subject's attempt at knowing itself, in the image of the continuously diminishing reflections, is similar to the subject trying to know object in "The World's End" in that they are both pulled as a phantasm to infinity. Empson seems to have been working out these metaphors, before having written these poems, in his *Granta* reviews (1927): "Any simple relation which may be proposed between subject and object leads at once to an infinite regression; […] The only analogy so far proposed is that of a mathematical limit; it is mysterious".[84] The poem sits well with the intense debates at Cambridge at the time about the role of unobservables in physical theory: are theories that use prior theories slowly becoming theories only of theories,[85] like reflections of reflections? The image also evokes the Buddhist belief in the emptiness, Śūnyatā, of phenomena, Rūpa.[86] A consequence of the belief in the chimerical nature of form, "also one of his [The Buddha's] chief doctrines, was the denial of the existence of *atta*, the self, as a permanent unit";[87] thus, Buddhism and mathematics mingled for Empson at their roots, and we see the result of this entanglement in the metaphor of reflecting mirrors. The use of the mirror as an analogy to Buddhist self-abnegation is made more directly by Yeats, a decade on, in "The Statues":[88]

> [...] Empty eyeballs knew
> That knowledge increases unreality, that
> Mirror on mirror mirrored is all the show.
> When gong and conch declare the hour to bless
> Grimalkin crawls to Buddha's emptiness. [20-24]

But as we have seen, apart from principles of the fool and the Buddha, the line about drinking with Infinity weaves in the 'love of activity for its own sake' as well, in the fact that merriment seems to countermand self-reflection. In a letter to Richards (1933), a few years after writing these poems, Empson says, "Buddhism is relevant to what I am trying to think about, in connection with the Value business".[89] Empson finds a complex balance between these ideas to symbolise one of the central notions in the *Poems*: that "most of the puzzles of philosophy [...] can be stated as infinite regress".[90]

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[84] Empson, *Granta*, p. 33.
[85] See discussion of Ramsey in section 1.4.
[86] These concepts are discussed in the Pali Canon, which we know Empson was reading well before beginning work on his text on Buddhist art (Empson, *Buddha*, p. 9.) and from the fact that the Fire Sermon is in this canon.
[87] Empson, *Buddha*, p. 14.
[88] Yeats, *Poems*, p. 322.
[89] William Empson, *Selected Letters of William Empson*, ed. John Haffenden (Oxford: Oxford University Press, 2006), p. 61.
[90] From unpublished essay (1935) rendered in Haffenden, *Poems*, p. 174.

We have said that the austere Buddhist, the rugged European, and the Elizabethan fool all come together and raise different heads at various points in the works of Empson. We also suggested, with respect to mathematical fictions particularly, that these ideas are related to Empson's *English* attitude. This can be more readily seen in his later works, when Empson expounded on his suspicion of convenient fictions:

> A mathematician will often take an absurdly small context—'me seeing a stick'—and argue from what is inherent in that to a theory of continuity; a philosopher commonly takes 'me seeing my table' and finds inherent in it his theory of knowledge. [...] [F]rom a small specimen he leaps to the universal truth, commonly with references to infinity".[91]

Empson edges close here to admitting a nominalist position by his reference to the eyewitness of a stick, a case-study that often appears in the writings of Duns Scotus and William of Ockham. Scotus argues that the evidence of the senses may be flawed, as when seeing a stick bent under water, and therefore needs universals, at times like these, to stand in for the senses' muddled evidence. In this case, the superseding universal would be that hard objects like sticks cannot be bent by soft objects like water.[92] But Ockham maintains that universals are ultimately verbal fictions, that the universals of metaphysics are language games, and must thus be kept to an absolute minimum in our theories of the physical world.[93]

Empson can be seen defending the nominalist position against empiricism in his review of A.J. Ayer's *The Foundations of Empirical Knowledge.* Ayer takes up the old stick-in-the-water issue and nearly reverses Ockham's position by suggesting that we should refrain from any talk about 'the stick' and remain instead with our senses, because we may never know matter as sub-stratum outside the world constructed by sense-data.[94] Empson, in his usual caustic manner, points out that Ayer is merely substituting one fiction for another: "if we can't talk about matter because we can't observe it, how are we better off reducing it to sense-data which we can't conceive ourselves as having?"[95] The Berkeleyan idea that appearance is an entity separate from substance and that it jumps out at the beholder who is capable only of knowing semblance, is, though seemingly without a yearning for the infinite, still too firm a grasp on the metaphysics of being for Empson's taste.

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[91] Empson, *Complex Words*, p. 254.
[92] Duns Scotus, *Contingency and Freedom: Lectura I 39*, eds. John and A. Vos (London: Kluwer Academic, 1994), p. 78-79.
[93] William of Ockham, *Ockham's Theory of Terms: Part I of the Summa Logicae*, trans. Michael J. Loux (Notre Dame: University of Notre Dame Press, 1974), p. 31.
[94] A.J. Ayer, *The Foundations of Empirical Knowledge* (London: Macmillan, 1940), p. 17
[95] William Empson, 'Review of *The Foundations of Empirical Knowledge*', *Horizon*, 3.15 (March 1941): 222-23.

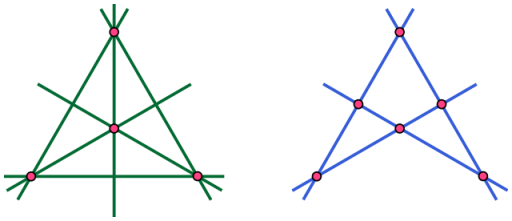
2.1.3 The Mirror Image

Our discussion of the two mirrors and Infinity takes us to the final type of mathematical image that appears in Empson's works, namely, the mirror image. This image, broadly speaking, takes two forms. On the one hand, it could work by showing two things as mirror images of one another but ultimately, in a mysterious way, different. On the other, it could work by bringing out the differences between a representation and the original. The first of these is the argument that when one thing is shown to be another in a satisfying way, we must always be suspicious: it might well be the imposition of a theorist or a product of propaganda.

In the *Structure of Complex Words*, an equation describes how a complex word communicates its multiple senses; to describe "how the two meanings are imposed and which order they are given".[96] The Type IV equation proposes that if 'A is like B,' then 'B is like A.' The equivalence can be abbreviated like so: 'A ⇔B'. Since the meanings of words in language depend so much on the order—imposed by experience, tradition—in which they strike the reader, this type of equation, where two meanings are completely integrated until they form mirror images of one another, exists only when enforced by a writer of authority. In other words, it is an artificial strain on the natural use, slippage, and evolution of language. The example Empson gives is Richard Hooker's proposition that the word 'law' contains the senses of 'both human and divine law'. In other words, some human laws have all the force of divine edicts, and vice versa—an equipotence registered somehow, by the formula 'human law ⇔ divine law'.[97]

Empson uses an analogy from projective geometry to illustrate the relationship between the terms in equations of the fourth-type: "cases can easily be found in which 'B' is like 'A' as well as 'A' like 'B' […] e.g. a quadrangle and a quadrilateral".[98] In projective geometry, a quadrangle in a plane is formed by six lines drawn through four points in such a way that every pair of points is connected by a line and no trio of points lies on the same line. A quadrilateral, on the other hand, has four lines on a plane that pass through six points with no trio of lines passing through the same point:[99] see the diagram below.

[96] Empson, *Complex Words*, p 46; The specific number of equations is as irrelevant as Empson's ironic claim that there are 'seven' types of ambiguities. As Michael Wood puts it, "if there are seven types, there could be more, and probably are" (Michael Wood, *Literature and the Taste of Knowledge* (Cambridge: Cambridge University Press, 2005), p. 96).
[97] Empson*, Complex Words,* p.52.
[98] Ibid.*,* p. 51.
[99] Eric A. Lord, *Symmetry and Pattern in Projective Geometry* (London: Springer, 2013), p.18.



Quadrangle Quadrilateral[100]

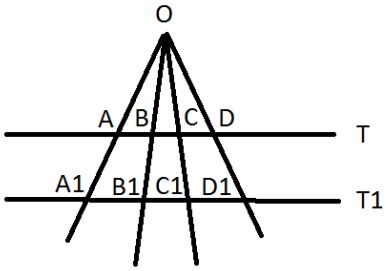
Any proposition in projective geometry is as valid as its dual statement in which the terms 'line' and 'point' are interchanged, making them essentially mirror images of one another. A proposition about quadrangles, for instance, can be proven by demonstrating the dual statement about quadrilaterals, and vice versa.[101] It seems to be Empson's contention that, within a poem, semantic equivalences of the fourth type allow cognately dual transcriptions of statement.

In this instance, Empson uses an analogy from projective geometry to characterise the attempt to create a mirror image between two ideas. But he criticises the use of the same when dealing with metaphors; his main issue is with how the visual analogy between projective geometry and metaphor smuggles in fictions like the Freudian unconscious.

Scott Buchanan uses projective geometry to symbolise the structure of a metaphor as given by Father S.J. Brown. Brown begins with the allocation, "you should try to root out your faults one by one".[102] According to Brown, the metaphor in the statement above can be visualised thus: 'a:b = x:y', such that 'faults: soul = weeds: garden'.[103] Empson first points out that Brown seems to miss the entire point of the homily in his elaborate ratio-analysis. It is not to suggest that faults can be like weeds in a garden, but to provide a technique for ridding the soul of faults: specifically, to do it one-by-one. Rooting—the only word actually used in the metaphor and missing in Brown's scheme—is the process by which weeds are removed one-by-one as opposed to digging, where one needn't be so discerning.

Empson says, Brown's proportion scheme "has been put very dramatically by Scott Buchanan in […] *Symbolic Distance*, which uses the analogy of projective geometry all the way through". Buchanan visualises the metaphor as follows:

[100] Image distributed under a CC-BY 2.0 license.
[101] Lord, *Symmetry*, p. 19.
[102] Empson, *Complex Words*, p. 336.
[103] Empson, *Complex Words*, p. 336.



> In this figure let, 'O' be a point of projection with rays running out from it to cut a transversal (T) in A, B, C, and D. The intervals thus cut off on the transversal, AB, BC, CD, will have certain relations to each other which can be expressed in ratios, and these ratios may be combined to make more complex ratios of ratios. Draw another transversal (T2) cutting all the rays at some given angle with the former one. There will again be intervals on this transversal cut off by the rays, and the relations between these intervals may be expressed in ratios and ratios of ratios. When this has been done it will be found that the set of ratios of ratios on the first transversal are equal to the set of ratios of ratios on the second transversal.[104]

This translates to 'AB: BC = A1B1: B1C1,' which is another approximation for 'faults: soul = weeds: garden.' The problem with this visual analogy is that the dominant sense becomes the difference in size between AB and A1B1, making the process of meaning transfer from vehicle to tenor in a metaphor necessarily visual, thereby drawing us into fuzzy regions of psychology. Buchanan calls the transfer between AB and A1B1 "expansion" and the reverse, A1B1 to AB "condensation",[105] and uses Freudian and Jungian terminology to justify himself. The process of transfer, he says, begins with "nonverbal archetypes", which then "demand verbal expansion". For instance, the physical relationship between 'mother and son' becomes analogous to the emotional relationship, which is then symbolized as 'AB: BC' along 'T'. This undergoes a projective transformation, or "expansion" at the level of 'family and son' at T2.[106] Empson, profoundly irritated by the creeping psychologisation of literary analysis, which he felt smuggled in a grand haul of empty metaphysical assumptions, retorts by saying that the equation formed by this kind of representation (AB/A1B1) is the equivalent of "naughts divided by naughts" (0/0).

> I think at this point we must become irritated with the claims of the sub-conscious mind no less than with those of the Logos. We had better stick to what the fool of a conscious mind is doing, if we can be sure that it is so distinct from our unconscious wisdom.[107]

[104] Scott Buchanan, *Symbolic Distance in Relation to Analogy and Fiction* (London: K. Paul, Trench, Trubner& co, 1932), p. 57-58.
[105] Ibid., p. 59.
[106] Buchanan, *Symbolic*, p. 64.
[107] Empson, *Complex Words*, p. 341.

It may seem as though Empson was singling out Brown or Buchanan's obscure works, but the image-theory had become extremely popular in his time. Norris points out that Wittgenstein used projective geometry to propound his picture-theory of knowledge in the *Tractatus*.[108]

> § 3.11: We use the perceptible sign of a proposition (spoken or written, etc.) as a *projection* of a possible situation. The method of projection is to think of the sense of the proposition.
> § 3.12: I call the sign with which we express a thought a propositional sign. And a proposition is a propositional sign in its *projective* relation to the world.
> §3.13: A proposition, therefore, does not actually contain its sense, but does contain the possibility of expressing it. A proposition contains the form, but not the content, of its sense. (emphases mine)[109]

In the *Tractatus*, a complex of related objects—a state of affairs—in reality or the world is a 'fact'; the cat is sitting on the mat would, for instance, be the statement of a potential fact. The mind forms a picture of the fact, in which the elements of the picture have the same relation to one another as the corresponding elements in reality. This picture can be transcribed in the form of signs (language), wherein the elements of the propositional sign will map commensurately onto the picture and reality. Of course, the sign does not consist of the actual contents of reality but only the 'form' (as per §3.13), which means the relationship between the three ontological levels is expressed algebraically; if the cat sitting on the mat is c/m, the perception of the fact would be c1/m1, and the verbalisation of the perception would be c2/m2. What is more, the correspondence from sign to reality is in increasing scales (as per § 3.12), so the algebraic ratio is expressed projectively, not unlike Buchanan's representation.[110]

Wittgenstein seems to imply three things by his use of projective geometry: reality exists on a different ontological plane than thought or language, the relationship between them is intentional and projective, and the process of intention is pictorial or image driven.[111] All of these assumptions seem to also underlie Buchanan's analogy, which means Empson was attacking a popular theory—one he believed too fanciful in its psychological hypotheses. Just so, he uses the mirror image to show up the artificial doings of theorists.

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[108] Christopher Norris, *William Empson and the Philosophy of Literary Criticism* (London: Athlone, 1978), p. 109; See Helen Thaventhiran, 'Well-versed: Wittgenstein and Leavis read Empson', in *Wittgenstein Reading*, ed. Wolfgang Huemer and Garry Hagberg (Berlin: De Gruyter, 2013), for a longer account of the relations between Empson and Wittgenstein.

[109] Ludwig Wittgenstein, *Tractatus Logico-Philosophicus* (New York: Humanities, [1921] 1951).

[110] For more texts on Wittgenstein's use of projective geometry, see Pasquale Frascolla, *Understanding Wittgenstein's Tractatus* (London: Routledge, 2007) and David G. Stern, *Wittgenstein on Mind and Language* (Oxford: Oxford University Press, 1995).

[111] "Intentional" is being used here in the sense of Husserl's "intentionality". This is the notion that when we contend with the world using our thoughts, we are moving towards them with intent: the intent to understand them, rather than passively receiving them.

The mirror image shown as different is taken to its furthest when Empson is characterising the seventh-type ambiguity. We have already introduced the seventh-type, which occurs when a phrase or word means opposite things at once, showing a fundamental split in the poet's mind. The equation Empson invents to describe the ambiguity is as follows: If a= a1, the meaning is p; if a= a2, the meaning is –p. In the equation, 'a' is the verbal unit as given in the poem, a1 and a2 are possible senses of a, and p and –p are the ultimate meanings of the phrase.[112] We shall see an exemplary application of this equation in our interpretation of "Letter V" but Empson gives a fitting enough example from George Herbert's "The Sacrifice".[113]

> Lo here I hang, charged with a world of sin
> The greater world of the two; for that came in
> By words but this by sorrow I must win:
> Was ever grief like mine?

These lines are spoken by the Christ on the cross. It could mean He is burdened by humanity's collective guilt whilst hanging on the cross or that He is the one ultimately responsible for their sins; this popular theological dichotomy of the seventeenth century, which occurs, for instance, in Tintoretto's depiction of the crucifixion, is resolved in the poem at the moment upon the cross when the Christ becomes at once man and God: He who induced sin into this world dies for it. So, if 'charged' = laden, then p; and if 'charged' = accused; then -p. Both equations contain the same member, but we end up with opposite meanings, such as benevolent and wrathful, and scapegoat and tragic hero.[114]

The second form of mirror image we mentioned was that of representation. Mathematical representation often claims to be the true image of the thing reflected because it pretends to double as explanation.[115] But Empson shows that the purported mathematical explanation is not much more than one amongst many reflections, specifically, one without substance. Take the first stanza of "High Dive"

> A cry, a greenish hollow undulation
> Echoes slapping across the enclosed bathing-pool.
> It is irrotational; one potential function
> (Hollow, the cry of hounds) will give the rule. [1-4]

The poet thinks he can "give a single mathematical expression for all the movements of water".[116] However, he can only do so whilst the water remains 'irrotational', or not rotating about an axis.

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[112] Empson, *Seven Types*, p. 196-97.
[113] George Herbert, *The English Poems of George Herbert*, ed. Jacula Prudentum (London: Rivingtons, 1871).
[114] Empson discusses this poem in Empson, *Seven Types*, p. 233.
[115] For a discussion of resistance to the idea that mathematical law in physics constitutes 'explanation', see section 1.2.
[116] Empson, *Poems*, p. 188.

The 'one potential function', by giving 'the rule' for the tank, will pretend as both image and explanation of the water. The poet eventually discovers that even the slightest perturbation of the still water will confound his most accurate representation. But the poem has already given us a glimpse, in line 1, of phenomena that cannot be contained in theory. How is the undulation of an echo green? One cannot quite say how the synaesthesia works outside the lines of the poem, except that the atmosphere that 'green' creates invests the sound with a certain unmistakable feeling. This is the general pattern of Empson's use of the second-type mirror image: the mathematical image is shown to be lacking by contrast to a poetic device of feeling; synaesthesia, in this instance.

Thinking back to standing on the diving board in "High Dive", Empson once said that "one would be ashamed to walk down; the proper thing is to take a decisive action whose results are incalculable".[117] In other words, the 'proper thing' is to be Erasmus's fool, for, as we quoted earlier, 'the wise man is modest and cowardly, the fool tries'.[118] Of course, there is a lot of philosophical wrangling in the poem, but the attitude seems naive, almost jejune. The only proper response to a full knowledge of things, including of oneself, is a kind of paralysed despair. To act, one must set aside any pretension to foreknowledge and to a large extent, knowledge itself. Sometimes it is okay to be a fool and jump in without knowing what the results will be.

The inducement is simple but there is a complex play of ideas, worked out in Empson's poems, that brings the poet to the palsy at the tip of the diving board. In the next section, we shall abandon the broad strokes about the strange sallies of Empsonian thought and converge on Empson's peculiar philosophy of irrealism, articulated in "Doctrinal Point". The poem critiques mathematical epistemology through the images of the tensor and tautology—in many ways, the ideal mirror-image. The poem will show how the two types of mirror-images in Empson's work relate to one another by comparing the represented (tensor) with the mirrored (tautology).

2.2 The God Approached

The previous section has been dedicated to uncovering a set of odd attitudes that may unsatisfactorily be summed as Empson's (non-)philosophy. Chief amongst his idiosyncrasies, Empson was committed to ignorance, and apt to flee from a settling doctrine, deeming any pretension to ultimate answers theological, even tyrannical. We caught a glimpse of the many mathematical images he uses to set firm epistemological limits. A whole class of Empson's mathematical poems were shown to trade in the impress of unresolved paradoxes, the mode of

[117] Stated to *Listen*; Found in Haffenden, *Poems*, p. 188.
[118] Empson, *Complex Words*, p. 106.

cogitation that seemed most to excite the young reviewer of *Granta,* and soon to haunt the author of the *Seven Types.*[119] In this section, we shall focus on a singular paradox whereby the epistemological achievements of mathematics and poetry are brought into direct conflict.

Some background about Empson will, I believe, allow greater insight into the more elusive movements of meaning in the poem. The poet Kathleen Raine recounts from her undergraduate days at Cambridge,

> the impression he [Empson] made upon me—as upon all of us—of contained mental energy […] This impression of perpetual self-consuming mental intensity produced a kind of shock; through no intention or will to impress, for William was simply himself at all times […] mild, impersonal, indifferent to the impression to the point of absent-mindedness. Nevertheless his presence spellbound us all. His shapely head, his fine features, his eyes, full lustrous poet's eyes but short-sighted behind glasses and nervously evading a direct look […] was the head, in any gathering, that seemed the focus of all eyes.[120]

Favoured with enough beauty and misfortune to know the plights of an indifferent muse and his supplicating bard, the young Empson, in the words of I.A. Richards, was able to take "the sonnet-cycle as a conjuror takes his hat"[121]—but he left as fugitive a record of himself in verse as in the memories of his brilliant contemporaries. However, the self-consuming intensity of the mysterious poet, in a rare occasion, seems to have imploded to form the lines of "Doctrinal Point". Of the torments of his youth, the miracle of visual delight, the remoter charms of thought, the disappointment assured in all pursuit, I believe "Doctrinal Point" to be in some ways the highest expression. Tragically little has been said about its virtuoso performance.[122] A thoroughgoing close-reading may have seemed unnecessary to most critics, for the poem appears deceptively easy to summarise, as vaguely suggesting that doctrinaire or dogmatic views, as science seems to nowadays hold, are wrongheaded and bad. I hope in these pages to show why the poet Charles Olson's dictum that a poem "means exactly what it says" finds a votive instance in "Doctrinal Point".[123] Its implications lie beyond paraphrase (Empson's own feeble attempts included), for it is in the act of unfolding that the poem shudders its bleak vision to existence.

The curiously New Critical flavour of these suggestions is intended here as affect—for the weight of opinion has gathered around Christopher Norris's thesis that Empson's abiding critical achievement lies in having dissolved the boundaries between poetry and prose. Norris accepts the

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[119] See section 2.1.
[120] Kathleen Raine, *The Land Unknown* (London: Hamish Hamilton, 1975), p. 44-45.
[121] I. A. Richards, 'William Empson', *Furioso*, 1/3 (1940), supplement following p. 44.
[122] See Gardner and Gardner, *God Approached*, p. 147; Kohlmann, *Styles*, p. 71; Kitt Price, 'Empson's Einstein: Science and Modern Reading' in *The Cambridge Companion to Literature and Science*, ed. Steven Meyer (Cambridge: Cambridge University Press, 2018), p. 97-117.
[123] From 'Projective Verse' in Charles Olson, *Collected Prose*, ed. Donald Allen, and Benjamin Friedlander (Berkeley: University of California Press, 1997), p. 240.

complaint lodged by the New Critics, often parroted by Frank Kermode, that the method of the *Seven Types* applies equally to "a piece of infinitely qualified prose"[124]—Norris, of course, presents this as Empson's distinction. His argument in *William Empson and the Philosophy of Literary Criticism* is that to Empson, "the language of poetry is continuous with—directly qualified by—the expository language of prose".[125] This view has gone more or less unchallenged to the present: Michael Wood, for instance, says "Norris puts this very well when he says that 'Empson's books all seek, in different ways, to make terms between poetry and the normal conditions of language and common-sense discourse', and that ambiguity, for example, 'belongs to a normal, not uniquely poetic order of thought and language"'.[126] I do not assume the burden of disputing the settled position on 'Empson's books'; but in what follows, I shall proceed under the assumption that the consensus view is inadequate to understanding his poetry. The 'consensus view' I refer to is the contemporary one: when his poems were published in the 1930s, reviewers regarded them as "crosswords", "mosaics"[127], and "riddles"[128]—certainly not to be confused with anything achievable in prose (or by any other poet, for that matter). In this section, the notions of solving the riddle or rearranging the mosaic will better approximate my critical method.

"Doctrinal Point"

1. The god approached dissolves into the air.

2. Magnolias, for instance, when in bud,
   Are right in doing anything they can think of;
   Free by predestination in the blood,
   Saved by their own sap, shed for themselves,
   Their texture can impose their architecture;
   Their sapient matter is always already informed.

8. Whether they burgeon, massed wax flames, or flare
   Plump spaced-out saints, in their gross prime, at prayer,
   Or leave the sooted branches bare
   To sag at tip from a sole blossom there
   They know no act that will not make them fair.

13. Professor Eddington with the same insolence
    Called all physics one tautology;
    If you describe things with the right tensors
    All law becomes the fact that they can be described with them;
    This is the Assumption of the description.

[124] John Crowe Ransom, 'Mr Empson's Muddles', *The Southern Review,* 4 (1938/9), p. 32-39; p. 33; Frank Kermode, *English Pastoral Poetry from the Beginnings to Marvell* (London: George G. Harrap, 1952).
[125] Norris, *Empson*, p. 5.
[126] Michael Wood, *On Empson* (Princeton: Princeton University Press, 2017), p. 15.
[127] Louis MacNeice, 'Mr Empson as Poet (review of poems)', *New Verse*, 16 (1935): 17-18, p. 17.
[128] I. A. Richards, 'Empson's "Poems"', *Cambridge Review*, 57.1399 (1936): p. 253.

The duality of choice becomes the singularity of existence;
The effort of virtue the unconsciousness of foreknowledge.

20. That over-all that Solomon should wear
Gives these no cope who cannot know of care.
They have no gap to spare that they should share
The rare calyx we stare at in despair.
They have no other that they should compare.
Their arch of promise the wide Heaviside layer
They rise above a vault into the air.[129]

Empson described the poem as being about "Deism […] If you arrive at the point of grace, you no longer require a personal god".[130] What precisely is meant by 'grace' will emerge from the poem's conceit, but the hint of a contradiction in approaching god is sufficient for our present design. Loosely put, the poem opens with a paradox, asserting with certitude the impossibility of certainty. The line is thrown up as a thesis preceding an argument. The odd structure, even by Empson's standards, of a single-line declarative paragraph followed by staves of elaborate philosophical argument seems after a fashion of medieval disputation, given especially its celestial subject-matter. It must be noted that the argument itself is more Metaphysical in its absurdity; but in fact, it has been shown by Una Nelly that the medieval technique of disputation was a model even for Donne.[131] One might profitably look beyond the usual seventeenth century paradigms for Empsonian argufying and imagine St Anselm posing a prompt such as initiates "Doctrinal Point"—"God created the world in Time", say[132]—and setting his students off to debate. A case, in the medieval university, would customarily begin with settled postulates about the known world and proceed, in Aristotelian fashion, to draw conclusions favourable to its discursive compact.[133] Aquinas's five proofs for the existence of God, for instance, follow the exact procedure.[134] The second stanza of "Doctrinal Point" likewise prosecutes its argument through a series of postulations about magnolias, starting in line 2 with the forensic register of, 'for instance'. Before interpreting the argument, however, we must come to terms with the mysterious thesis.

The poem's ambitions rest on balancing the myriad performances of the first line. By its lineal isolation, it seems instantly to demand some acrobatics of interpretation. Jeffrey Wainwright theorises that the modernist invention of "isolating single lines makes this [the attention to it] more

[129] Empson, *Poems*, p. 39; Haffenden says the poem was written sometime before 1935 (*Poems*, p. 277).
[130] Qtd in John Haffenden, *William Empson: Against the Christians* (Oxford: Oxford University Press, 2006), p. 619.
[131] Una Nelly, *The Poet Donne: A study in his dialectic method* (Cork: Cork University Press, 1969), p. 53-55.
[132] Alex J. Novikoff, *The Medieval Culture of Disputation: Pedagogy, practice, and performance* (Philadelphia: University of Pennsylvania Press, 2013), p. 35.
[133] Ibid., p. 141.
[134] Ibid., p. 163.

intense".[135] Broadly speaking, this is the effect had in "Doctrinal Point". But unlike the experimental one-liners of Williams and Stein, or the livid lumen of a Hill line, the single-liner of "Doctrinal Point" forms a tight hermeneutic circle with the rest of the poem that eventually rectifies into stanzas of 6, 5, 7, and 7 lines. We have likened the whole affair to medieval disputation: with a thesis, followed by arguments, and in the final stanza, the peroration. The poem has thus already demanded a consideration distinct from prose, and even from poetic convention. If lines are conjoined as in prose, none can acquire the semantic dynamism with which Empson, as we shall see, has charged his first line.

2.2.1 I am Lying

Let us begin by classifying the paradox. We do not mean here the 'language of paradox' which was to Brooks the "language appropriate and inevitable to poetry"[136]—Empson's paradox does not dissolve trivially into a meaning more capacious, as in Wordsworth's seemingly indifferent girl, who reveals more piety than she first lets on.[137] The paradox Empson sets is logical and thereby more tenacious; after all, it is a "poem whose subject is being puzzled", as Empson notes (rather unsatisfactorily) in his first manuscript.[138] Richard Wilbur, similar to our argument in the previous section, noted that there is a loose paradox in the logic of Empson's poems, when taken whole: "It may seem […] that Empson is advocating a sort of bustling neglect of ultimate questions, but the very existence of the poem belies such an interpretation: in suggesting that ultimate questions be neglected, the poet recognizes their importunate presence".[139] Empson, as we are about to see, had long recognised this fact, and accepted an inherent contradiction in denying ultimate answers; and he employs the paradox of the first line to offer a darker and more howling emptiness than in his other poems.

Haffenden says Empson "fell for a while under the influence of Frank Ramsey", his tutor in mathematics at Cambridge.[140] Ramsey, in his seminal essay, "The Foundations of Mathematics", recasts all paradoxes—at least those listed in the *Principia Mathematica*—that had been deployed to unseat the foundations of mathematics into Wittgenstein's machinery of 'atomic propositions'.[141] He divides them, as Russell and Whitehead had done, into two principal types: the mathematic

[135] Jeffrey Wainwright, *Poetry: The basics* (London: Routledge, 2004), p. 126.
[136] Cleanth Brooks, *The Well-wrought Urn: Studies in the structure of poetry* (New York: Reynal & Hitchcock, 1947), p. 1.
[137] Reference to Brook's discussion of the girl in 'It is a Beauteous Evening, Calm and Free', (*Urn*, p. 1-2)
[138] Empson, *Poems*, p. 278.
[139] Richard Wilbur, 'Seven Poets', *Sewanee Review*, 58.1 (1950): 130-134, p. 133.
[140] He was taught Solid Geometry and Theory of Equations by Frank Ramsey at King's College whilst the other subjects of his Mathematics Tripos were handled by A.S. Ramsey, Frank's father (Haffenden, *Mandarins*, p. 104).
[141] Frank P. Ramsey, *The Foundations of Mathematics and Other Logical Essays*, ed. R. B. Braithwaite, intro. G. E. Moore (London: Kegan Paul, Trench, Trübner, 1931), p. 1.

and the semantic.[142] In this reading, it is with the semantic variety that we are chiefly concerned; semantic paradoxes depend for their contradiction on the definition of constituent terms. Our burden is to demonstrate the following: the first line, with constituent terms carefully defined, is a semantic analogue to the Liar's Paradox. And reading it so (as critics have not) is integral to how the poem means.[143]

The feature common to all paradoxes listed in the *Principia* is self-referentiality. The Liar's Paradox, a paragon of said virtue, is said to have originated in St Paul's epistolary account of Epimenides the Cretan who said all Cretans are liars. Its simplest version is, "I am lying". If I am lying, then I am telling the truth, and vice versa. To enable comparison with the poem, we shall render the mechanism in the abstract: "there is a proposition I am affirming and which is false", or "I assert p and p is false".[144] The terms of a proposition, to be considered in logic, must be pared of ambiguity, and strictly restricted to denotation. Of course, in a poem, one is not justified in taking the scalpel to connotations when phrases are designed to connote emotions and images. If, in other words, an attending sense of 'god' should render the proposition demonstrably true or false, then no paradox obtains.[145] For instance, if 'the god' referred to is Boreas or Zephyr, we might picture him simply turning to mist or wind. The first line of "Doctrinal Point", however, is resistant to such readings. Beyond Empson's lifelong critical distaste for psychologism or imagism, we are prompted foremost by the line's scholastic and scientific register to treat it referentially.[146] The more plausible delimitations of sense in the line, or so I hope to show, lead perforce to paradox.

Anatomised to an aggregate of its attributes, 'The god' approximates to 'The truth'. Owing to the curious juxtaposition of an uncapitalised 'god' preceded by definite article, 'the', the term refers neither to the God of monotheism nor a pagan god. Because the immediate referents of the phrase are thus evacuated, we infer its meaning instead by treating it as a bound variable possessing specific attributes, both positive and negative. We can with reason assign two positive attributes and one negative: being god, it must (1) be ultimate; being *the* god, it must (2) be unique; and we have explained why it (3) cannot be a deity. It follows from these premises that 'the god' is the

142 Ibid., p. 20.
143 The phrase 'how the poem means' is used in Jonathan Culler's distinction between hermeneutics, what it means, and poetics, how it means (Jonathan Culler, 'Hermeneutics and Literature' in *The Cambridge Companion to Hermeneutics*, eds. Michael N. Forster, and Kristin Gjesdal (Cambridge: Cambridge University Press, 2019), p. 304-309).
144 Alfred N. Whitehead and Bertrand Russell, *Principia Mathematica*, *vol. 1* (Cambridge: Cambridge University Press, 1910), p. 62.
145 Based on the how linguistic statements can be considered logical in Gottlob Frege, 'Ueber Sinn und Bedeutung', *The Philosophical Review*, 57 (1948), p. 209.
146 Stanley Fish has discussed how register is part of the code that affects our interpretive strategies as readers in 'Interpreting the 'Variorum', *Critical Inquiry*, 2.3 (1976), p. 485.

doctrinal point realised, the singular verity of existence, by whichever organon—metaphysics or natural philosophy—it came to be known. We shall proceed to show that this hypothetically exclusive Truth comes to mean the knowledge of Nature, as Spinoza and Wordsworth conceived it—but much work remains before we can see how or why this is so.

The word 'dissolve' is jarring in an otherwise lofty line ending. There are more agreeable ways to express the unapproachability of 'god'—that when approached, god is brought to nought—: 'disappear,' 'vanish,' or to maintain the metre, 'consumed'. These, indeed, are senses connoted by 'dissolve', as in William Jones's 1769 phrase, "each gay phantom was dissolved in air".[147] But 'dissolve' inescapably suggests to a post-industrial reader the diffusion of "molecules of (a solid or gas) in a liquid so that they are indistinguishable from it".[148] It is impossible to prefer one sense as dominant, but running the function through multiple arguments of 'dissolve' happens, in this instance, to intensify rather than contradict the overall sense. The chemical dissolution of 'the god' is possible, but fantastic—it projects no ready mental image or even logical sense. But a sound philosophical significance for the diffusion of god into air is synthesized by supplementary senses.

To see the process unfold, we may begin by modifying the subject to 'the *scientific* truth'. After all, we are prompted in stanza 4 to see the doctrinal point not from a philosophical or theological perspective, as might have been urged in the medieval university, but through a scientific lens. We have shown in the previous section that Empson inherited Richards's nominalism, specifically, what Max Black called Richards's "excessively nominalistic conception of the nature of scientific discourse".[149] Despite the jibe in line 13, the poem is written very much in the spirit of Eddington, who said "exact science invokes, or has seemed to invoke, a type of law inevitable and soulless against which the human spirit rebels".[150] The Gardners identify from Eddington's discussion of quantum physics a potential source for line 1, namely, "Our conception of substance is only vivid so long as we do not face it. It begins to fade when we analyse it".[151] Whilst Empson was an undergraduate at Cambridge, Heisenberg had established a definite epistemological limit to our grasping the basic modes of material existence. Eddington writes that the "exact position with exact momentum [of a quantum entity] can never be discovered by us" because the very ascertaining of one alters the other.[152] Viewing quantum monads, the limits of

147 William Jones, 'The Palace of Fortune', *The Works of Sir William Jones*, ed. by Lord Teignmouth (Cambridge: Cambridge University Press, [1807] 2013), p. 418; this particular analogue has not been identified by critics.
148 *OED*
149 Empson, *Letters*, p. 217.
150 Eddington, *Physical World*, p. 126.
151 Ibid., p. 184.
152 Ibid., p. 154.

physical reality, as the ultimate truth signified by 'the god', Heisenberg's Principle of Indeterminacy issues a potent image of a god approached dissolving into the air. Despite referring ostensibly to the physical world, the dissolution, even in this sense, is epistemic in nature.[153]

Moving to its application in mathematical logic, we might also read 'dissolve' as 'dis-solve'. 'Dis-solve' suggests a purportedly achieved solution coming undone: that is, 'the truth approached' coming undone when looked at too closely. An approximation of the opening line might thus read, 'The truth approached dis-solves'. Despite the gesture to Heisenberg's Principle, 'scientific truth' cannot be preferred as the subject because universal 'truth' as locum tenens for 'the god' is more appropriate. We thus arrive at the sense, 'consumed by being solved' or 'reverting into a riddle'. Primed so, the declaration becomes the very doctrinal point it denies. In other words, if the only identifiable sine qua non of 'the god' is its unapproachability, then that very fact is its essential truth. That is, in discovering its unreachability, the god has paradoxically been reached. Like the Liar's Paradox, the most plausible argument of the opening line affirms and denies itself, conforming to the logical form, "I assert p and p is false".

The paradox seems at first to recommend a healthy scepticism, such as one might find in Max Black's essay, "Cynic or Skeptic" (1930).[154] Black said "enlightened scepticism" is not a "defective vision of life" but courage in the face of "the fundamental difficulties which beset the search for knowledge".[155] But one soon finds in the advancing implications of the paradox something more terrible than anything nominalism, descriptionism or even scepticism envisions. Empson would later write that "the poetry of flat contradiction is almost a clinical thing; it can only be done well as a way of treating yourself for a terrible state of mind".[156] It is a torment one discovers lurking at the fraying edges of Wittgenstein's clinical propositions. Having obsessed at college over a translation by Ramsey and C.K. Ogden, of Wittgenstein's *Tractatus*,[157] perhaps Empson unconsciously floats his opening line as a Tractarian ladder, the instrument that disproves all else before itself, like the sword of the Roman General upon which he will eventually fall.[158] The poem achieves the same effect—through the interplay of content and form—in the staggering

153 See discussion of Empson's application of ideas from quantum mechanics (taken chiefly from Eddington and Dirac) to poetic ambiguity in a brief discussion of Bate's ideas about Empson and quantum mechanics 2.1.
154 It was published in *Experiment*, the student magazine that Empson co-edited (Max Black, 'Cynic or Skeptic', *Experiment*, 5 (February 1930), p. 42-45).
155 Black, 'Cynic', p. 42.
156 From 'A Masterly Synthesis' (1939) in Empson, *Argufying*, p. 342.
157 Haffenden, *Mandarins*, p. 105.
158 "My propositions are elucidatory in this way: he who understands me finally recognizes them as senseless, when he has climbed out through them, on them, over them. (He must so to speak throw away the ladder, after he has climbed up on it.) He must surmount these propositions; then he sees the world rightly" (Wittgenstein, *Tractatus*, p. 90); Colin Falck is the only critic to have noted some parallels between Empson's and Wittgenstein's setting of limits to rational investigation—although Falk's comments are in reference to 'High Dive' (Colin Falck, 'This Deep Blankness', *the Review* (1962): 49-61, p. 58.)

space of a single line. Read in time, it impresses first an epistemological limit, throwing up the apposite puzzle of quantum theory, and having firmly communicated its message thus, asks itself to be abandoned.

We are now able to synthesize these hermeneutic processes into a clear account of a god whose molecules, indistinguishable from air, disappear to the approaching mind. The line invests its god with a doctrine of immanence as extreme as Spinoza's *Deus sive Natura* (God-or-Nature).[159] In *Pastoral,* Empson, pointing to a similar line in Marlowe, to wit, "their souls are soon dissolved in elements", says, "the doubtful word *dissolved* allows pantheism to be still present at the end".[160] He would even suggest later that Spinoza's God-or-Nature is one extreme of Milton's God.[161] In our poem, god is identified with material Nature in line 25: 'Their arch of promise the wide Heaviside layer'. The rainbow, which was to the Israelites the arch of promise, Heaven's guarantee of their covenant, is equated to the Heaviside layer, an atmospheric layer of gas, protecting plants from harmful radiation. The grace of god is thus shown to lie within the natural order and not as Manna descending from above. This said, it must be remembered that the god of line 1 is not quite the God of Spinoza's *Ethics* because whilst it shares His principal attribute, being no more or less than Nature, Empson's 'the god' refers not to a 'deity incarnate as existence' but a more 'generic truth of existence'. Nevertheless, the *Ethics* is a potent interpretive framework because the one Substance of the *Ethics,* like the 'the god' of line 1, is unattainable to mind; through investigation, we may discover its many properties, but never its real nature—for "every substance is necessarily infinite".[162] According to both schemes, science is a useful exercise in understanding the relations between modes of existence, but the god, immanent yet apophatic, remains tantalisingly elusive. The poem is thus about a Promethean deception at the heart of modern science, which claims finally to have known Nature, and even revealed to us the face of god.

If, as Norris says, we must not read poetry as distinct from prose, the line's brimming entelechy would be lost. A prose statement, even one so dense, is clarified by context, say, the following or previous line, and not, as we have shown, by its self. A prose statement is an instrument to convey meaning (as is implied by Norris); but, we have seen, meaning emerges entirely from the meaning-making procedure of the first line. According to the New Critical standards, which Empson is supposed to have routed,[163] poetic statements can be distinguished

[159] In reference the idea that God is Nature, or the totality of existence in Benedictus Spinoza, *Ethics*, ed. and trans. Edwin Curley (London: Penguin, 1996).
[160] Empson, *Pastoral*, p. 73 (This is noted as a source by Haffenden, *Poems,* p. 279)
[161] William Empson, *Milton's God* (London: Chatto &Windus, 1961), p. 143.
[162] Spinoza, *Ethics,* p. 10.
[163] Norris, *Philosophy*, p. 4-5.

from prose by virtue of self-referentiality and paradox, amongst others.[164] In this regard, line 1 is self-referential (in a most extreme sense): it is a semantic analogue to a statement whose paradox is established by virtue of self-reference.

The literature on Empson's finer disagreements with Richards's pseudo-statement theory of poetry is quite thorough, and I haven't much here to add.[165] Richards divides language into the "scientific use" in prose, which makes "true or false" statements and the "emotive use" in poetry, made for "the attitudes and emotions which ensue".[166] Line 1 of "Doctrinal Point" savages this dichotomy by operating through the scientific use, via reference, whilst flouting the law of excluded middle, and rendering the emotive sense almost entirely absent. This is not to suggest a reversion to New Critical doctrine for the study of Empson's poems. It is to stress what we have in the previous section, namely, that attaching any doctrine, New Critical or anti-New Critical to Empson is apt to be confounded. His only lasting critical conviction is stated clearly in the first chapter of *Seven Types,* which we shall quote here again: "you must rely on each particular poem to show you the way in which it is trying to be good"[167]—the poem thus arbitrates whether it requires prosaic or special treatment. And if any poem demanded new artillery, it is "Doctrinal Point".

2.2.2 The Summer's Flower

So much for paradox. To demonstrate our auxiliary hypothesis, namely, that the paradox is key to the poem's cipher, we must naturally offer a full reading. The disputation begins, however strangely, with a comparison between human and magnolia being. Alien to us, magnolias' 'texture can impose their architecture'. As each term is set in analytic fashion, we are able, almost exactly, to delineate the conceptual extents of their definienda. The reference of 'texture' is material-and-surface, or simply, material appearance. And because architecture is what is over and above texture, its non-material aspects, the word refers to structure. Careful distinctions in this vein are common to medieval disputation, dominated as it was by Aristotelian taxonomy.[168] Recast, then, in the dichotomy of matter and form, we might render the line as 'material cause can impose their formal cause'. In other words, the magnolia's architecture is contained entirely in its texture. The poem begins to elaborate on its epistemology by implying that, unlike in the magnolia, there a gap between architecture and texture in man; the gap stands for the primordial rupture between mind and matter that never came to pass for magnolias in bud.

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[164] For a list of Brooks's "articles of faith", which he implies are held by other New Critics, see Cleanth Brooks, 'The Formalist Critics', *The Kenyon Review*, 13.1 (1951): 72-81, p. 72.
[165] Paul H. Fry, *William Empson: Prophet against sacrifice* (Taylor and Francis e-Library, 2002 [1991]), p. 15.
[166] Richards, *Principles*, p. 250.
[167] Empson, *Seven Types*, p. 7.
[168] Novikoff, *Disputation,* p. 106-7.

Line 7 is another statement that in logic is problematic. Besides the Liar's Paradox, Russell proposed another sentence that defies the law of excluded middle: "The present king of France is bald".[169] France, having no monarch at the time, could not have had a bald king, but when considered false, the negation posits a hirsute king, equally untrue. Line 7 may be read as a logical analogue: 'Their sapient matter is always already informed'. Just as there is no 'present king', there is no 'sapient matter', whether already or not as yet informed. Before writing it off as poetic license, the oxymoronic juxtaposition of 'sapient' and 'matter' in a line that sounds of fact, is performatively suggestive enough to enlist further logical analysis.

Taken as 'wise inanimate-stuff,' 'sapient matter' poses a problem analogous to the 'current King of France': sapient entities can be 'already informed' but matter is not sapient. Despite Empson's penchant for Eastern mysticism—wherein one might readily imagine 'wise matter'—because the matter in question is distinguished from human beings, the contradiction is sustained, even emphasized. That is, an equally potent gloss of 'sapient' is the character of man, the *homo sapien* shown to lack 'foreknowledge' in the poem. However, a reader who was apt to regard the sentence as nonsense will not, when reading the poem: the apparent contradiction enforces speculation on verbal ambiguity. In other words, the paradox is resolved by surfacing the hidden senses in 'sapient', buried by centuries of technical use. 'Sapient' derives from *sapēre*, a word for 'wise,' but, more readily in the vulgate, for 'having a taste or savour,'[170] sapid, a sense often employed in Renaissance poetry, as in Alexander Hume's "Of every substance sapient, the sapor and the taste".[171]

The poem, however, does not rely entirely on knowledge of such philological arcana. The sense of 'savoury' is imposed on 'sapient' by the word 'sap' in the fifth line of the stanza. There is firstly the visual repetition of sap in sapient; but the image in the fifth line of a bud safely cocooned in sap readily allows a reading of sapient matter as sap-laden matter. Sapient as 'sappy' resolves a seeming contradiction: the sap in the young buds contains genetic information that already tells them how to flourish. Without the perlocutive effect across lines—incidentally a feature exclusive to poetry—'sapient matter' would not have invoked the germ cells in sap, as germ plasm merely contain *information* whereas sapient entails *wisdom*.[172] But the gesture towards sap, the reproductive

[169] Bertrand Russell, 'On Denoting', *Mind*, 14 (1905): 479–493, p. 479.
[170] *OED*; Haffenden has already made the connection to the Italian but draws none of the wider implications presented here.
[171] Alexander Hume, *Of Gods Benefites Bestowed Vpon Man* (published privately, 1599).
[172] The idea of genetic information was mentioned first for recognition, as it is 'germ plasm' that would be more historically accurate [Ernst Meyer, *The Growth of Biological Thought* (Cambridge: Harvard University Press, 1982), p. 700]. However, "modern gene theory nonetheless retained the genetic determinism that 19th century 'germ plasm' theorists relied on to explain the intergenerational transmission of evolutionarily adaptive characteristics" [D. S. Moore, 'Espousing Interactions and Fielding Reactions: Addressing Laypeople's Beliefs about Genetic

fluid of flowers, forces the consideration of a new, more interesting puzzle: why, amongst all species, do the cells of the magnolia, eo ipso, furnish *wisdom*: and prefiguring the discussion of scientific epistemology in the fourth stanza, when does information *become* wisdom? As the magnolias 'in bud / Are right in doing anything they can think of', their very instincts seem unfailingly correct. One explanation is that flowering plants nurture the birds and the bees around them; here, the word 'sapient' almost achieves the condition that Empson described as a 'mutual metaphor' (Type IV equation), whereby two senses are equally imposed by context: the magnolia's matter is 'tasty', and by being tasty, it seems to know how to live and let prosper, making it 'wise'.

In sum, magnolias, by dint of cell make-up, become enviably sapient; miraculously, their texture doubles as architecture both good and beautiful. As to the differences between magnolias and people, it rests on how they each comes to acquire 'wisdom', a concept for which the poem develops intricate distinctions. The couplet, 'The duality of choice becomes the singularity of existence;/ The effort of virtue the unconsciousness of foreknowledge', suggests a definition of wisdom as accord with the universe: so close an identification with the way of the world as to become indistinguishable from it. From stanzas 2 and 4, we gather this much that man before the age of modern science needed effort to discover the noble choice, whereas magnolias have always been right, whichever way their foreknowledge bade, as they are in singularity with existence. The first and last lines of the poem, by ending alike, form a helpful equation. Magnolias 'rise above a vault into the air', the very air into which the god of the first line had dissolved. Whilst the pantheistic god of line 1 is dissolved into existence and indistinguishable from it, magnolias daringly approach that state as they 'rise into the air'.

The god, imperishably 'dissolved' in Nature, and to mind impenetrable, is briefly approachable to the righteous magnolia, the mind of god even knowable, for indistinguishable from its molecules, the 'always already informed' cells with genes coded in accordance with the divine.[173] Such pious regard for the magnolia means we mustn't stretch its signification beyond 'beautiful flower in summer bloom', to avoid an added implication of biological determinism that might reduce the second stanza to a crude Darwinian argument about hereditary information fitting an organism to nature. Empson, in his sympathetic review of the sceptical biologist Needham, said,

> If you are using the scientific method, you must assume that determinism can always be applied to the matter in hand; if however you are not using the scientific method […], then you must assume that determinism does not apply to the matter

Determinism', *Philosophical Psychology*, 21 (2008), p. 335]; also see Lily Kay, *Who Wrote the Book of Life* (Stanford: Stanford University Press, 2000).

[173] Once again, the phrasing of 'genes being coded' is anachronistic; one might substitute 'germ plasm' here, as well.

> in hand. These actions are not conflicting but complementary [...]. [I]f the organism shows purpose in fitting its environment, so does the environment show purpose in being such as can sustain an organism.[174]

The magnolia is chief amongst creation not for its evolutionary 'fitness' but because Nature itself seems to conspire with it to bring about a brief mystical union.

By reserving knowledge of, or oneness with Nature to the magnolia, the second stanza avoids implying that nature has one law, determinism, with which all instinct is in accord or discord. In fact, I would submit that the word 'nature' is meticulously avoided in the poem to prevent these very confusions. In *Complex Words*, Empson compared the English word 'nature' to the Sanskrit 'dharma,' both of which can be made to carry the same orders of meaning: "nature of an individual," and "the universal law of righteousness".[175] He quotes Aldous Huxley:

> The Sanskrit dharma has two principal meanings. The dharma of an individual is, first of all, his essential nature, the intrinsic law of his being and development. But dharma also signifies the law of righteousness and piety. The implications of this double meaning are clear: a man's duty, how he ought to live, what he ought to believe and what he ought to do about his beliefs—these things are conditioned by his essential nature.[176]

Unlike medieval Sanskrit, in English, the order and degree of connection between the senses Mother Nature and an individual's nature has largely been imposed by context; the universe and natural instinct are in Christian civilisation too remote from one another for a direct mutual equation to develop, as, for instance, happened to the word 'law' during the Enlightenment.[177] Such a doctrine, though rarely present in the career of 'nature', is contained, according to Empson, in the poetry of Wordsworth.[178] Following Rousseau, whenever Wordsworth used 'nature', he meant both senses equally—to him, 'the nature of an individual' was unfailingly 'the universal law of righteousness'.[179] A dispute between Rousseau and Augustine, between the normative elevation of the state of nature—the belief that man is born ethical and by society corrupted—and the shadow of Original Sin, is inevitably at play in the poem once magnolia and human ethics are so starkly opposed: it forms the backdrop to the dispute as to whether humanity ought be satisfied flawed or covet the floral boon. In the end, the foreboding tones of lines 18-19 recommend the

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[174] Empson, *Argufying*, p. 528.
[175] Empson, *Complex Words*, p. 69.
[176] Ibid., p. 69.
[177] We shall recall from the previous section (2.1) Empson's example of a 'mutual metaphor': 'there is a sense of *law* meaning both human and divine law', as in the case of 'the laws of this country are underwritten by God'.
[178] Empson, *Complex Words,* p. 70.
[179] T.E. Hulme had in his popular *Speculations* already drawn the connections between the rise of modern science and what he regarded as the final mutation of Christianity into Rousseauian Romanticism (Hulme*, Speculations*, p. 60-61); we also know that Empson had read the *Speculations* whilst an undergraduate (Christopher Norris and David B. Wilson, "An Interview with William Empson" in Bevis, *Versions of Empson*, p. 304).

Augustinian view to human nature. The difficulty of weeding Wordsworth's legacy from the language of English poetry explains why the poem describes neither the world nor instinct as 'nature' though both, at various points, are strongly evoked.

The poem says: mind cannot be both Nature and nature for its nature is to seek Nature; but following that nature, it will never actually find Nature (as the magnolia briefly does). Only a flower in bloom, with colour lovely to behold, sap sweet to taste, seems right and fair to all: as in Shakespeare's Sonnet 94, "The summer's flower is to the summer sweet/ Though to itself it only live and die"[9-10].[180] In his youth, flowers appeared to Empson a serious philosophical puzzle: human nature yearned for everything that flowers flaunted when flaunting was itself an undesirable trait in man. He records once "the source of so vivid a pleasure, of so delicate an impression of character, of so universal an appeal, as is found in flowers".[181] In many ways, "Doctrinal Point" is the climactic episode of Empson's verdurous meditations, what was to Marvel the annihilation of all "to a green thought in a green shade".[182] In Empson's famous exegesis of Sonnet 94, he explains lines 9-10 as, "sweet to the summer (said of the flower), since the summer is omnipresent and in a way Nature herself, may mean sweet to God".[183] The magnolias in bud may 'flare/ Plump spaced-out saints, in their gross prime, at prayer', but as with the lovely youth of Sonnet 94, "moving others, are themselves as stone" [3]. Bewitching all who venture in their mien, the flowers themselves, having attained Heaven's graces, are—unlike the surly saints in their sexual prime, reciting a desperate prayer at catechism—entirely "indifferent to temptation".[184]

A possible pun on the word 'gross' in line 9 to mean 144, customarily articulated as "dozen dozens",[185] might evoke the twelve-year old pubescence of saints sitting in rows of twelve; but we may attach another equally plausible image to the plump spaced-out saints at prayer: of buzzing bees carelessly drifting, until, ensnared by its heady perfumes, dipping prone into the coy flower. Because line 8 is rather clumsily phrased, another interpretation might read the saints as the magnolias themselves, taking 'gross' to signify the 'general' quality of youth. 'Gross' can mean "thick, stout" with a related sense "of a shoot or stalk: thick, bulky,"[186] as in Wesley's "burn to

[180] William Shakespeare, *Shakespeare's Sonnets*, ed. Katherine Duncan-Jones (London: Thomas Nelson and Sons Ltd., 1997), p. 299.
[181] From Empson's notebooks (Haffenden, *Poems,* p. 278.)
[182]Andrew Marvell, *'To His Coy Mistress' and Other Poems* (Mineola: Dover, 1997), p. 25; This line of Marvell's seems to have evoked to Empson a similar dichotomy to that in "Doctrinal Point": "This combines the idea of the conscious mind, including everything because understanding it, and that of the unconscious animal nature, including everything because in harmony with it" (Empson, *Pastoral,* p. 113).
[183] Empson, *Pastoral,* p. 96.
[184] Ibid., p. 89.
[185] (This sense dates back to the 15th century); Steven Schwartzman, *The Words of Mathematics: An etymological dictionary of Mathematical terms used in English* (Mathematical Association of America, 1996), p. 101.
[186] *OED.*

ashes [...] the gross stalks, on which the red Coleworts grow".[187] The Gardners read the 'plump spaced-out saints' as "aptly conveying the posture of the opened blooms, seated on the branches like rows of Buddhas", but identify the problem with their own interpretation: that "the pun of 'gross prime' is tendentious", as "it promotes the implication that the magnolias are well-fed and complacent."[188] The absence of a comma ending line 8, in any edition of the poem, allows us to read the verb 'flare' transitively, which, although unusual, is tolerated by its slippage into 'snare'.[189] It also makes for a more coherent conceit as the comparison of magnolias to saints is not developed further in the poem, whilst being 'saved by their own sap' in the previous stanza immediately suggests an ecological relationship with insects.

Whether seen as saints or bees, the main thrust, with the repeated 'bud,' 'burgeon,' and 'blossom', is their susceptibility to youth. It is the transitory nature of floral appeal that justifies Nature's flagrant favouritism towards the magnolia. Empson describes "the flower in its beauty, vulnerability, tendency to excite thoughts about the shortness of life, self-centredness, and power in spite of it to give pleasure"[190]—possessing these qualities, the flowers 'know no act that will not make them fair'—a line, incidentally, whose elegant iambic cadence, set in a rare rhyming stanza, amidst the rugged tones of disputation, pronounces the hint of Shakespeare. The poem also distinguishes carefully the 'power' of beauty from 'authority'. In his notes for "Doctrinal Point", Empson says, "Man was given authority over all creatures, but this involves much toiling";[191] he cannot hope to exercise dominion over the land and the seas without discriminating between fair and ugly acts. The flower's life "under the power of their own impulses" is sweet to God "so long as they are not in power. [...] This may be the condition of the flower and the condition for fullness of life".[192] Mature or 'rational scepticism', as Max Black put it, comes with a recognition that this 'fullness of life' is a fantasy; unattainable, at any rate, to a race sired by the sinning Adam. This judgement was already passed, we shall recall, in the wistful conclusion to "The World's End":

> Apple of knowledge and forgetful mere
> From Tantalus too differential bend.
> The shadow clings. [13-14][193]

[187] John Wesley, *Primitive Physic or an Easy and Natural Method of Curing Most Diseases*, (privately published, 1773), p.112.
[188] Gardner and Gardner, *God Approached*, p. 144.
[189] Slippage is used in Derrida's sense of signifiers suggesting others signifiers without resting on a signified. It might be worth noting that Empson's method in *Seven Types* [p. 50-51] was inaugurated by an awareness of line-end ambiguity in Shakespeare's sonnets.
[190] Empson, *Pastoral*, p. 91.
[191] Haffenden, *Poems,* p. 278.
[192] Empson, *Pastoral*, p. 94.
[193] See section 2.1 for an analysis of these lines.

The god of "Doctrinal Point" thus selectively bequeaths dominion or grace. Like Sonnet 94's flowers that represent "the full life of instinct",[194] the magnolias in bud "rightly do inherit heaven's graces" [5]. 'Saved by their own sap, shed for themselves', the magnolias might have stood indifferent at the crucifixion—to recall Empson's passing note, 'if you arrive at the point of grace, you no longer require a personal god'. The magnolia's sapience, or Grace, is its oneness with Nature; it needs no saviours from sin or favours from Heaven. Gazing at the flower, green with envy, the lapsed race thus wonders with Spinoza, what it must be to know the union of mind and Nature.

But there is something already quite grisly about freedom 'by predestination in the blood'. It remained a dark mystery to Calvin, how "by the mercy of God, not their own exertions, they are predestinated to salvation" as are "others to destruction".[195] In the second draft of the poem, alluding to Marlowe's phrase, "Christ's blood streams in the firmament", Empson noted, "X's blood in the firmament"[196]—'X' being shorthand for the Christ.[197] That the poem stresses predestination 'in the blood' rather than soul modifies Calvinist doctrine, from the eternal seat amongst God's elect to a transient berth in Nature—we are taking 'blood' as the magnolia's 'sap' because it confers on the flower's destiny the same salvific unction that Christ's blood would have to the desperate Faustus. The apparent contradiction in being freed by predestination reminds us of the worrying equation we identified in Empson's early poems, between freedom and imprisonment.[198] The poem says the magnolia is free to do as it pleases, because its actions are a consequence of foreknowledge and hence predestined to agree with reality. The sympathetic reader will have already begun to regard this condition not wholly desirable.

But the poem swerves carefully between desire and craving. At first, stanza 3 appears to say, from the flaming petals to the blackened branch, that Eros leads to calamity. And although calamity comes ultimately with magnoliaesque automation of human being, in stanzas 4 and 5, delight in the flower's beauty is not itself designated as the font of ruin. The poem imparts this ethical balance by modulating the verbal force in the lines, 'whether they burgeon, massed wax flames/ Or leave the sooted branches bare/ To sag at tip from a sole blossom there'. The grammar of the sentence indicates that the branches were 'sooted' before the bud blossomed, or 'massed wax flamed'. The 'branch' is a metaphor for the fallen world surrounding the flower. Its purpose is to support the flower and generally allow it to flourish. The budding magnolia at the end of a

194 Empson, *Pastoral*, p. 92.
195 John Calvin, *Institutes of the Christian Religion,* trans. by Henry Beveridge (Grand Rapids: Christian Classics Ethereal Library, [1536] 2002), p. 197.
196 Haffenden, *Poems*, p. 279.
197 Price, 'Empson's Einstein', p. 106.
198 See section 2.1.

scorched branch is imaged as a bright flame at the end of a blackened wick. One cannot be without the other, as in Sonnet 73, "In me thou see'st the glowing of such fire,/ That on the ashes of his youth doth lie" [9-10][199]: the flower only seems fair in a fallen world already torched by sin.[200] The word 'soot' brings to mind black, insoluble spots descending from the air—a fall that sets the stage for the flower's rise 'into the air'. The verb 'leave' thus only works actively on 'bare' and 'sag'. And even then, an infected will was already apt to sag; in other words, since the branch was already 'sooted' (in the perfect tense), it is disposed to these attitudes. To imply a causal link between Eros and the Fall, the line would have to read 'leave the branches sooty bare'. But because, as it stands, the flaw is aboriginal to the branch, the culpability of the inflammatory flowers is tempered; the 'magnolias leave branches bare' as, for instance, 'the clown leaves me sad', despite all efforts to delight.

The problem begins when the delicate aesthetic symbiosis between radiance and admiration is displaced by a hope forlorn. A direct line is drawn from the second stanza, where matter becomes form, to the end of the fourth stanza, where empiricism becomes ethics. Wise Solomon is then described as donning the worker's cloth, the 'over-all'. Empson notes, "Man was given authority over all creatures, but this involves much toiling and spinning, as when in over-alls".[201] It is an echo of Matthew, "And why take ye thought for raiment? Consider the lilies of the field, how they grow; they toil not, neither do they spin: And yet I say unto you, That even Solomon in all his glory was not arrayed like one of these".[202] The most regal cope is thus outmatched by the careless lustre of lilies. Calling up this verse, the poem suggests that Solomon's wisdom lay in a life of much spinning and toiling, not in his innate glory. Wisdom from suffering is shown to be more suited to human ethics than always already knowing right. To be sweet to the summer, the flower must 'to itself only live and die'—that is why it 'cannot know of care', the very human struggle to find what pleases others.

Via a routine of images, following Solomon and the lilies, the argument unfolds by recalling once more the Sonnet evoked by stanzas 2-3. Thus, the foreboding end of Sonnet 94, "for sweetest things turn foulest by their deeds/ Lilies that fester smell far worse than weeds" [13-14], looms on the singularity to which we are shown to tend. This is truly a case in which, as Christopher Ricks says about poetic meaning, "the past poem is central to though not coterminous with the poem's

[199] Shakespeare, *Sonnets*, p. 257.
[200] Thus, invoking a common apologia for the problem of evil, namely, that beauty is not possible without its opposite.
[201] Empson, *Poems*, p. 279.
[202] Mathew 6:28, *KJV*.

meaning".[203] "Doctrinal Point" relies on the shared possession of a lyric corpus relaying to imagination the correct vectors of meaning that have crystallised through historic memory. This circumstance, undoubtedly a rift in Norris's theory, surprisingly testifies to Eliot's vision of lyric poetry being involved across time in a sublime semantic entanglement, *sui generis*.[204]

2.2.3 Tautology and Reference

Roughly speaking, the complex mechanism of stanza 4 envisions a telos wherein the full acceptance of modern scientific epistemology brings to pass an abnegation of human mind: knowledge, in other words, annuls know*ing*. Both types of mirror images that we characterised in the previous section are at play in this stanza: sameness in the word 'tautology', and representation, in the word 'tensor'. We will recall that Empson employed the mirror image to question the seeming likeness of that which is mirrored—the manoeuvre is at its most exceptional in this stanza.

The power in the use of 'tautology', in line 14, derives largely from its formalist implication. Because it mirrors itself, a tautology is always true. It is thus the logical obverse of paradox or contradiction, which is neither true nor false. Both violate the cardinal principles of a scientific statement: that (1) it must be capable of being true or false,[205] and (2) its veracity must rest on object conforming to statement. This approximates the basic criteria repeated in important treatises of the 1920s—such as Ramsey's and Wittgenstein's—that greatly influenced the precocious poet. For instance, Ramsey calls empirical statements "genuine propositions" and distinguishes these from "necessary propositions" which are "mere tautology".[206] Russell summarises Wittgenstein's "essential theory" as follows: "in order that a certain sentence should assert a certain fact there must, however the language may be constructed, be something in common between the structure of the sentence and the structure of the fact".[207] On sentences that violate this axiom, Wittgenstein states, because "the proposition shows what it says, the tautology and the contradiction that they say nothing"[208]—by 'nothing', he means nothing sensible about the world. This is because "the tautology has no truth-conditions, for it is unconditionally true; and the contradiction is on no condition true. Tautology and contradiction are without sense".[209]

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[203] Christopher Ricks, *True Friendship: Geoffrey Hill, Anthony Hecht, and Robert Lowell under the Sign of Eliot and Pound* (London: Yale University Press, 2010); Harold Bloom makes an almost identical point in Harold Bloom, *The Anxiety of Influence: A Theory of Poetry* (New York: Oxford University Press, 1973), p. 70.
[204] This is the central argument in 'Tradition and the Individual Talent', in G. Douglas Atkins, *T.S. Eliot and the Essay: From The Sacred Wood to Four Quartets* (Waco: Baylor University Press, 2010), p. 45-58.
[205] We shall recall Richards's definition, 'A statement may be used for the sake of the reference, true or false, which it causes. This is the scientific use of language' (Richards, *Principles,* p. 250).
[206] Ramsey, *Foundations*, p. 4-5.
[207] From Introduction to Wittgenstein, *Tractatus,* p. 8.
[208] Ibid., p. 53.
[209] Ibid., p. 53.

We have discussed at length how by contradiction, line 1 comes to negate its own sense. By referring to physics as 'one tautology', Empson urges the conception of science as a formal system willing the necessity of its own truth: the premonition of its ultimate failure, therefore, already lies in the first line. To make good the charge of tautology, science must be seen as rending phenomena into parts which are each redefined in mathematical terms, and 'discovering' its laws by contriving equations between these mutually agreeable terms. If, for instance, Force is defined as Mass*Acceleration, and M*A always yields F, then law simply states F = F. Thus, in the dystopian future of the poem, validity is internally established, sans reference to the world.[210] This is precisely what J.D Bernal envisioned in his popular essay (1929), predicting the effects of modern science on human morality and physiology: "The manner appears to us as physical law but it may well be found to be a tautology".[211]

The formalist diagnosis of modern physics is in fact highly suggestive of the formalist conception of modern mathematics. In light of Gödel's Incompleteness Theorem, a semantic analogue to the Liar's Paradox,[212] the poem's thesis could plausibly be stretched to query the ultimate truth of both mathematics and physics. Kurt Gödel published his proofs in 1931, four years before "Doctrinal Point" appeared in print.[213] Amidst the early twentieth century rush to firmly establish the foundations of mathematics, Ramsey through atomic propositions, Russell through logic, Brouwer through intuitionism, and suchlike, it was David Hilbert's enterprise that led the charge.[214] Hilbert's dream was a legendary list of axioms, a finite, complete, and consistent set to ground all theories in mathematics. Formalism, as Hilbert's program is chiefly known, requires of its axiomatics only "proof of consistency", disregarding "reference to known acts of experience"[215]—the exact premise that makes physics a tautology in the poem.[216] Alan Weir summarises Hilbert's argument as follows: "mathematics is not a body of propositions representing an abstract sector of reality, but is much more akin to a game, bringing with it no more commitment to an ontology of objects or properties than ludo or chess".[217] Formalism takes mathematics itself, we may say, as 'one tautology', which is one of the reasons why Ramsey's essay

[210] See section 1.2.
[211] J. D. Bernal, *The World, the Flesh and the Devil: An inquiry into the future of the three enemies of the rational soul* (London: Cape, 1970), p. 2.
[212] L. Goddard, ""True" and "Provable"", *Mind* 67. 265 (1958): 13-31, p. 13
[213] Kurt Gödel, 'Über Formal UnentscheidbareSätze der Principia Mathematica und Verwandter Systeme I', *MonatsheftefürMathematik und Physik*, 38 (1931): 173-198
[214] Engelhardt, *Modernism*, p. 11.
[215] David Hilbert and Paul Bernays, 'The Foundations of Mathematics', *Grundlagen der Mathematik*, 1 (1934), trans. by Ian Mueller, p. 3.
[216] Eddington calls it a tautology in *Physical World*, p. 131.
[217] Alan Weir and Zalta, Edward N., eds., 'Formalism in the Philosophy of Mathematics', *The Stanford Encyclopaedia of Philosophy* (Stanford: Metaphysics Research Lab, Stanford University, 2015), online.

attempts to disprove it. But it was Gödel who found definite success. Rendered in the vernacular, Gödel's theorem states, "This sentence is not provable".[218] It showed that "there is an arithmetical sentence G such that neither G nor not-G is provable in arithmetic".[219] And since one heretical statement in arithmetic could never be proven, it followed that the truth of *all* mathematics could never be demonstrated, even if the standard of 'truth' was simply internal consistency. Modelling itself on the Liar's Paradox, Gödel's theorem basically shows that any logical system cannot be proven to be entirely consistent.

Recently, Rebecca Porte has examined the influence of Ramsey and Gödel on the Cambridge poets:

> The kinds of close reading developed by Graves, Empson, and Richards demonstrate the major tenets of logical modernism. They manifest an entanglement with post-Kantian aesthetic discourse (derived from the Cambridge Apostles and their circle) and an anxiety about the terms of truth in literature (especially truth in poetry) relative to the terms of truth laid out by logical positivism. Furthermore, this disquiet culminates in worries about whether the truths of aesthetics and the truths of science and philosophy and those of literature might ever be reconciled in one complete theory of everything.[220]

If news of Gödel's breakthrough had indeed reached the keen mind of Empson, however into the Orient it had by then wended, there emerges an added layer of meaning in the first line. The annulment of formalism by paradox in line 1 (which once anatomised, becomes a direct semantic analogue to Gödel's theorem) sends a strong signal to the formalism of line 14. The allusion, if present, also begs the question, if mathematics, the language nearest perfection cannot be 'one tautology', one perfect system, then what of its sordid cousin physics? But besides these purely logical implications, the signification of 'one tautology' is also engaged in sensuous imagery.

In *The Nature of the Physical World*, Eddington asks us to "examine the kind of knowledge which is handled by exact science". Taking a question from a physics exam, he considers a sentence beginning with "An elephant slides down a grassy hillside […]"

> The experienced candidate knows that he need not pay much attention to this; it is only put in to give an impression of realism. He reads on: "The mass of the elephant is two tons." [...] the elephant fades out of the problem and a mass of two tons takes its place. [...] Never mind what the two tons refers to; what is it? How has it actually entered in so definite a way into our experience? Two tons is the reading of a pointer when the elephant was placed on a weighing-machine. Let us pass on. "The slope of the hill is 60°." Now the hillside fades out of the problem

[218] Goddard 'True', p. 13.
[219] Ibid., p. 13.
[220] Porte, 'An Agreement', p. 10 & 32. The influence of logical axiomatics on continental poetry in the aftermath of Gödel's theorem has been explored in Loveday Kempthorne's PhD thesis, 'Relations between Modern Mathematics and Poetry: Czesław Miłosz; Zbigniew Herbert; Ion Barbu/Dan Barbilian', (PhD Dissertation: Victoria University of Wellington, 2015), p. 172: "Kurt Gödel published his 'incompleteness theorems' in 1931, a year after Barbu published his final collection of poetry".

> and an angle of 60° takes its place. What is 60°? There is no need to struggle with mystical conceptions of direction; 60° is the reading of a plumb-line against the divisions of a protractor. Similarly for the other data of the problem. The softly yielding turf on which the elephant slides is replaced by a coefficient of friction, which though perhaps not directly a pointer reading is of kindred nature.
> And so we see that the poetry fades out of the problem, and by the time the serious application of exact science begins we are left with only pointer readings.[221]

In this vein, stanza 4 throws up an image of a world fast enveloped by 'the linkage of pointer readings with pointer readings' as 'the poetry fades' (Eddington implies by 'poetry' not poems but experiential particularity and ethical complexity). It is, however, in the description of *process*—by which pointer-readings are shown to replace the physical world—that the poem leaves biographical influences like Eddington behind and becomes visionary. Like the "dying star cut off from the rest of the universe" in "Letter 1",[222] in line 17, there occurs a mitosis of sorts which we are now primed to follow.

In lines 14-16, science raises on reality a curtain stitched with abstract mathematical notations, each corresponding to objects in the physical world, as the mass and slope do to the sliding elephant. The process philosophically resembles the doctrine of immanence in the first line—we will recall the 'doubtful word dissolved' which to Empson 'allowed pantheism'. The tautology of modern science, seen as independent from 'Nature/Substance', eerily conforms to Spinoza's definition of Substance, as that "which is in itself, and is conceived through itself".[223] Eddington envisages physics in similarly solipsistic terms: "in science we study the linkage of pointer readings with pointer readings. The terms link together in endless cycle".[224] The poem describes how 'all physics', through its endless cycle of pointer-readings, become one closed system, 'one tautology', a doctrine that *is* and 'is conceived through itself'. We arrive here in the following way. If god is dissolved in Nature, it is coextensive with it. Because only the totality of the one Nature is sufficient reason for itself, anything within Nature, including discourse, is contingent. The comprehension of Nature by any organon—that is, a description congruent to the one necessary Being—is impossible because the contingent cannot reconcile the necessary. Having worked out these implications from the first three stanzas, we reach stanza 4, where physics becomes necessary and *a priori*: 'tautology', as we have explained, does not depend on empirical confirmation. In other words, because Nature remains beyond investigative approach, to achieve the doctrinal point, the discourse of modern physics itself becomes Substance. Thus, magnolias

[221] Eddington, *Physical World*, p. 127.
[222] Price, 'Flame', p. 312.
[223] Spinoza, *Ethics,* p. 6.
[224] Eddington, *Physical World*, p. 260.

attain grace by merger, physics, by fission. Humanity must thereby select which necessary being to occupy: Substance, or the apparition Assumed from Substance. But staring in despair at the shielded flower, as in line 23, we seem wan enough to gamble with the cycle of pointer-readings, the parallel universe of numerical certainty. It is important to note that certainty comes not from empirical knowledge fed into statistical machines, as in the mathematical sociology of Isaac Asimov's *Foundations* trilogy.[225] A physics become tautology is indifferent to empirical data; it is by folding in on itself that it taunts the succour of the 'calyx'. It is not unlike the fear we discussed in the first chapter, amongst philosophers of science in the early twentieth century, that modern physics was fast become theories of theories, not of matter.

So far, we have seen the poem's assertions about god, magnolias and physics hang together coherently. The word 'tensors' in line 15 is the second type of mirror-image (that of representation), which goes on to describe the *process* by which a universe of mathematics prescinds from existence. Critics have all read the word 'tensors' as pointing to its use in Einstein's theory of gravitation.[226] But tensors are mathematical tools that long predate Einstein, who merely adapted them to his theory.[227] The poem demands a reading considerably more latitudinous than delimitation to a single theory will allow. We may begin with Eddington who defined 'tensor' as a "schedule of pointer readings".[228] In the poem, the word, like sap, propels a perlocutionary effect on the Assumption of the description. *What* tensors are is less important to its meaning-making procedure than *how* tensors work, because lines 13-16 are meant to initiate a process, to wit, the transubstantiation of reality into simulacrum.

The *OED* uses Woldemar Voigt's 1898 definition of tensors: "an abstract entity represented by an array of components that are functions of co-ordinates such that, under a transformation of co-ordinates, the new components are related to the transformation and to the original components in a definite way".[229] The clearest exposition of these workings I have found is in Richard Feynman's lectures. Feynman says, in the nineteenth century, tensors were reserved for cases when irregularities in the physical world would otherwise not submit to mathematical description; their use promoted the "feeling that our treatment of physics is complete".[230] Tensors were principally applied in the study of crystals, the most irregular, or anisotropic, of solids. Voigt

[225] Isaac Asimov, *Prelude to Foundation* (London: Grafton Books, 1988).
[226] Haffenden, *Poems*, p. 59.
[227] It dates to the mid-nineteenth century (*OED*).
[228] This is also the only significance that Haffenden places on the usage (Haffenden, *Poems*, p. 280); Eddington, *Physical World*, p. 257.
[229] W. Voigt and G. Chisholm Young, 'Die Fundamentalen Physikalischen Eigenschaften der Krystalle', *Nature*, 58 (1898), p.99.
[230] Richard P. Feynman, *The Feynman Lectures on Physics*, *vol. 2*, ed. by Robert Leighton and Matthew Sands (Boston: Addison Wesley, 1971), online version.

in fact employed tensors to describe *Die Fundamentalen Physikalischen Eigenschaften der Krystalle* [The fundamental physical properties of crystals in an elementary presentation].

When an electric charge travels through different directions on a surface, tensors can be used to calculate the issuing variations in something known as the 'dipole moment'. It is assumed "that for a given direction of the electric field the induced dipole moment per unit volume P is proportional to the strength of the applied field E".[231] The dipole moment is proportional to the electric charge, but differs with every direction of the applied field E. Because the surface of a crystal is highly irregular, the changes in direction are frenetic. To maintain the proportionality P:E across varying directions, a constant α is introduced. The physical nature of P or E is not germane to this discussion. It is sufficient to state that the irregularity or anisotropy of a crystal demands a different proportionality constant α for every direction on its surface. Thus, to maintain P:E, the constant α is divided into 'α_x, α_y, α_z…' for every direction 'x, y, z…'. A crystal of n directions is said to have been "described completely" by the set of all constants (α_x, α_y, α_z….α_n): and this set is termed a tensor.[232] Eddington argues that "by the use of tensors the mathematical physicist precisely describes the nature of his subject-matter as a schedule of indicator readings; and those accretions of images and conceptions which have no place in physical science are automatically dismissed".[233] Because the poem uses the term 'tensor' to symbolise the path that 'all physics' takes, we can substitute the crystal in the metaphor with the universe, seen as, in some ways, the greatest irregular object. The tensor would then amount to a set of constants that accounts for every 'thing' in reality. This set, of constants corresponding to each item in the world, is the bracketed reality of physics that the poem posits. 'There is', indeed, 'no need to struggle with mystical conceptions of direction'.

Line 16 states that laws in the ersatz reality of physics are ratified by their convertibility to the language of tensors, not their purchase on reality. Indeed, if the subject and object of law were not signified by common terms (tensors) thus, physics could not have been called a 'tautology'. There is, however, a pun on the word 'law' that has gone unnoticed. Just as human law implied divine law in the Enlightenment, the phrase 'all law', in the poem, suggests that scientific law in modern times supplants all others, including moral laws. In other words, the descriptive becomes the normative. Commentaries on the poem have not explained how 'one tautology', 'tensors' and 'all law' mutually define one another to synthesize the terminal image of the 'Assumption'. The Gardners, for instance, say "all it [tensor] really means here is a measuring device chosen for its

[231] Ibid., 31.1.
[232] Ibid., 31.1.
[233] Eddington, *Physical World*, p. 130.

suitability to a certain type of job".[234] If this were so, 'constants' would have served better: its colloquial and technical senses are alike, and the reader would not be forced to ignore a dominant sense in mathematics. We, in our reading, have seen that taking tensors to mean exactly what they do explains a range of other activities in the poem: how, for instance, physical laws become tautologies and scientific discourse is cleaved from the world to which it pretends to refer.

It is important to explore the implications of line 16: it reverses the traditional view of scientific law as induced from facts about the natural world; this is already prepared by 'tautology' and 'tensor'. In his review of E.A. Burtt's *The Metaphysical Foundations of Modern Physical Science* (1930), Empson says, the "double stress on order and truth, on the *simplest* rule that covers enough *facts*, is the essence of the scientific method".[235] In other words, scientific laws are, and always have been, functions of mathematizability. What is queer in the circumstance of the poem is that scientific laws have turned into universal laws. Moral laws derived from the 'effort of virtue', imprecise and at times profound, become overwritten by scientific determinism: and the simulacrum legislated by pointer-readings, governed by deterministic laws, thus also becomes peopled by unconscious shades. Unburdened by a duality in choice, man is set free to wander the veil as spectre, always already informed.

As it stands, however, line 16 is unnecessarily ungainly in length; the Gardners muster, by way of explanation, that "lines 15-16 paraphrase this [the science of relativity] circular process, making use, with a pseudo-scientific 'trendiness', of the difficult new relativity term 'tensor'"[236]; and Price heeds the reading: "the poem is making a joke about tensor calculus, the central technique of relativity theory"[237]—both reduce the monumental metaphysical argument of the poem to an application in a single theory. The phrasing, however, properly received, gives us deep insights into Empson's attitudes to poetry. It is useful in understanding the prolixity to isolate its source, which is the word 'they'—the anaphora seems to undermine an otherwise perfect build-up of meaning to the Assumption. If the line had read 'all law becomes the fact that can be described with them', it would have aptly symbolised the reversal that the stanza in any case labours to convey, between the *a posteriori* and the *a priori*. Empson once remarked that despite being induced from observation, theories, in modern physics, had curiously come to be called 'laws', as if first principles of the world: "it is very odd to call your first principles *a priori* when they are latest news".[238] On closer reading, we see that law become *fact* might have better prepared the reading of

[234] Gardner and Gardner, *God Approached*, p. 145.
[235] Empson, *Argufying,* p. 532.
[236] Gardner and Gardner, *God Approached*, 145.
[237] Price, 'Empson's Einstein', p. 106.
[238] From an unpublished essay on Eddington, Haffenden, *Poems,* p. 281.

line 17 as this metaphysical exchange—that is, the latest news becoming *a priori*. But the image of reversal obtains despite the presence of 'they', because the word 'tautology' in line 14 has already declared all physics *a priori*, mirroring lines 18-19, where man himself, fallen from the Fall, inverts to innocence—to foreknowledge of and singularity with the great cosmic drama, whereupon his free will is traded in for a prelapsarian contentedness.

Between lines 14 and 18, the poem repeats thrice, in three lines, various forms of the verb, 'to describe', raising an incantatory lilt that brings to pass the final Assumption of the description. Implicit in shadow raised to Form—that is, phenomenon rendered as noumenon—is the Form's descent to shadow. Considering a kind of Platonic reversal is already operative in the stanza, without 'they', line 16 would have said, moral law, the Idea of the Good, becomes mere 'fact'. As it stands, the presence of 'they' prevents a potential opposition between 'law' and 'fact': the lines simply say, "because 'things' *can* be described mathematically, their mathematical descriptions become the ultimate law which is then thought (somewhat circularly) to determine how 'things' *will* behave"; this meaning is already communicated by the formalist implications of the word 'tautology' in line 14—bringing line 16 closer to redundancy. However, Empson has opted for the cumbersome and less meaningful line: but given Empson's dismissive attitude to visionary poetry, and insistence that his own poems are simply intellectual exercises, it might have seemed to him unseemly to render a mystical vision complete whilst interdicting doctrinal points.

In this vein, we might also inquire into the role of the final stanza, which seems largely superfluous. The 'over-all' of Solomon adds little to 'the effort of virtue', the absence of 'gap' between mind and Nature in the magnolias is communicated adequately—and, indeed, better—by the identification of its architecture with its texture, and the opposition of rainbows and the Heaviside layer seems a trivialisation of the idea of Grace hitherto developed in the poem. The attempt to bookend the poem with a repetition of 'into the air' structurally resembles the dreaded tautology of physics, and perhaps faintly deprecates the poem's own efforts to define terms internally, as it does with 'god', 'air', and 'magnolia'. But as regards the conceit, it adds nothing to magnolias in bud qua Nature. In fact, Empson's notes raise a serious suspicion. "I meant here to compare the cope of heaven which protects the earth [...], the cope of the priest-king that symbolises the protection of heaven, the calyx that protects the growing flower [...], the Heaviside layer that keeps off ultra-violet rays [...], and vaults over tombs under the ground".[239] The notes shed no light on the poem's meaning, and do not appear even designed to; they merely highlight a range of antinomies that Metaphysical poetry can juxtapose. H.A. Mason said that Empson's poems "contain a surprising number of ideas brought together, but brought together, it seems,

[239] Haffenden, *Poems*, p. 278.

only to show that it can be done"[240]—although the observation is quite unfair, it seems rather reasonable when applied to Empson's notes. In "Doctrinal Point", the notes rattle through a single stanza—one with a rather affected scheme of seven consecutively rhyming line-endings. The notes refer solely to the specimen stanza, as if to say, "look how absurd the conceit of this poem is"; and given that the final stanza adds little of importance to the meaning already conveyed, the gamble (one that gallingly pays off) seems to be that the poem will not suffer much when posed as exemplary of a poetic movement.

The formal risks in the poem, however, merit the final stanza another explanation: that the master of a medieval university would be expected to close disputation with a summary peroration.[241] But even this does not acquit the initial charge—one expects from a master's summary a sharpening of insight, not mere repetition. Norris suggests that Empson's "note functions as an extension, almost a genetic stage, of the poem itself".[242] If this were so, Empson might have mentioned the relations of magnolias to human being, the effect of tautologies on ethics, or even what was meant by tensors. Given the rest of the poem's radical ambitions, the note seems closer, as Helen Thaventhiran describes, "to parody, with which it can share a definition: reductive rewording".[243] Observing their mutual arrangement with the final stanza, the notes appear neither genetic nor essential. In fact, the 'genetic stage' of the poem, if it possessed such a thing, lies in the thesis of the first line, which holds in it the activity of all subsequent meanings that emerge. At the level of form, possessing a structure inimical to content, the paradox shows that even the most ambitious of answers—particularly in the mathematical language of science—are incapable of manumitting man from his fallen condition of ignorance (from which the magnolia in bud seems flamboyantly free). And at the level of content, by declaring scientific teleology unattainable, the paradox halts the conversion of fact to law, and the reprobate inference of 'ought' from 'is'. These irregular flashes of illumination, amidst regions of prolixity and profanity, seem almost allowed by a poet writing with much the same insolence as Professor Eddington or Magnolias in bud.

2.3 Conclusion

We have in this chapter attempted to demonstrate the novelty of Empson's epistemology (and, to a great extent, ontology) by drawing upon Buddhism, utilitarianism, logic, and nominalism, amongst others. The Buddhist and Ricardian strains come together against the alluring comfort of

[240] H.A Mason, 'William Empson's verse', *Scrutiny*, 4.3, (1935): 302-04, p. 303.
[241] Novikoff, *Disputation,* p. 141.
[242] Norris, *Philosophy*, p. 5.
[243] Helen Thaventhiran, 'Empson and the Orthodoxy of Paraphrase', *Essays in Criticism*, 61.4 (2011): 382-404, p. 383.

abstract truths; but they are also opposite poles of experience that sublate into the Elizabethan fool, who neither cares to know too much nor stops living. "Doctrinal Point" contrasts the two great themes of his poetry—the Ricardian prescription of being and the Buddhist proscription of knowing: perfect being in the magnolia, and perfect knowing, in mathematics. It posits the latter as a barren and hollow perfection that we seek desirous of the flower's state, wherein being and knowing seem miraculously one.

Empson used mathematical paradoxes and mirror images to work out what bits of the Buddhist scepticism towards knowledge and the European spirit of activity to keep and how best to develop the ideas to come to terms with modern man's predicament. For instance, the poems ask, given the paradox in our physical predicament, to be in a finite but unbounded universe, should we abandon altogether the hope that has lingered since the ancient Greeks,[244] to make all things come together and make sense? In fact, most of Empson's poetic engagement with mathematics seems designed to contend with this very question. The processes by which tensors approximate from irregular substance, and infinity stitches a theory to completion, are examples of how our restless search for final answers makes us inevitably depart from reality. Through mathematical paradoxes, he shows that modern man's attempts, using mathematics, to create a complete and consistent logical system is doomed to failure. And in his use of the differential curve, he finds an arresting image of our eternal consignment to dissatisfaction within a narrow parameter of knowing.

On the whole, the poems seem to suggest that it if one is not born a Shakespearean flower, it is better to be a Shakespearean fool, who simply acts, than trying to know too much, or worse yet, believing one already does.

[244] At least since Anaximander replaced Thales's water-universe with the 'Boundless'.

Chapter 3: Eros: Michael Roberts and William Empson on Sensuality and Love

In the previous chapter, we examined the differences between mathematical and poetic modes of knowing, and the pictures of being that issued from their epistemological processes. Empson's vision prophesied the kinds of large-scale unexpected consequences to thought and being that might result from culture restricting itself to a literal language designed primarily to consolidate our conquest of the material world. Whilst the previous chapter teetered from the sociological to the theological—concerned as Empson's poetry was with preserving ethical deliberation and proscribing 'doctrinal points'—the present chapter withdraws to a topic more particular to poetry, namely, Eros. Having characterised the shortcomings of scientific hubris, we shall in this section ask how poetry can fill the lacunae in numerical reasoning. How, for instance, can sensuality, or sensuous emotion, be re-infused to a modern poetic idiom? And what, for instance, is love in a mathematical world?

There is an element of showmanship in using mathematical language to describe passion and intimacy: this, we shall see, is usually done to create a sense of alienation and dissociation between the poet and his lover or even his own emotion. Michael Wood, reading Empson's "This Last Pain", argues that it is difficult to gauge whether Empson is writing "a love poem" or "addressing himself or the reader".[1] Using mathematics, Empson often manages to make the phantom addressee of his poems, one who dissolves in the face of the poet's cleverness, seem distant to sensual apprehension. Perhaps sensing the cold intelligence behind his Metaphysical poems, Namwali Serpell compares the "Empsonian 'mind'" to a "Head Calculator who makes the analysis without ever forcing a decision".[2] The cultivated, or seemingly calculated, absence of passionate resolution in his poems, however, points deliberately to the anaemic embodiment of a poet operating in a world of abstract symbols. As has been discussed, both Roberts and Empson generally agreed with Eliot's conclusion that the age after the Metaphysicals saw a "dissociation of sensibility" into wit and emotion.[3] Ever since the eighteenth century, according to Roberts, "the language spoken by ordinary people has become more and more capable of expressing 'material' facts, and less and less capable of doing any other work".[4]

To contend with these limitations, as they perceived it, in the modern language, Empson attempted to revive forgotten techniques of seventeenth century Metaphysical poetry, and Roberts

[1] Michael Wood, *On Empson* (Princeton: Princeton University Press, 2017), p. 74.
[2] Namwali Serpell, *Seven Modes of Uncertainty* (Cambridge: Harvard University Press, 2014), p. 167.
[3] T.S. Eliot, 'The Metaphysical Poets', *TLS*, (1921): 669-70, p. 670.
[4] Michael Roberts, 'The Poetry of T.S. Eliot', *London Mercury* 34 (1936): 38-44, p. 44.

exhumed ideas from Renaissance alchemy and mysticism to fashion a language once more capable of conveying ideas through Eros.

3.1 Pent Emotion Recombine with Stranger Matter

As with many twentieth century Metaphysicals, the model for Michael Roberts's poetry is the sensuality of "Donne, Herbert and Vaughan".[5] Despite his measured treatment of philology, Roberts often betrays nostalgia for the English of the Renaissance, for "a prose which spoke not only to the eye and brain but to the senses of touch, taste and hearing. For Donne, prose was nearer to music and to painting or to texture of leaf of carpet than to mathematics".[6] He praises Herbert most highly for his metaphors, in which the "feelings not the measurements are asserted to be congruent".[7] But the seventeenth century also signalled to Roberts the beginnings of decay: the *Leviathan* of Hobbes and the polemics of the Royal Society were instrumental in setting English on a course to pure denotation, to words shrivelling into mathematical signs.[8] In the twentieth century, he says, "we habitually describe in abstract scientific language experiences which would once have been described in more vivid and more sensuous speech".[9] But the "desire for a plain, unambiguous language, in which words have hard, definite values, like numbers, is not new. The scholastic philosophers, for example, had aimed at it, and Dalgarno and Bishop Wilkins had tried to invent such a language in the seventeenth century".[10] Roberts believed, however, that there yet existed the mechanism of seventeenth century sensibility—that could comprehend the whole of experience—buried beneath modern English. The archaeology of that Eros, defined in this section more as sensuous passion than passionate love, particularly in the language of poetry, is the principal design of his poetic and critical works.

In the poetic world of Roberts, knowledge and wisdom emerge from careful attention to the senses. The landscape of his artistic vision in many ways resembles that of da Vinci. The water and rock that background Leonardo's paintings, washing clean all mire and clay, foreground the early verses of Roberts. Walter Pater once said of the Mona Lisa that "she is older than the rocks among which she sits"; "that presence so strangely beside the waters" intimated the wisdom and folly of a thousand generations.[11] Faltering at her knowing look, the poet asks, "Why do you lift

[5] Roberts, *Mind*, p. 88.
[6] Ibid., p. 90; the description seems an extension of T.S. Eliot's phrases, such as "the massive music of Donne", in the well-known Eliot, 'Metaphysical Poets', p. 670.
[7] Roberts, *Mind*, p. 91.
[8] See chapter 3, 'Materialism and Scientific Language' in *Modern Mind*, p. 63-87.
[9] Ibid., p. 93.
[10] Michael Roberts (unsigned), 'Examination of Logical Positivism', *The Listener*, 17 (February 1937): 238, p. 238; Attributed to Michael Roberts by R. Hamilton (T.W. Eason and R. Hamilton, eds. *A Portrait of Michael Roberts* (Chelsea: College of St Mark & St John, 1949), p. 69).
[11] Pater, *Renaissance*, p. 129-30.

the veil and spy/ The thing behind our commonsense? // How can you bear to flay the mind/ of noble lies and brave pretence?" [9-12].[12] The ever-sensible critic seems once to confess that he would not refuse a mystical vision should it ever attend; but remaining unfavoured, he asks of the Lady, "what secret anchorage is yours? [...] What quiet wisdom? Why, O why/ May I not find its counterpart?" [13-16].

In his eagerness to share the burden beneath her eyelids, the poet reveals his own inadequacies. Roberts's poetic visions were often—confessedly so—as irregular as his landscapes; but he also knew of another world: having studied mathematics at Cambridge, and taught it thereon in schools,[13] he admits, "I am only a second-rate mathematician, but I have penetrated far enough to admire the generality, rigour and economy of thought".[14] His religious views on the imperfectability of man—influenced in part by Hulme's reading of Original Sin—were tested severely by a keen insight into the realm of perfect ideas.[15] This was a spiritual struggle that shadowed the poet's life, manifesting brilliantly throughout his works. We showed in our first chapter how Roberts in his criticism denounced modern English for its frigid rationalism, whilst trying paradoxically to make language ever more precise. In his poems, we often find the poet chasing the light of mathematical perfection and ending repeatedly in failure. In the poem "Nicolas Flamel", the titular character invokes the daemon of Socrates to release him from the cave for a glimpse of the Forms: "Come daemon now, uplift the glass/ Reflect the dying candle-gleam,/ And show the images that pass/ Above my black and broken dream" [1-4].[16] The alchemist pursues not gold but truth behind the veil of shadow. Soon after, "these vessels crumble", for "none can hold/ Elixir vitae we have known/ Or grasp the true alchemic gold/ Or touch the substance of the stone" [25-28]. In Roberts's poems, the poet, trading in the transmutation of commonly alloyed words, meets the very fate to which the alchemist is consigned: in defeat lies the recognition of the imperfectability of word and world.[17]

Despite frequent disappointments, the spirit seems once to have favoured his poetic persona, on the bitter and bright summit of "Kanchenjunga". In the thin air of the Himalayas, "God's thought" finally descends and "racks cloud-confusion" [13].[18] The "blank precipice/ grown final. No analysis/ can find familiar footing. Here// All reason ends; ends summer; Time/ In eternal winter, watches, thrall/ To faltering flesh" [14-20]. At the dying end of his ascent,

[12] From 'Mona Lisa' (Michael Roberts, *These our Matins* (London: E. Matthews & Marrot, 1930), p. 13.
[13] Roberts, *Selected prose,* p. 1.
[14] Michael Roberts, 'Credo: A note on poetry and science', *Poetry Review*, 29.3 (May-June 1928): 192-96, p. 193.
[15] See essay on 'Hulme's Speculations' in Roberts, *Critique*, p. 71-85.
[16] Roberts, *Matins*, p. 23 (First published in *Poetry* (Chicago), May 1930)
[17] See chapter 2, 'Humanism and the Perfectibility of Man', *Hulme*, p. 39-56.
[18] Michael Roberts, *Collected Poems* (London: Faber and Faber, 1958), p. 64. (Originally published in *New Country*, 1932)

thought and feeling are wiped clean, and the poet, in desperate delirium, grasps the first and final things. It is an unusual set of circumstances for a poem in the nineteen thirties: beyond the many thirties-poems recording the flight of planes,[19] and the picaresque sublime of late-Georgian verse, the last time a vision so blank in the clouds ended a lyric, an Irish Airman had foreseen his death in World War I. It is not the kind of poem one expects from a mathematics teacher of a secondary school;[20] but Roberts was no mild-mannered intellectual: at university, for instance, he would cross borders into France and Italy looking for brawls with Fascist guards.[21] Janet Roberts said of her late husband, "Michael's life […] was lived in a heroic temper".[22] The philosopher Quinton even calls him an "unusually muscular intellectual".[23] Justifying the activity of mountaineering, Roberts once said, "Man can preserve his dignity only by showing that he is not afraid of anything, not even death".[24] It is clear that his frequent disappearance into hostile country was more than pastime. "Kanchenjunga" begins, "Harsh hills be comfort" [1].

The medium of poetry, in which the jagged rocks of mountainsides can be invested with rivalling intricacies in meaning, became for Roberts an "answer to the unanswerable questions: the recurrent 'why' to which our science gives no answer. Poetry […] rebuilds the shining world that is for ever falling, for ever tarnishing. It reveals the world, it does not number it".[25] Unease about society's fixation on rational thought, logical order, and material advance seems to dog his views on almost any contemporary subject. Taking a random example, Roberts's review of Empson's *Pastoral* begins, "The prestige of physical science, the natural laziness of human minds, and general ignorance of the difficulties implicit in word 'meaning', all combine to form a mistaken and dangerous conception of the scope of language"—although all this is quite tangential to Empson's work, Roberts makes it seem like the central message of the author.[26] Roberts believed language, messy and complicated, could unlike the pure symbols of mathematics illumine the 'tarnished world' brightly in its fall. Although he thought mathematisation beautiful, practical, and even vital, he found it offered but a faint grasp of things—in its procedures he recognised a seductive precision that possessed the powers to set the just use of faculties off-kilter. This is roughly speaking his critique: Eros—passion and emotion—untended by the accurate-minded, had in modern times ballooned to vague immensities or shrivelled to wisp. "Among non-scientists", he

[19] See chapter 'High Failure' in Cunningham, *Thirties*, p. 155-210.
[20] Grubb, *Roberts*, p. 1-2.
[21] Ibid., p. 1.
[22] Janet Roberts, 'Introductory Memoir' to *Collected Poems*, p. 17.
[23] Anthony Quinton, "Introduction" to Michael Roberts, *T.E. Hulme* (Manchester: Carcanet Press, 1982 [1938]), p. i.
[24] Michael Roberts, 'Poetry and the Humour of Mountaineering', *The Alpine Journal*, 52 (1940): 22-33, p. 33.
[25] Qtd. in *Collected Poems,* p. 17-18.
[26] Michael Roberts, [review of William Empson, *Some Versions of Pastoral*], *The Criterion*, 15.59 (January 1936): 345-48, p. 345.

says, "the commonest attitude of our time is a materialism, a belief that 'matter' is an ultimate reality, a neutral substance whose motions 'cause' all thought and feelings".[27] Roberts wishes to purge this belief, and confer on poetry a central role in the renewal of civilisation. Given a more latitudinous definition of 'science', as an accurate take on the nature of things, Roberts hoped to make of poetry the science of experience. He says,

> The physicist and chemist have been very successful within certain limits and to a certain degree of approximation, in forecasting future events in the world of measurement. […] In practical experience, however, things which cannot be measured are quite as important as measurable quantities, and the assumption that we can forecast the behaviour of the world of people and of living things by similar laws and concepts is not necessarily valid.[28]

He even attempts to invest poetry with the rigours of scientific method: "scientific method is no more uniform and scarcely more easily described than is poetic method".[29] In the *Critique of Poetry,* he says, "the fullest appreciation of poetry or of any art may require as much training and effort as the appreciation of mathematics, and the effort is justified by the additional delight".[30] One can't help but get the feeling that Roberts, perhaps unbeknownst to him, saw poetry as a kind of panacea.

There is a pattern to his intellectual heroes, William of Ockham, Campanella, Pascal, Hulme, amongst others.[31] Like Roberts, they all begin as students of science, mainly mathematics, and sense in formal description a vital lack—a pretence to perfection perhaps only visible to the mathematician—and proceed in their careers to devalue abstract knowledge. He says, for instance, "Pascal, who began as a mathematician, ended by doubting the adequacy of the kind of reasoning that is used in logic and in mathematics".[32] A similar shift in attitude animates the poem, "North Country 1929". The poet rejects the faint "water-colour in these hills/ Inadequate and pale" [1].[33] Just as representation in water-colour lacks the heavy tones of oil, the world through layers of academic knowledge appears to the poet insubstantial—as much so as it had to Campanella the friar, who, under the spell of Telesio,[34] had rejected the Aristotelian orthodoxy of the Dominicans, declaring allegiance only to *Philosophy Demonstrated by the Senses*.[35] "This is a futile sketch the world

[27] Michael Roberts, 'Science and Human Temperament', *The Adelphi*, 10.6 (September 1935): 381-82, p. 381.
[28] Michael Roberts, 'The Mathematic Way', *The London Mercury*, 32 (June 1935): 178-79, p. 178.
[29] Roberts, 'Mathematic', p. 179.
[30] Roberts, *Critique*, p. 58.
[31] Roberts was on the fence about Hulme's value in *Critique of Poetry*, thinking Hulme depended too much on the visualisation in poetry (Roberts, *Critique,* p. 49). But as he became more religious, he began to forgive the master's inconsistencies and view him more as 'prophet' than philosopher (Roberts, *Hulme*, p. 12).
[32] Roberts, *Hulme*, p. 11.
[33] Roberts, *Matins*, p. 45 (First published in *Poetry Review* May-June 1929)
[34] Telesio is mentioned in another poem in the same collection—'The Goldfish' (Roberts, *Matins*, p. 50).
[35] Title of his 1592 work, in which he affirms the philosophy of Telesio.

rejected,/ Crumpled with no compunction. Once I saw/ White towers and a roof of gold,/ City of Campanella known" [5-8]. As Aristotle had been to the early scientists, the empiricism of Telesio come full circle, it is the mathematical science of the modern world that now obscured the clarity of vision.[36]

Throughout his career, Roberts tried to counter the modern extreme of what he believed has perdured "the whole history of human thought", namely, "an attempt to split up experience into a geometrical byzantine mosaic, to substitute for a continuous flux of experience an orderly system of discrete particulars".[37] But unlike Lawrence, for instance, who intervened in a similar manner against rational modernity, Roberts found value in order and precision, not just in animal heat. He paraphrases Hulme sympathetically as saying "poetry is a *sensuous concrete* language that forces the reader to feel the thing described as if it were actually present […] It is a kind of algebra in which the x's and y's are not changed back into physical things till the end of the process" [emphasis mine].[38] Roberts found in poetry the ability to hold the drama between the whole and its parts; he saw in the hermeneutic circle of the poem a faithfulness to experience that lay beyond the part-by-part recovery of the scientific method. The "unparalleled precision" of mathematical description, he says, applies only to "those parts of experience about which the widest agreement can be established, i.e. measurable things".[39] Be that as it may, another mood would at times compel him to exalt the glories of mathematics: of Maxwell's equations, wrought from vague mounds of experimental data, he says "the precision, elegance and generality of his theory caused it to be accepted by mathematical physicists as one of the most beautiful products of the human mind".[40] Just so, mathematics stands in ambivalent tension to Roberts's poetry: its concepts and symbols are both admired for their precision and feared for that reason.

The relationship between mathematics and poetry in the works of Roberts is almost completely forgotten, which is to be expected, given his work in general is mostly neglected. Samuel Hynes reduces Roberts's importance to his having "persuaded the public that there was a left-literary movement, a school of Auden".[41] Hynes praises Kathleen Raine's essay on Roberts,

[36] Whitworth makes an analogous connection between modern physics and the Aristotelian world in his reading of 'The Goldfish': "It seems that besides being an Einsteinian universe, the bowl also represents the medieval Aristotelian universe, which was a series of concentric spheres" (Whitworth, 'Community', p. 269.)
[37] Roberts, *Critique*, p. 93.
[38] Roberts, *Hulme*, p. 66 (Roberts is discussing Hulme's *Speculations*); See 3.1 for a discussion of similar analogies between poetry and algebra in the period.
[39] Roberts, *Critique*, p. 84.
[40] Michael Roberts, [review of James Clerk Maxwell 1831 - 1931], *Time and Tide*, 8.5 (January 1932): 126 & 128, p. 127.
[41] Samuel Hynes, 'Michael Roberts' Tragic View', *Contemporary Literature* (University of Wisconsin), XII.4 (1971), p. 437.

which similarly placed him in the nineteen thirties milieu of Auden.[42] Jason Harding also stresses Roberts's politics, arguing that his importance is more as compiler and critic than poet—in fact, Roberts is mostly remembered today as an anthologist.[43] Penny Bradshaw says, Roberts "is an important figure within the thirties context", of which Auden was "the unofficial leader".[44] But her essay also falls in the other category of Roberts criticism, if such a paltry number can at all be grouped—that of mountaineering. Valentine Cunningham also explores Roberts's mountaineering poems in his tome, *The British Writers of the Thirties*.[45] The importance of mountains to Roberts's poetry was first expressed by Janet Roberts in her introductory memoir to the *Collected Poems* (1958).[46]

The stereotypes of the "editor" and "thirties poet"[47] are disputed in Whitworth's thesis; in the growing literature and science field, this is in fact the only one serious treatment of his poems, which is itself not published. The present work will attempt to demonstrate that Roberts's poems should be afforded a place central to modernism and science studies, more so as regards modernism and mathematics, not only because scientific and mathematical metaphors pullulate their lines, but because they bring the rational and emotional world wholly together into a seamless one. Eros, or sensuous emotion, is infused through mathematics, mountaineering and language, with almost neurotic consistency and precision, whereof it is our present task to anatomise.

Roberts "outlined the idea that modern prose emphasises sight and touch because it is derived from the scientist" says Whitworth, "and contrasted it with the prose of Lyly, Nashe and Sidney".[48] But Whitworth also argues that the early poems of Roberts, until 1936, failed to match his sixteenth and seventeenth century models, becoming at times overwrought, almost Baroque. He describes the early poems as "dense", and "knotted"[49]: "Roberts' scientific allusions become too compressed to be comprehensible without reference to external texts. When these texts are brought in, the web of information extends exponentially, and the permutations of meaning increase uncontrollably".[50] In many poems from *These our Matins* (1930), for instance, or the first few from *Poems* (1936), besides the attitude, which becomes soon familiar, the serpentine syntax

[42] Hynes, *Tragic View*, p. 448; Kathleen Raine, 'Michael Roberts and the Hero Myth' in *Penguin New Writing* 39 (1950): 84-98.
[43] Jason Harding, *The Criterion: Cultural politics and periodical networks in inter-war Britain* (Oxford: Oxford University Press, 2002), p. 159-163.
[44] Penny Bradshaw, '"Living at Our Full Compass": Michael Roberts and The Poetry of Mountaineering', *The Alpine Journal*, 116 (2012): 229-237, p. 230.
[45] Cunningham, *Thirties*, p. 165; See also Abbie Garrington, *High Modernism: A literary history of mountaineering, 1890-1945* (forthcoming).
[46] Roberts, *Collected Poems*, p. 18.
[47] Whitworth, 'Community', p. 248.
[48] Ibid., p. 253.
[49] Ibid., p. 277.
[50] Ibid., p. 286.

and thorny semantics do at times seem needless. However, I shall in this section attempt to show that the early poems, from "Mona Lisa" (1927) to "Earth, Impact" (1932),[51] were meant to be comprehended as a subsisting whole—that is to say, although each poem is individual, meaning develops across the corpus by gradual modification of language. He writes, in 1929, enviously of the novelist who, unlike the poet, did not need to depend on "words as they exist in his reader's mind" and could instead build "up those symbols he intends to use: he takes words coloured in the reader's mind by individual experience; he enriches them by use in context after context until they possess for the reader the exact significance the writer wishes".[52] Roberts is not abashed to attempt the feat in his own collections, despite this perceived limitation of verse.

The dictional similarity in his early poems is so profound that words acquire almost the quality of private language that Empson attributes to Milton,[53] as if the poet is trying to undo the damage of three hundred years in the span of a decade. Once these words with their conceptual valency are bombarded on the reader over the course of many poems, the knottedness in diction and syntax begins slowly to dissolve; the references grow less to external texts and more to an internal semantic web. Roberts does not cease developing these linguistic themes in 1932; but the fervour of meditation on a narrow range of words is at its most intense in our period of focus. By 'meant to be comprehended' I do not insinuate hubris—that his poems should be accessible only to the devout reader of his collections. The period identified was simply one of fascination with a peculiar formation of signifiers and signified, which Roberts, almost as a lapidarist, took for his quarry. Roberts argues that

> Language […] shows an amazing intricacy which is useless to the traveller until he identifies a few landmarks. Definitions, like compass bearings, are useless until we determine a number of fixed points, our fundamental terms […] Even tautology is not valueless if it serves to focus attention on one selected region of experience.[54]

The traveller in his poetic realm is likewise expected to find her bearings without key or north pole; one uses words as landmarks—and often they are literally landmarks, mountains, rivers, hills—and begins gradually to be oriented until the whole terrain is embossed on the unconscious mind.

To manage this argument, or method of criticism, I shall divide the lyric corpus into word-clusters. Each shall contain a set of words that are related by and symbols of a common weltanschauung. I aim to show that the repeated use of terms across contexts sharpens concepts and carves for each a unique semantic niche, which may overlap with others, as much so as entire

[51] These dates refer to when the poems were composed (Michael Roberts, 'List of Verses', copy in possession of Michael Whitworth; the original is located in *National Library of Scotland*, acc. 13145/53.)
[52] Michael Roberts, 'Broceliande, or the Future of the Past', *Poetry Review*, 20.1 (Jan-Feb 1929): 43-50, p. 44.
[53] In reference to Milton's uses of the word "all" in *Paradise Lost* (Empson, *Complex Words*, p. 101)
[54] Roberts, *Critique*, p. 21.

word-clusters may, but their extent and limits become accurately identifiable upon completion of this exercise. In order to accommodate this enterprise—to focus intently on the development of words across an oeuvre—I shall not be able to offer a coherent reading of a whole poem; although across the chapter, there will form near-complete readings of a few poems, such as "Perspective", "Earth Impact", "Artificer in Torment", "Note on θ, Φ and Ψ", and "Nicholas Flamel". More than providing an authoritative reading, the chapter aims to provide tools for the perspicacious reception of a poet who is hardly read.

Roberts says, "All distinction is arbitrary, but we must draw the line somewhere. You can draw it at all sorts of distances and all sorts of angles, but you cannot draw it to infinity. For distinction is valid, at the best, for all known experience, never for all possible".[55] In the poems, semantic fields are delimited by word-clusters through measured signification. This is not, of course, done to reduce words to the signs of mathematics, but for a more intensive and extensive engagement with said arcs. Even the concepts from science and mathematics are infused with poetic ambiguity. Roberts recognises that scientific words, though unreasonably exact, are themselves matured by intercourse with history: ""Truth' in the sciences is like an animal or a plant, not like an atom or a building; it includes an internal impulse towards adaptation and growth".[56] It is under this organic conception of science that Roberts would make modern poetry the science of experience.

Roberts wholly identified the state of mind in mountaineering with that of writing poetry and began to see language itself as harsh terrain.

> Words have their history, their interrelations their familiar associates; they have latent meanings that can be evoked through their context […] they can be used to express the complexities of a world that is neither 'one' nor 'many' but an intricate landscape with features distinguishable, yet merging into each other.[57]

In his repeated description of language as 'landscape', Roberts shows that he felt for the pebbles and rivulets that throng a landscape much the same awe as for the dialectical forces of history in the humblest vocables. But as in "Kanchenjunga", we see that he also sees nature, beyond its impossible complications, at moments come pulsating as one. In his poems, Roberts shows nature variously as infinite and whole: the intricate bricolage of words builds to a monument of 'known experience'. Reacting against one another and the structure of the poem, words, like gemstones, are thus finely refined. He says, "if we are to talk to another satisfactorily, we must use words which affect speaker and listener alike. The chemist and physicist have found such words: sodium,

[55] Roberts, *Critique*, p. 19.
[56] Roberts, *West*, p. 126-27.
[57] Ibid., p. 148.

chlorine, centimetre, inductance; these words are objective and definite enough for practical purposes".[58] With the impurities of *prima materia* corroded, and confusion cleared from the baseness of speech, if the formula is fortuitous, it shall, or so Roberts believed, become the mystical vision in the hills, the true poem. But this, he knew, was beyond control: "anyone who has ever written any poetry will admit that, after a period of conscious preparation and unsuccessful effort, a poem (not always the poem that the writer intended) sometimes begins to write itself".[59] With ultimate success thus given to chance, Roberts found his immediate task was to chip away at words and wait.

3.1.1 Sureness

The first cluster appertains to sureness. Words in this set are 'perfection', 'precision', 'fact', and 'cause'. In the poem "Midnight", the poet says, "I held my hands to heaven/ To hold perfection there" [13-14].[60] 'Perfection' is here a fiction requiring the artificial stoppage of time: "But through my fingers streaming/ Went time" [15-16]. 'Perfection', in other words, is sought to cope with constant change. In "Nicolas Flamel", the poet asks, "Where is the soul's perfection? Where/ Shines the clear lamp of Lully's mind?", and proceeds in the imperative, "Show me the water, earth and air,/ And fire's quintessence unconfined!" [21-24]. Finished with the temporal world, the alchemist scours the shifting elements for the faintest residue of eternity. He realises, we have seen, that 'none can touch the substance'—the alleged constant beneath flux.

Always the nominalist to supra-temporal universals, whether in concepts or words, Roberts says, "the collective noun has become an abstraction and its field has changed in the process. Critics, and even poets, set out to define the abstraction, forgetting that it may not be a single positive quality at all"[61]—we may regard the 'substance' of "Nicolas Flamel" as such an abstraction-without-reality. In "Lovely Immortal", 'perfection' is even personified, "darling perfection, whom I scorn,/ Lie sleeping, sleeping, softly now!"[62] The poet thus banishes her to the dream-world, though at the end, he says, "You'll turn and leave a wreath to lie/ Where I have made my bivouac/ Under a black and broken sky" [18-20]. Here abstract perfection is not repulsed, as a severe nominalist might; the poet shows in the image of the wreath that the pursuit of heavenly perfection is what delights an otherwise gloomy prospect. Roberts finds this complex stance in Hulme, whom he paraphrases as saying, "Man is fundamentally and inherently imperfect:

[58] Roberts, *Critique, p. 17*
[59] Michael Roberts, 'The Source of Poetry', *The Spectator* (November 1937): suppl. 14 & 16, p. 14.
[60] Roberts, *Poems*, p. 43 (First published in *Fellowship* 1929)
[61] Roberts, *Critique*, p. 63.
[62] Roberts, *Matins*, p. 16 (First published in *Adelphi* 1929)

he can apprehend perfection, but can never attain it. Man's apprehension of perfection gives him a right and necessary aim in life; but the aim is unattainable".[63]

The ambivalence introduced in "Lovely Immortal" extends through this cluster. Let us take the word 'precision'. In "Johann Sebastian", the poet chides "some fool precisely playing Bach" [15],[64] but in "Note on θ, Φ and Ψ", "while I, maybe, precisely seize/ the elusive photon's properties" [16-17].[65] Whilst the poet seizes a fact precisely, his lover will "pause a learned hour [...] neatly to annotate" [13, 15]. As opposed to the classicist's recondite and laborious annotations, it is clear the poet sees his precise seizing as an act of clever intuition. "Precision is necessary clarity", he says; "precision is a quality which will characterise the work of a good writer whatever his attitude may be".[66] Holding precision in high esteem, as we discussed in chapter 1, is not an uncommon attitude for a second-generation modernist: Roberts says, "In those Romantic poets who exalt emotion above intellect, the words 'vague', 'immense', 'infinite' are used as commonly and with as much enthusiasm as intellectual poets use the words 'precise' and 'strict'".[67] Precision is indispensable when vying for authority with science, but at the same time, Roberts holds that the kinds of precision found in formal language must be kept at bay for poetry to tell its own truth. This position is developed in his use of the word 'fact'.

In "Note on θ, Φ and Ψ", the poet belittles science, calling it "one small world of fact" [9]. This is an attitude typical of the Roberts's writings. The lamentation in "Credo" (1928), of a reduction in the field of truth to mere fact,[68] continues to be expressed until *Recovery of the West* (1941), where Roberts testily states, "[I]f we refuse to make use of any experience save that of the five senses [...] and ascribe no meaning to statements about other kinds of experience, it is obvious that in so far as 'statements of value' are not 'scientific' they are not 'statements of fact'".[69] The word 'fact' is here used to signify 'something really present', from whose remit he laments the exclusion of value. That is why we may not say that Roberts wanted, in a Yeatsian or Lawrentian fashion, fact discarded for muscle. To the contrary, he reasonably points out through his rhyme schemes that most activity is not possible without mind separating fact from fiction. In "Perspective", there is a rather elegant stanza, "But mind in action is machine/ Quarrying stern and stubborn fact;/ In rhythmic pulse and discipline/ It shapes the firm and final act" [13-16].[70] It is plausible that most actions require that mind first figure things out about the world; but lines

63 Roberts, *Hulme*, p. 42-3.
64 Roberts, *Poems*, p. 53 (First published in *There our Matins*, 1930)
65 Ibid., p. 56 (First published in *New Statesman* 1935; written in January 1931 ('List of Verses'))
66 Roberts, *Critique*, p. 86.
67 Ibid., p. 93.
68 Roberts, 'Credo', p. 94-5.
69 Roberts, *West*, p. 129.
70 Roberts, *Poems*, p. 47 (First published in *Poetry Review*, January- February 1930)

15-16 sell a rather difficult proposition that disciplined rational thinking also has rhythm and pulse. He repeats the rhyme between 'act' and 'fact' in "Earth, Impact": "volcanic act;/ All contact, observation, cuts/ Clear shell to sharp projecting fact" [2-4].[71] Parallel to "Note on θ, Φ and Ψ", in which the 'world of fact' was a "dark and igneous rock" [11], the scientific mind erupts here like a volcano, casting and recasting its surrounding world: in these lines, Roberts achieves perhaps the most succinct description of science, particularly with the words 'contact, observation' which capture perfectly the experimental preliminaries of the scientific method. 'Fact' here is much richer than in "Note on θ, Φ and Ψ". Like rocks jutting from the mountainside, 'facts' are the most stolid assertions of reality. Unlike the Greek *physis* who "loves to conceal herself",[72] or Earth, her avatar in German metaphysics, who goes invisible to project World,[73] matter in Roberts is not entirely coy:[74] he sees the whole scientific enterprise, its success and importance, as owing to the declarative presence of what physically is. Staring at the colossal mountain, he says, "Stand up, unconquerable fact" [2].[75] Perhaps what is least convincing about his equations is the idea that the intellection behind science is like a volcano; we might be convinced of this metaphor in specific cases, Newton, say, or Maxwell, but not as regards the average white-coat. But 'fact', we have seen, extends beyond science proper to any careful observation of reality.

'Fact' in the poems slips from its rigid sense in science and analytic philosophy. Logical positivism had tried to reduce legitimate language to statements of a factual or verifiable nature:

> Its treatment of 'meaning' is severe: it refuses at present to pay any heed to any elements of tone, association, or suggestion in language which cannot be reduced to simple equivalents. The historical aspect of words and concepts must therefore be ignored. Language is regarded as a set of counters, rather than a tree.[76]

Roberts's poetic uses of 'fact' may be seen as a directed—and we shall see such instances recurring throughout the poems—mode of lexical re-appropriation. As 'fact' is thus fleshed, the restrictive and deadening qualities of mathematical representation begin to be concentrated in the word 'cause'. The elusive, "feint, the sudden pause,/ the cobweb touch of terror" is "cause/ Unknown" [3-5]. The lines display a central principle in the poems: spontaneous emotion defeats the causal scheme.[77] Beyond the linear world of "stubborn fact" [14], "we have impulse uncontrolled/ And

[71] Roberts, *Poems*, p. 62 (Written in February- April 1932 ('List of Verses') and later published in *Poems*, 1936)
[72] From Heraclitus's fragment 123 (Heraclitus, *The Fragments of the Work of Heraclitus of Ephesus on Nature*, trans. and intro. G.T.W. Patrick (Baltimore: N. Murray, 1889).
[73] See Martin Heidegger, 'Origin of the Work of Art' in *Off the Beaten Track*, trans. & ed. Julian Young and Kenneth Haynes (Cambridge: Cambridge University Press, 2002), p. 1-54.
[74] The "fact" must be understood as an outcrop of a much larger body of truth that remains concealed, which science leaves unrepresented.
[75] From "Kanchenjunga".
[76] Roberts, "Positivism", p. 238.
[77] From 'Prelude: It is the first Susurrus' in Roberts, *Poems*, p. 59 (First published in *Adelphi*, June 1932).

joy not marked on causal map" [7-8].[78] Even the physicist is forced to re-consider causation, in "Rocks Are Immutable", when dealing with the spontaneity of electrons: "Gripped in what causal schemes/ Endures each casual atom what/ When one perchanced electron screams/ A stuttering signal, and is not?" [5-8].[79] Roberts explains, it is "impossible even in principle to determine the position of an ultimate particle without disturbing its velocity by an indeterminate amount, for every observation is an activity"—once electrons escape the atom, we must "abandon 'causes' altogether".[80] There could even be a sensual effect intended by juxtaposing 'causal' and 'casual' so closely: to rehearse visually—in the forward jump of the 'u'—the subatomic movement of the particle readying itself to wriggle free. The poem almost taunts the measurement-minded: a 'signal' is the one quality an electron offers for measurement, for it cannot be weighed on a scale. But in the loosening grips of the causal mesh, spitting out a final number, it bids adieu.

3.1.2 Hardness

The world of facts is related to a second cluster pertaining to hardness. Hardness is to be understood in the geological sense of a state and a becoming, compassing the words 'rock', 'compact', 'hard', 'jagged', 'frigid', 'stone', 'embalm', and 'congeal'. We do not include mountains because they mean too much to the poet and cut across many clusters. Whitworth observes:

> As Roberts recognised, mountains provided 'metaphors and similes for a dozen different situations'. Among these was science: the vocabulary used to describe scientific endeavour overlapped with that of mountaineering. Mountains could serve 'as symbols of the spirit', but they had an undeniable materiality: they were essentially 'masses of rock and ice which are hard to get up'. They become for Roberts symbols of materiality and inescapable 'thusness': symbols that deny being symbolic. The best writers were impressed by their thusness, and wrote 'terse and direct' impersonal writing. Such writing resembles scientific writing.[81]

We shall recall this undeniable materiality expressed in "Kanchenjunga" as 'unconquerable fact'. And in "Rocks are Immutable", rocks become the visible manifestation of our Democritean foundation, of 'atoms gripped in causal schemes'. The poet seems to imply that the very idea of atoms, as basic units of matter, as hard and unbreachable, derives from the common experience of rocks as the secure base, the *terra firma*. "Rocks are immutable and hold/ No scope for self-aggrandizement,/ Each well-worn pebble churned and rolled/ Suffers a like predicament" [1-4].[82] A rock is thus the object nearest in daily experience to the physicist's substance. By 'self-

[78] From 'Perspective'
[79] Roberts, *Poems*, p. 49 (Written in August 1929 ('List of Verses').
[80] Roberts, 'Temperament', p. 381. For a longer discussion of Indeterminacy, see sections 1.2 and 2.1.
[81] Whitworth, 'Community', p. 272; sources of Roberts quotations: Roberts, 'Mountains as Metaphor', *The Spectator* (1935), p. 16; Roberts, *The Spectator* (1936), p. 1090.
[82] From 'Rocks are Immutable'

aggrandizement', the poet implies potential for changing aspect and signification. The words 'stone' or 'marble', as we shall see, held for Roberts a latent potential for expressiveness, as materials usual to sculpture or monument. But rocks signify for Roberts what Whitworth calls that 'inescapable thusness'. They were stuck, in a predicament, in the rocky state; broken to smaller pieces, they would still be rocks. They in some ways exemplify Aristotle's first predicament of 'substance': that which is not predicated by any quality, what simply is.[83]

'Rocks' and 'boulders' are used almost synonymously, with the slight difference in 'boulders' that suggests magnitude, both in terms of size and divisibility: "stubborn boulders/ set in rubble hunch their shoulders".[84] This downward tending earthenness and refusal to animation makes them immutable like 'fact', implied in the negative sense of dogma. They can be *destroyed* by mining, as in, "Rocks and boulders are abolished/ Under engines brightly polished" [13-14], but never *moulded*. An engine breaking off stubborn boulders is akin to, we shall recall, 'mind in action is machine/ Quarrying stern and stubborn fact'—the 'irreducible and stubborn facts' of William James, almost like Kuhnian paradigms, need new facts and minds as powerful as engines to collapse them. Although the final form of fact is hard, it must be remembered that even rocks are results of metamorphic and sedimentary processes. This subtlety of rock-history becomes tied explicitly to the scientific process, as seen in the phrase, "one small world of fact […] compact/ Within the dark and igneous rock/ Of *Comptes Rendus* or *Proc. Roy. Soc*" [9-12].[85] When the rock identified is volcanic, it is designated to hold the memory—as in lava cooled—of intense activity. The vigour of scientific discovery goes stiff in the pages of scientific journals, '*Comptes Rendus* or *Proc. Roy. Soc*'.[86] One might imagine here the mystical vim of Newton's musings on the occult beaten into the dogma of gravity by the likes of Samuel Clarke of the Royal Society.[87] In this way, even the symbol of rocks allows for movement and change diachronically. This is connected to Roberts's views on the nature of good science: Janet Roberts says, "in his view of knowledge as a constantly changing pattern, I think Michael owed much to his training in science; certainly his sympathies were with the empirical thinkers like Roger Bacon rather than with the system-builders like Aquinas whose tightly-woven doctrines left no loophole for admission of new fact".[88] In "Earth, Impact", we shall recall, "Outcrop basalt" is modified by 'volcanic act' and 'projecting

[83] Aristotle, *Categories and De Interpretatione*, trans. & ed. J.L. Ackrill (Oxford: Clarendon Press, 1963), p. 2a12.
[84] From 'Les Planches-en-Montagne' in Roberts, *Poems*, p. 50 (First published in *Poetry Review*, January-February 1930)
[85] Roberts, *Poems*, p. 56.
[86] From 'Note on θ, Φ and Ψ'
[87] In reference to the less subtle representations of Newton's ideas by Samuel Clarke in his correspondence with Leibniz; see Ezio Vailati, *Leibniz and Clarke: A study of their correspondence* (Oxford: Oxford University Press, 1997), p. 17 & 30.
[88] Janet Roberts, 'Introduction' to *Poems*, p. 30.

fact'. Its original title was "Earth Activity", announcing the fusion of opposites to follow in the poem.[89] Roberts seems to expect from a good reader an internalisation of his associations. For instance, Quinton, having absorbed the connection, summarises Roberts's position as follows: a good critic "should seek a 'dry hardness', strive for accuracy and precision in the rendering of a freshly perceived world".[90] Whitworth says,

> The life of John Tyndall, Victorian scientist and mountaineer, was characterised by 'courage, tenacity and intellectual vigour': the first two terms could apply equally to his science or his climbing. Science and climbers cling tenaciously to the facts; they struggle towards an 'objective' which, once attained, ceases to be important: 'The British regard every theory as a stepping-stone to a new experiment'.[91]

We may thus summarise three senses essentially related in Roberts's uses of rocks: rigidity/ immutability, hardened activity, and sureness (the first cluster). The reference in the passage above is to the third. Whilst the first two derive from rock's common semantic field, the third is a stretch. But that it should be present powerfully in his every use of the word creates across the poems what Empson calls a Type III equation. He gives as example Shakespeare's 'fool':

> It seems to me that many of Shakespeare's uses of the word *fool* are an example of it; he takes the symbolism of the clown so far (as I find myself reading him) that in effect he treats the word as meaning 'clown' and nothing else; when he uses the word about ordinary people they are not called foolish but described metaphorically as clowns.[92]

Similarly, in Roberts, every mention of 'rock' comes with the relatively private implication of 'fact', and only through an exercise such as this, are we able to excavate these connections for the reader.

"Earth, Impact" completes the triangle of fact-act-rock: even in crumbling, rocks give grip to the climber: "Sudden the rock-fall" and the "wounded fingers touch/ Granite, and clutch the crumbling fell" [5, 7-8]. "Strip Bare Pretence" similarly states, "Now munch hard fact: it shall not grow/ Till you have worn red jagged flesh" [13-14].[93] The impression of hardness on soma, the friction with which the climber, with gashed fingers, is able to propel, is, like the experimental stage of science, a condition necessary for the learning of fact. Roberts boldly calls for similar equations amongst his contemporaries; in the poems of Richard Eberhart, he appreciates how "word after word surprises with its amazing fitness: 'frosty', 'actual', 'hard', and these adjectives give to their nouns a new vigour; the words speak directly to senses";[94] in modern poetry, he says, "what is needed is honest, sincere, and *accurate* sentiment—the sort of sentiment you are prepared

[89] Roberts, 'List of Verses'.
[90] Quinton, 'Introduction' to *Hulme*, p. iii.
[91] Whitworth, 'Community', p. 272.
[92] Empson, *Complex Words*, p. 50.
[93] Roberts, *Matins*, p. 24.
[94] Roberts, *Critique*, p. 43.

to *act* on" [emphases mine].[95] Fact as protruding, involving itself in our activities, counters the semantic appropriation of 'knowledge', after the Renaissance, into the exclusive purview of science: "the 'mechanical' world of Newton has become the basis of the implicit metaphor in all philosophic writing: we talk of […] the field of knowledge as if it were Newtonian space".[96] The fact-hardness nexus and its extension to 'action' is thus part of Roberts's larger programme to undo Enlightenment entrenchments and involve the senses in all the faculties of thought.

Conversely, 'stone' comes with hardly any connotations of rock; there is perhaps a vague similarity to volcanic rock, if carved stone is seen as bespeaking the creative labour of masons—but this connection is never made explicit. Unlike 'basalt' or 'igneous' stretched into geological metaphors for scientific activity, the everyday use of 'stone' latently suggests carving, hewing and moulding. Roberts is particular about the distinction. When a poem of Edwin Muir says, "often hewn steps in the steepest mountain-side", Roberts is palpably irritated by the suggestion that rock is hewn, and sneers, "steps are cut in ice, not hewn in mountain-sides".[97] In "Artificer in Torment", the poet begins, "He would express in quiet stone/ The flame that bites beneath the bone,/ He would congeal the dying storm/ To grey, slow torment, frigid form" [1-4].[98] The word 'quiet' animates 'stone' in a manner that 'hunched' and 'stubborn' had not, 'rock': a quiet person, for instance, can brim with interior drama she thinks prudent to suppress; or be like those "Who, moving others, are themselves as stone".[99] The word 'frigid' certainly belongs in this cluster; it is worked upon here to signify bitterness, repose, and other feelings not attached to rocks. The adjectives 'quiet' and 'frigid' are, however, symptoms more than causes of the varying ontologies of 'rock' and 'stone'. Because the quality in the poems that makes stone different from rock is potential for animation, its true substance lies not in material but spirit, which explains why the alchemist can never 'touch the substance of the stone'. The phrase, 'to congeal the dying storm' is odd and doesn't readily throw up any image, particularly as it is the stone that is purportedly congealed. Roberts is at times careless about the ramifications of metaphors, and, overlooking the poem at hand, gets carried away with his elaborate poetic lexicography. He assumes the direct sense of congealed storm will be taken as inner torment expressed in stone. The only sense in which a storm can be imagined as hardening is—with the help of 'frigid'—as freezing. But neither freezing nor congealing appertain to stone, which unlike cooling lava, is already hard. And with the reference to 'cathedrals' in the next stanza, the imagination is not even suffered to posit schist,

[95] Michael Roberts, 'In Praise of Modern Poetry', *The Listener*, 29 (February 1938): 375-76, p. 375.
[96] Michael Roberts, 'Thought in the Seventeenth Century', *The Philosopher*, 12.4 (October 1934): 170-72, p. 172.
[97] Michael Roberts, 'Poetry and Mountains', *The Spectator* (March 1934): 420 & 422, p. 420.
[98] Roberts, *Poems*, p. 44 (First published in *These our Matins*, 1930)
[99] Shakespeare, *Sonnets*, p. 278.

a stone the Pallava Indians found soft enough to carve their idols on before it hardened. A more elegant image of hardening can be found in his use of 'embalm', in the phrase "Time/ embalms corruption yet uncast" [13-14].[100] Its beauty derives from ambiguity—Empson's seventh-type—in the word 'uncast', which can mean cast in stone or cast out, rendering the opposite senses of time preserving all sin or simply those not yet expunged. References to hardening, as opposed to the hard, seem in this cluster to drive at the monumental, whether in sculpture or sepulchre, so we shall resume this discussion in the cluster on architecture.

3.1.3 Process

The next cluster is of processes, not of hardening, but of movement, activity, and their relation to the inner life of man. The cluster consists of words that invoke continual change, impelling a quickening of the imagination, with nouns like 'wind', 'chaos', and 'fire', verbs like 'corrode', 'act', 'stream'. We have already seen 'Time', in "Midnight", 'Through my fingers *streaming*' [emphasis mine]. Time facilitates movement and change: in "Time and Crystal Image", there is a sudden burst of verbs, "sweeps, swerves, leaps, swift".[101] Activity is the other grand principle of the poems. Challenging Mathew Arnold's legacy, Roberts says, "rhetorically we claim 'to see life steadily, and see it whole,' and sometimes the concealed metaphor of 'life' as something static and unchanging makes us forget that the vision must continually change".[102] There is on the one end, hardness and fact, and on the other, movement and impulse. After the steady grip of granite in "Earth, Impact", the climber realises, "a world of action waits/ Vital the chance, the random rain" [11-12]. The word 'random' separates the active aspect of the world as unavailable to rational inquiry or arrangement in fact. The same shift occurs in "Perspective", from the hard world of Euclid to 'impulse uncontrolled/ And joy not marked on causal map'.

In "Artificer in Torment", the poet says, "He would express, could eyes corrode,/ In living rock" [13-14]. From 'stone' in the first stanza, he reverts in the last to 'rock', because here he seeks only the sense of solidity—not potential for animation—, to show in the face of unconquerable hardness the artist's triumphal act of 'corroding'. Roberts gambles too much with 'rock' in this stanza. He brings it back to act immutable, to enhance the consequence in the verb 'corrode'. In the context of the artificer, however, 'rock' must perforce refer to sculpture; but the semantic field of 'rock', both in common use and his own poetic symbolism, does not allow for the association—even the most muscular of poets Dryden has his Aeolus carve "a spacious cave of *living stone*"

[100] From 'Nicolas Flamel'
[101] Roberts, *Poems*, p. 48 (First published in *Poetry Review*, January-February 1930)
[102] Roberts, *Critique*, p. 50.

[Emphasis mine].[103] Roberts has been cornered in his own Baroque patterns, and forced to animate 'rock' in the most literal and crude fashion, with the adjective 'living'. The articulation of vitality seems at times difficult to achieve with Roberts's impersonal register: for instance, "There is no quiet in the earth,/ In the green root of history, or the leaf/ Bending toward the earth; […]/ Cumulus, cirrus, moving". In this poem, "In Time of Peace", he wants to exhibit the steady growth of all life on Earth as a unitary order of becoming, but has resorted again to literal means, like pure statement, in the first line, or the word 'moving', in the last. But this is not always the case. Changing but one word in the action of "Artificer in Torment", "Nicolas Flamel" elevates the phrase to "corrode my living past" (a 'past', we shall recall, which had been embalmed) [16]. The temporal mingling of 'living' and 'past' creates an effect considerably more striking than 'living rock'. As with the chemic energy of 'corrode', the natural forces wind, air, water and fire work to shiver the hardness of structure. In "Artificer in Torment", "wind and weather wreck the blind/ and bleak cathedrals of mind" [5-6]. And in "Nicolas Flamel", we shall recall, 'earth' is flanked by 'water', 'air', and 'fire': 'show me the water, earth and air/ and fire's quintessence unconfined'. It is as if the alchemist so far changes the nature of his situation—and this is precisely what made him so attractive a figure to Roberts—that stasis is controlled by movement; as if a dam made of water were to contain concrete.

The effort of contrasting the present cluster with the prior two is made easier with the word 'chaos', which latently implies an opposition of order. Roberts argues that a balance between order and chaos is essential for good poetry:

> Individual human perceptions only approximate to the 'fact', the reality which is the highest common factor of experience of us all; by the unconscious selection of the new stimuli which most resemble the old, the old response is evoked and an air of pattern is given to what might well be chaos. The human mind may well be a kind of sorting machine, imposing order willy-nilly on experience and selecting as scientific knowledge those elements in the experience of others which most resemble its own.[104]

The poem "And I have Turned to Westward" affirms chaos defiantly, in the line, "chaos, shall be my solitaire" [32]:[105] 'solitaire', a type of diamond, the hardest of materials, is shown in the poem to hint a gleam of madness. We shall note again that the opposition can only work if hardness is received readily as signifying rationality and fact. In "Rocks are Immutable", contradicting the titular statement, the poet asks, "Or grant pure chaos, flickering chance" [13]. Solidity—the causal scheme—and chance are concentrated in the lines, "Then mark the shock

[103] John Dryden, *Virgil's Aeneid* (New York; P. F. Collier, [1697] 1909), p. 1.
[104] Roberts, *Critique*, p. 94; Roberts uses the phrase 'sorting machine' from Karl Pearson, *Grammar of Science* (Briston: Thoemmes Antiquarian Books, 1991), p. 106. It is later used by Hulme in *Speculations*, p. 228.
[105] Roberts, *Matins*, p. 26 (First published in *Adelphi*, December 1929)

of circumstance,/ The day from solid darkness hewn" [15-16]. The cluster of solidity is often appended, in this way, with 'darkness'—that 'darkness' is 'hewn' binds it to the hardness cluster. The poems draw on the common attribute of opacity present in solid objects and darkness—as in the title of the poem, "Darkness in Stony Places".[106] Order is to darkness what chaos becomes to brightness: the 'day' emerging from 'darkness' is 'the shock of circumstance'. In "Midnight", 'chaos' is repeatedly contrasted with darkness. "The chaos of the mind" [20], which the poet implies is the natural mode of thought, is "screened from outer darkness" [19], as if the two principles will suffer from contact. In the phrase, "burning/ In chaos, proudly bright" [3-4],[107] the Blakean collocation 'burning bright' is split and conjoined by the word 'chaos'. Light and dark come together in his Miltonic phrase "Shining Dark", in which 'dark' is mapped onto "firm insubstantial Earth" [5] and the 'shining', onto "living pulse" [6].[108]

The two principal forces, movement, activity, passion, and hardness, fact, rationality, are distinguished in Roberts from familiar antecedents, particularly the Apollonian and Dionysian of Nietzsche, by how lightness and darkness are distributed. Apollo is logic, rigidity, the pillars of Doric order, but he is above all light; whereas Dionysian sensuality and chaos always unfold in the dark. We know Roberts thought in cognately grand terms: he says in *Critique of Poetry,* "although we find logical order more satisfactory than chaos, and harmony between our wishes more desirable than incompatibility, order and harmony are never final: they need continual revision, for integrity is an activity, not a final state".[109] The strange reversal in Roberts's poems of these ancient forces is curious: it is, I believe, to be taken as indicating how these principles came to seem in the modernist period. For instance, when speaking of the past, Roberts consciously suspends his regular associations. In "And Is Familiar Country", "Kant and Abelard […] walk through fields of vision, bright/ with premiss and white predicate" [33-36].[110] To Abelard emerging from the Dark Ages, syllogisms were as bright as to the Athenian breaking from 'Asiatic vague immensities'.[111] But by the twentieth century, the rational, logical regime of science must have seemed as large, misshapen, uncontrollable, and oppressive as the devilish congeries of Persia had to the Greeks. Chaos seems to Roberts the light of hope in rational society, and fire and water as necessary to hem the stolidly inching Earth.

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[106] Roberts, *Matins*, p. 20 (First published in *Poetry* (Chicago), May 1930)
[107] From 'Midnight'
[108] Roberts, *Poems*, p. 75.
[109] Roberts, *Critique*, p. 24-25.
[110] Roberts, *Poems*, p. 67.
[111] We discussed in 1.1 the opposition between the humanism of Greek art and the 'Asiatic vague immensities' in Yeats's 'The Statues'.

3.1.4 Static and Dynamic

The elevation of irregularity and disorder in the poems is to be understood as bringing equilibrium to an overly rational language. It was never in Roberts a reversion to Romanticism. He in part accepts Hulme's diagnosis of romanticism when he says, "in so far as romantic poetry contains vivid and accurate sensuous description, it resembles all great poetry, but when it is yearning after the infinite and claiming attention and admiration for its own soulful sentiments, it is specifically romantic".[112] His poems, whether invoking the hard or the fast, aim for 'vivid and accurate sensuous description'. Accuracy, however, does not entail rigid taxonomy: there are moments when the two principles are concentrated in a single phrase. This cluster is a synthesis of the prior two and may be termed the static and the dynamic. It consists of phrases such as 'frozen spring', 'crystal air', 'bone-stark action', 'burst vulcanite'. We began to see this trend in 'living rock' and 'rock-fall'. "Jura in Islington", in an elegant line of chaste diction, imbues to rocky terrain a sprightliness not achieved in either of the above: "And water leaps from rock to rock" [27].[113] Despite the frequent failings of the poem, the ending couplet of "Artificer in Torment"—"He would unlock the frozen springs/ Of pain in dumb unliving things"—has the epigrammatic terseness of a final couplet in Shakespeare. Facing the limpid Christ of Michelangelo's "Deposition", or Bernini's "Teresa" in agony, it is difficult to sometimes believe that pain was not somehow native to the stone anchoring the scene. Just so, one does not doubt that the water frozen in spring did once flow: 'frozen spring' invokes the Renaissance Neo-Platonism which saw in inanimate stone a rising entelechy of emotive form. Roberts repeats essentially the same image less impressively in the titular poem of the 1930 collection, "And These Our Matins…": "Then freeze the fount of sorrow" [8].[114]

In the poem, 'matins', or midnight prayers, sound of "stony rills" [7] and "bony tune" [11]. The expressions are meant to evoke the "bleak ecstasies" [5] of midnight choral, and do so, appropriately, more through sound than image. The sound of streamlets breaking on stony passes is polyphony adequate to a church choir performing Byrd or Tallis, but the word 'rill' also works phonetically to call up the narrow, striated columns of cathedrals. 'Bony tune', if pictured, is almost comically sensational, as Jan Breughel's "Triumph of death" or cheap Victorian gothic, yet as a symbol of the static and the dynamic, of life-in-death, the phrase intensifies the aural atmosphere of night, building to the haunting line, "uneasy murmur breaks to sound" [18].

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[112] Roberts, *Hulme*, p. 64.
[113] Roberts, *Poems*, p. 55 (Written in October 1930 ('List of Verses')
[114] Roberts, *Matins*, p. 36 (First published in *Poetry Review*, May-June 1929)

We have shown in the poems that hardness is found in society with darkness; the word 'bone' is often a natural occupant of this semantic orbit. In "Artificer", what is expressed in stone is 'The flame that bites beneath the bone'. 'Flame' and 'bone' work to show life fighting to emerge from death. In "Nicolas Flamel", "my hungry bones have found a universal alkahest" [10-11]. The caustic dissolution of calcified bone prepares our reading, in the next stanza, of embalmed corruption corroding. "And Is Familiar Country" throws up the curious phrase, "bone-stark action" [4]. Without the context of death, bone and action are not natural opposites, for one is necessary to the other. The poet thus attaches 'stark' to project a bare, skeletal bone. Having established this connection, the poet demands from the reader a recollection of rock's familiar associates, hard, still, and suchlike, so paradox can somehow be wrung from the contrived collocation.

'Bone-stark' is representative of a more general problem in the cycle. The poet's flair for kinetic and temporal paradox overshadows his poems to such an extent that at times they twist the norm and lead to bizarre locutions. In other words, when a static or dynamic object is mentioned, there follows an automatic expectation of the counterpart, explicit or implicit, in the phrase. This enforces redundancies like 'bone-stark' to introduce a paradox between bone and action, which isn't immediately discernible. In "Time and the Crystal Image", "below the moving waters now/ the bones of Agamemnon drift" [13-14]—line 14 is clearly sufficient to depict a moving river. Whilst the 'still water' on which the wild swans of Yeats drift is readily poetic, the phrase 'moving water' would under normal circumstances be difficult to justify: but is ridiculous considering the very next line conveys the same more succinctly. Roberts, however, ensnares the reader in his semantic web, of movement and stillness, rivers and mountains, and redundancies of this kind seem hardly noticeable. He says,

> In Shakespeare dynamic imagery predominates over static: it is suited to the emotional presentation of the ethical passion, and we therefore find it in Donne and Hopkins; for that ethical passion is not like contemplation, something timeless and geometrical, it is essentially something existing in time and leading to action. Even in describing things which are at rest, Hopkins gives this air of ceaseless motion.[115]

Unlike the restless images of Hopkins, Roberts deliberately checks his impulse to ceaseless motion. The dance between the static and the dynamic issues from contrasting collocations, but even from across entire stanzas. Take, for instance, the somewhat pleonastic phrase, "rigid vulcanite".[116] Although not the hardest mineral, 'rigid' can hardly be said to add information not found in 'vulcanite'. But read in stanza, 'rigid' acquires multiple functions: "And Time has burst the wet

[115] Roberts, *Critique*, p. 91.
[116] From 'Jura in Islington'

ravine/ To crocus-blue and cherry white/ Glass and rigid vulcanite" [18-20]. 'Rigidity' serves first as reassurance along the steep walls: as a hard respite amid precarious shards. But the mastery of the phrase unfolds across the lines. In the first line, the sudden contraction of geological Time by 'burst' seems as vertiginous as the resulting 'wet ravine'. The contraction is then held together by the contradiction in the movement from 'burst…to…rigid'. By 'held together', I mean specifically that the sublimity in the capital Time, ceded in part to the quixotic 'burst', is reclaimed by the closing 'rigid': the lines are thus able to convey at once both the devastating and enduring acts of Time.

The brilliancy of white glass along the time-carved gorge is also evoked in the singular image of crystals—as in the titular phrase of the poem, "The Broken Crystal".[117] Of Walter Turner, for instance, Roberts says, "he is at his best when handling that vocabulary which he has made his own […] his characteristic images of dark stone and coloured crystals".[118] A subtle distinction between stone and crystal means the latter does not feature in the hardness cluster: the timelessness of crystals is mostly exploited in the poems for contrast with change. For instance, the poem "Time and Crystal Image" expresses the desire to preserve popular deeds from their inevitable oblivion. The aged poet of "Nicholas Flamel" likewise asks to defy the degradation of time, "show/ Some blossom that defies the sun/ show me no more of crystal snow" [5-7]. In "Time and Crystal Image" 'crystal' is a surface upon which heroes challenge the forward, obliviating march of Time, as when great events future and past are shown on crystal balls. But in refusing 'crystal snow'—for it does not defy the sun—the poet of "Nicolas Flamel" also accounts for the other aspect of crystal, its vulnerability. In the image of 'crystal snow', precipitation becomes still while falling: the timelessness in the event itself becomes ultimately brief—like Empson's flower, the crystal's eternal beauty is bound to fragility. The timeless and precipitous image of crystals reappears in the poem, "Andromeda": "By crag or sudden fell,/ The crystal air is fairest,/ Glim-glossy filoselle" [10-12].[119] The images on 'crystal air' come as lucent shimmerings of folded silk. And perhaps the 'filoselle' also calls upon that fateful thread of the weaving goddesses, spelling the same doom written on galactic stars.

3.1.5 Mathematics

In "Perspective", there is a denser image of 'crystal air': "bright and frigid crystal air" [23]. To trace its impact on the poem, however, we must pass to the fifth cluster of mathematics. The first four clusters are foundations from which the meaning-making strategies of the remaining will emerge.

[117] Roberts, *Matins*, p. 25.
[118] Michael Roberts, 'The Decline of Love Poetry', *The Spectator* (June 1934): 862, p. 862.
[119] Roberts, *Matins*, p. 38.

Mathematics maps onto the other clusters because it is in some ways the third ontological realm of the poems, the others being geology and psychology. For a glimpse of how they hang together, we might say, geometric shapes connect like the pattern-seeking brain that charts the hard, mountainous terrain. Or lines curve like the wayward impulses of the animal brain along the splashing rivers and rain.

The metaphor most favoured in this cluster is the matrix. Take, for instance, the line in "Earth, Impact", "And firm rock-final matrix" [37]. Matrices are simply latticed lines; so their structures are visually insufficient to impress solidity; eo ipso, they lie more in the first than the second cluster. To us in the twenty-first century, saturated with rows and columns, the 'firm' may seem superfluous. But the poet manages to demonstrate a subtle ambivalence through the seeming redundancy. Based on our development of the word 'rock', we can venture that rock-final indicates a firm grasp of hard, immutable fact. This means the matrix cannot contain meanings in the third cluster, the 'world of action' that 'waits vital chance'. Based on other themes developed in the poem, the connotations of matrix are speculated by Whitworth as possibly denoting "womb, […] the typefounder's matrix […] and mathematical matrices";[120] despite the ambiguity of reference, he settles on the implication that "the phrase 'rock-final' offers an illusory security";[121] but the poem's main point seems less caution than reminder that facts are partial answers. The phrase in stanza slips readily from hardness to action: "And firm rock-final matrix, deep/ And leafmould answer, winter thorn,/ Action". The final stanza thus recalls the fact-act rhyme of the first. Roberts says, "Imperfection is life. So long as we can symbolise our feelings and experience in patterned words we have evidence of pattern […] there is scope for action".[122] In this way, once his poems segregate modes of thought, they begin to show deep ambiguities in their separation.

In "Note on θ, Φ and Ψ", we have discussed the words surrounding 'matrix', but shall now see why its presence in the third stanza is pivotal.

> And find for one small world of fact
> Invariant matrices, compact
> Within the dark and igneous rock
> Of *Comptes Rendus* or *Proc. Roy. Soc.*
> […]
> While I, maybe, precisely seize
> The elusive photon's properties
> In α's and δ's, set in bronze-
> bright vectors, grim quaternions. [9-12, 17-20][123]

[120] Whitworth, 'Community', p. 280.
[121] Ibid., p. 280.
[122] Michael Roberts, 'Symbolism and Romance', *Poetry Review*, 21.1 (1930), p. 34.
[123] Roberts, *Poems*, p. 56 (First published in *New Statesman*, March 1935; written in January 1931 ('List of Verses')).

The central image in the triangulation of 'fact', 'rock', 'matrix' is that, when new discoveries are set in matrices, inquisitive activity stagnates. The primary sense of matrices, as systems of rigid arrangement, can be found in Eddington's *Physical World*, a copy of which Whitworth reports as being part of Roberts's library.[124] Eddington defines a matrix as "not one quantity, nor several quantities, but an infinite number of quantities arranged in a systematic array".[125] As we have seen with the repeated prerequisite of 'fact' for 'act', 'structure' in the poems is not necessarily touched with torpor. But in this poem, the conversion of discovery to matrices is an act explicitly of confining and congealing, like hardening lava. Thus, the relatively neutral term matrix requires a distinguishing property, 'invariance'. The *OED* defines invariance in mathematics as follows: invariant transformations are those in which the object remains "unchanged by a specific transformation or operation".[126] So the technical definition does not differ significantly from its colloquial sense, of being invariably fixed. The descriptor 'invariant' thus serves to compound the dulling sensation from 'grasping a postulate' to setting in mathematical representation: that facts set in grid-iron cannot be swayed by flux and change: we shall recall from chapter 1 our discussion of 'iron arithmetics', used to mean firm thought in Cummings's "The Surely".[127] Roberts says, "Facts may be represented mathematically but 'working models' are utterly impossible".[128] At the same time, we are urged not to forget owing to the dull consequences that there is romance in *doing* science: "mathematics and mathematical physics have a beauty as precise and classical as that of Bach or Dürer, but it resides in its *method* not its subject matter" [emphasis mine].[129]

Quaternions, like matrices, are mathematical representations of three-dimensional space. Like the dark matrices, quaternions are described as 'grim'. This reinforces the notion that any form of 'setting down' denudes the vitality of intuition and dims the brightness of ideas. The word 'vector', described as 'bronze-*bright*', carries in it the sense of "movement and directed magnitude"[130], drawing the word into the third cluster, whose relation to brightness we have already established. In sum, the brightness and grimness of vectors and quaternions show the process of discovery as illuminated in the society of cluster three and receding to the darkness of clusters one and two.

"There is no sense in which the content of the science is essential to the poem", says Whitworth: "the speaker might equally well have been studying Mendelian genetics without the

[124] Whitworth, 'Community', p. 248.
[125] Eddington, *Physical World*, p. 208
[126] *OED*
[127] See 1.2.
[128] Michael Roberts, 'On Mechanical Hallelujahs, or how not to do it', *Poetry Review*, 19.6 (December 1928): 433-38, p. 438.
[129] Ibid., p. 438.
[130] *OED* definition of mathematical vectors.

poem being substantially different".[131] It is germane, however, that in the history of mathematics, quaternions displaced Leonhard Euler's theory of rotation. Euler's angles were typically denoted by 'θ, Φ and Ψ', the very symbols selected for the poem's title.[132] The circumstance is significant insofar as a comparison is enforced between matrices and quaternions, the two modes of analysis superseding the outmoded theory of Euler. This also explains why the original title of the poem was "Critique of θ, Φ and Ψ"—quaternions being the critique. Quaternions are, however, to be seen as a class of matrices. Nathan Rosen, for instance, states in 1930 that "for any [...] rotation matrix one can find the corresponding quaternions".[133] Matrices and quaternions are both mathematical tools used to represent rotation in three-dimensional space. Their exact mechanism is not important to the poem but the difference in their appearance is. Matrix notations are longer but more visibly compact. Whilst fact is set in *compact* matrices, the photon's properties are *precisely* seized. Matrices thus entail a kind of crowded compression and quaternions, concise formulae.

A sample rotation, 'R', in a matrix will appear thus:

$$R = \begin{bmatrix} a^2 + b^2 - c^2 - d^2 & 2bc - 2ad & 2bd + 2ac \\ 2bc + 2ad & a^2 - b^2 + c^2 - d^2 & 2cd - 2ab \\ 2bd - 2ac & 2cd + 2ab & a^2 - b^2 - c^2 + d^2 \end{bmatrix}$$ [134]

The same rotation, 'R', can also be expressed in quaternions thus: z = a + bi + cj + dk.[135] The meaning of the operations and values of variables will not concern us here. The only distinction salient to the poem is that the quaternion can express in four values what took the matrix nine. The respective 'conciseness' and 'compactness' are evaluated by calibration to 'grim' and 'dark': both lie in the second cluster but at varying distances from the third. Such cursory engagement with the mathematics of matrices means we cannot rescue the poem from Whitworth's verdict that Roberts deploys the term "without its full meaning entering into the poem".[136] But we have tried to repeatedly show in this section that terms in clusters are used primarily in relation to other clusters: the definition of the terms in their native discourse is subordinate to their role in Roberts's linguistic-semantic map. With his carefully developed symbolism of hardness, lightness, darkness, Roberts is able to establish cognately fine distinctions between his mathematical metaphors, to develop his complicated attitude to different modes of thought and feeling.

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[131] Michael H. Whitworth, 'Strange Synthetic Perfumes: Investigating scientific diction in twentieth-century poetry' in *Science in Modern Poetry: New directions*, ed. John Holmes, (Liverpool: Liverpool University Press, 2012), p. 93.
[132] Lokenath Debnath, *The Legacy of Leonard Euler: A tricentennial tribute*, (London: Imperial College Press, 2010), p. 330.
[133] Nathan Rosen, 'Note on the General Lorentz Transformation', *Journal of Mathematics and Physics 9*, 1-4 (1930): 181-187, p. 184.
[134] Jack Kuipers, *Quaternions and Rotation Sequences* (Princeton: Princeton University Press, 1999), p. 156.
[135] Ibid., p. 156.
[136] Whitworth, 'Perfumes', p. 93.

As symbols, matrices and quaternions, unlike rocks and rivers, remain relatively neutral. The metaphors need to be modified by 'rock-final', 'invariant', and 'grim'. Similarly, in "And Is Familiar Country": "insurgent red, the flame implies/ Steel girders, stark arithmetics" [29-30]. A sailor, as much as a mountaineer, must calculate to navigate. To the precise navigator, a flash of brilliant red, whether in the unfathomable dark ahead, or the "spatio-temporal wreck" [29] of "brittle stars" [27] above, signifies not fear or awe but numbers and figures. The poet does not expect his reader to suspect that a captain preoccupied with arithmetic lacks emotion, so adds the word 'stark' to underscore the implication of an experience lost. "Sirius B" shows a physicist tabulating the heavens: "march, imponderable stars,/ In mind's dimension, bring to birth/ In formal symbol, Venus, Mars,/ and map the orbit, map the earth" [5-8].[137] As with seafaring, there is enough romance inherent to the study of astronomy that the reader will not view as frigid the representation of stars in mathematical symbols. So, the poet stresses, 'formal', and supplements with phrases "dim notation" [13] and "dumb design" [16], drawing upon associations from the first and second clusters for the final meaning.

A popular adjective akin to 'formal', used almost exclusively for mathematical metaphors, is 'hermetic'—like 'formal', 'hermetic' suggests symbols closed-off from daily experience. In "And These Our Matins…", we have the phrase "hermetic matrices" [32]—we shall return to this shortly. There is also the curious phrase in "Nicholas Flamel", "hermetic ordinall" [20]. An ordinal is a book setting forth the rules and regulations of a practice. The line "Can we save/ One poor hermetic ordinall?" [19-20] refers, presumably, to Thomas Norton's poem, "The Ordinall of Alchemy", a primer on the "purer ways" of the ancients in matters occult.[138] But the term 'ordinal' likely also has a punned mathematical sense: an ordinal number is the place of a particular term, as in a series, there is the first, second, third. If the reference is intended, it may be to the strict hierarchy of truth in alchemy. Take, for instance, Norton, who says, "Understood in the light of this [the works of the Ancients], my Ordinal, the truth of the matter, is fully set forth".[139]

In modern mathematics, the term 'ordinal' had received a fresh sense. Georg Cantor coined the term 'transfinite' in 1915 to signify his discovery that infinities could vary in size: roughly speaking, the number of different infinities is a number that can in theory be counted, so is neither finite nor infinite.[140] The place of any item within a transfinite set is termed a 'transfinite ordinal':

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137 Roberts, *Poems*, p. 65 (First published in *New Country*, 1932)

138 Thomas Norton, *The Ordinall of Alchemy*, ed. Elias Ashmole Thomas, and Eric John Holmyard (London: Edward Arnold, 1928).

139 Norton, *Ordinall*, p. 66.

140 Josè Ferreirós, *Labyrinth of Thought: A history of set theory and its role in modern mathematics* (Basel: Springer Basel AG, 2013), p. 271-74; also see Joseph Warren Dauben, *George Cantor: His mathematics and philosophy of the infinite* (Princeton: Princeton University Press, 1990)

and because the transfinite ordinal appears in sets, it could be thought of as a 'hermetic ordinal'. The 'one poor hermetic ordinall' may refer to a first principle of alchemy. The principle—if the reference to transfinite ordinals is meant—is 'poor' because illusory, as the realm of the transfinite never reaches the absolute infinite of mathematics; just as Flamel realises, 'none can [...] grasp the true alchemic gold/ Or touch the substance of the stone'. The mathematical sense is oblique but the reference to Norton is obscure.

We have thus far only seen mathematical concepts in collocation with clusters one and two—this is almost entirely the case with the prolific matrix. But outside the poems, in literary criticism, Roberts seems to find greater potential for matrices. I refer to his critique of Richards's Benthamite theory of counting impulses that we discussed in chapter 2:

> Arithmetic and elementary mathematics come to be regarded as exceptionally reliable reasoning and therefore an attempt is made to force all reasoning into that mould. Mr. I.A. Richards, for example, speaks of the 'number' of impulses as if they could be counted like potatoes or 'events'. The pure mathematician, familiar with non-cumulative algebras and 'q-numbers' which cannot be expressed in terms of a finite set of numbers at all, is not liable to fall into any such error. If the new romantics require a powerful new method of investigating the field of experience which is qualitative, not metrical, they might well start with a study of the properties of matrices: it would at least enable them to avoid that creeping arithmetisation which threatens to fossilise the "emotional" field, as completely as rationalism did two centuries ago.[141]

Although Roberts never shows us how specifically he would use matrices for analysis, I trust we have not strayed too far in the following from his intentions. Matrices allow a set of terms to be added to another (or subtracted or multiplied to divided, for that matter). For instance, two matrices may be added as follows:

$$\begin{bmatrix} 0 & 1 & 2 \\ 9 & 8 & 7 \end{bmatrix} + \begin{bmatrix} 6 & 5 & 4 \\ 3 & 4 & 5 \end{bmatrix} = \begin{bmatrix} 0+6 & 1+5 & 2+4 \\ 9+3 & 8+4 & 7+5 \end{bmatrix} = \begin{bmatrix} 6 & 6 & 6 \\ 12 & 12 & 12 \end{bmatrix}$$

Each term in the first matrix is added to a corresponding term in the second to yield a third. Poems in some ways work as microcosms of Roberts's word-modifications across collections: that is, words are often introduced to then be modified by movements in the poem, to then yield more refined meanings. This allows us in close-reading to replace numbers with words in the template of matrices. We shall illustrate with an example from Roberts's own poetry. In "Perspective", the

[141] Michael Roberts, 'The Loneliness of Mathematics', *Adelphi*, 1.6 (March 1931): 510-11, p. 511.

squareness of the first and last stanzas in their tetrametric form has prompted me to take them for the first and third matrices in the above example:[142]

> The music of no temporal ear
> Is Euclid's world invisible,
> In calm, pellucid, liquid air
> The mental mode is sculptural.
> [...]
> And music of no temporal ear
> Is all that world invisible;
> In bright and frigid crystal air
> The mental mode is sculptural [1-4, 21-24]

The first and last lines of both stanzas may be taken as constants. In lines 2 and 22, the music of the 'temporal ear' sees 'Euclid's world' and 'all that', respectively. 'All that' refers to the accretion of descriptive imagery from the intervening stanzas. The distance between 'Euclid's world'—the world of the geometry—and 'all that'—the world of the poem—can be identified by studying the differences between the third line of each stanza. Music and sculpture begin in the first stanza with basic form, to then be filled by characteristics mentioned in the intervening stanzas. Line 23 thus registers a combination of mathematical symmetry from the first stanza and qualities of 'all that' from the remaining. Both lines 3 and 23 have a common setting, 'air', upon which in our analysis we place a matrix:

> [calm pellucid liquid] + [ ] = [bright frigid crystal]
> [bright frigid crystal] - [calm pellucid liquid] = [ ]

'Calm' has become 'bright', 'pellucid', 'frigid', and 'liquid', 'crystal'. Placing the words in matrices, we can deduce what operations were performed on each to yield the corresponding terms in the final stanza. The attribute of translucency obtains between 'liquid' and 'crystal', but the refractive property of the translucent medium in question is intensified, such that the vision, musical or sculptural, is in the final stanza not placid but dynamic. Whilst the properties of 'crystals' in the poems are familiar to us from the fourth cluster, 'liquid', modified by 'calm', does not seem to belong to the third of rivers and movement. The transformation from 'calm' to 'bright'—that liquid when crystalized becomes bright—supports this reading, as 'brightness', we have seen, suggests anarchic activity. 'All that', we know from the intervening stanzas, consists of 'impulse unconfined', 'scourged love', and 'rhythmic pulse'—with these added, the 'calm' world of Euclid becomes 'bright'. 'Pellucid' denotes both transparency and lucidity; because 'Euclid's world' is not complicated by circumstance, it is the paragon of simple clarity. Transparency cannot be reconciled with darkness, and by extension, 'Euclid's world' is not to be confused with the world of rocks

[142] As Whitworth notes, the stanzas are also reminiscent of Read's poem, 'Equation', which Roberts admired (Whitworth, 'Community', p. 274)

and facts—it is nearer the unearthly music of the spheres, the 'clear lamp of Lully's mind'. This extends to other geometric jargon in the poems. For instance, when in "Note on θ, Φ and Ψ", the poet 'grasps a postulate', he is being as creative as an artist. 'Frigid', on the other hand, as we saw in "Artificer in Torment", comes loaded with bitterness, repose : "a certain frigid beauty"[143] that Roberts finds in the verses of Pope. Moving vertically from 'pellucid' to 'frigid', and horizontally from 'bright' to 'frigid', we begin to develop an idea of the 'sculptural mode' as, respectively, melancholy precision and frozen emotion; we may observe a similar freezing of emotion in Sterne's description in *Tristram Shandy* of "a thin, blue, chill, pellucid chrystal with all its humours so at rest".[144] The poem does not observe Hulme's distinctions of geometric and vital art too carefully—the geometric effigy of an Egyptian Pharaoh, for instance, does not express sorrow. It is closer in kin to Yeats's "Statues", which when 'live lips meet plummet-measured face', bespeak both passion and Pythagoras.

"Geometry has never appealed to me", says Roberts: "it is, in its lower reaches at least, at once less subtle and more restricted than analysis".[145] Although his distaste for the science does not enter the poems, geometric devices do symbolise control, or shaping—in "Perspective", Euclid channels the uncontrolled impulses of the artist into sculptural form. "Johann Sebastian" begins, "At the decline of day/ We might have fallen sentimental/ Tenderly pitying our souls/ Now life had narrowed to cylindrical/ Despair" [1-5]. 'Cylinder' would not be apt for expressing despair, a rather wild emotion, if not conditioned by 'sentimental': the 'cylinder' reshapes wild despair into prolonged hopelessness, aged and measured sorrow.

In "Earth, Impact", geometry mediates between control and passion. "Down to the last abstraction, Earth/ Fulfils her geodesic curve" [33-34]. In non-Euclidean geometry, a geodesic is the shortest distance between two points on a curved surface; more generally, the path of least resistance, an effortless course. The poem could imply that the Earth behaves in ways commensurable to our condensed 'abstractions'; Earth, in revealing to us her patterns and regularity, by 'fulfilling' its mechanical destiny prescribed by science, becomes contained in our geometry. But this might be illusory: "Mathematics in general like Euclidean geometry in particular is based on human experience, and the apparent scientific unity of the world may be, as Hulme suggested, due to the fact that man is a kind of sorting machine".[146] The phrase, especially its non-Euclidean tenor, expresses this ambivalence in its equal appeal to passion through sensual flair: the

[143] Michael Roberts, 'Pope and English Classicism', *Poetry Review*, 21.3 (May-June 1930): 61-70, p. 162.
[144] Lawrence Sterne, *The Life and Opinions of Tristram Shandy, Gentleman* (London: J.M Dent and Sons, [1759] 1917), p. 441.
[145] Roberts, 'Credo', p. 193.
[146] Roberts, 'Loneliness', p. 511.

Earth swings with the effortless curves of a beautiful woman. The poet regards the spinning Earth with much the same awe as he might his departing mistress. This reading is prepared by the line, "fertile earth/ Fulfils her rhythm" [17-18]. Similarly, "Jura In Islington" begins, "Sing in my heart, you pointed pines,/ And trace your geometric lines" [1-2]. Geometry more directly signifies beauty here; the lines of landscape are once again the curves of human form.

The final image in the cluster is that of 'infinity'. The second stanza of "Broken Crystal" reads, "but analysis/ Devised infinity to curse/ The finite glass whose finitude,/ Distorts a universe" [6-9]. The poem's subtitle is, "Jacob Boehme cogitates"—we may thus read these lines as the private musings of the Renaissance mystic. In Boehme's vision, reality issues from dialectical intercourse between matter and divinity. The universe is God, the Eternal One; He sunders to the fragments of our experience to make Himself sensible. In 1656, Boehme writes, "For when God made himself creaturely, then he made himself creaturely according to his Ternary: and as in God the Ternary is the greatest and chiefest, and yet his wonderful proportion, form and variety cannot be measured, in that he sheweth himself in his operation so various and manifold".[147] Boehme's discourse on metaphysics is similar to the modernist critique of science, as we have developed in this thesis. As we have shown, Roberts believed science divides reality into parts for measurement, yielding knowledge incomplete but useful. The poem recommends that science "flaw/ The virgin crystal and dissect/ With jagged fragments living form,/ Cognize, then resurrect" [2-5]. But rather than restoring unitary vision after particular 'analysis', science seems to have taken the separation of world into parts too seriously, and 'devised infinity' to explain away its lack of final answers; the poem suggests 'analysis' might have been better served to recognise, with Boehme, an eternal Oneness.

In *Critique of Poetry,* Roberts says, "because some non-visualisers (such as Pascal) find aesthetic satisfaction in mathematical elegance, he assumes that the most abstract words can become associated with emotions. Geometry may be studied by both mental types, diagrammatically in the one case, and, in the other, analytically".[148] In his poems, Roberts finds for mathematics a wide range across all the mental types of previous clusters. As with 'fact', Roberts loads mathematical words densely with meaning, as if to answer those who would think to make language mathematical. In his poems, matrices gird and grid the landscape of reality, shapes impassion and control it, and curves trace its sensuous outlines. When the mystical mood is upon the poet, he comprehends reality in its absolute extremes, as infinite myriad and Eternal One.

[147] Jacob Boehme, *The Aurora*, trans. John Sparrow (London: Printed by John Streater for Giles Calvert, 1656), 119 (a).
[148] Roberts, *Critique*, p. 50.

3.1.6 Music

The next cluster is of music. As with mathematics, the associations of music range from the first cluster of precision to the third, of sensuality. In this cluster, 'music' itself is least bound. In "Perspective", the eye, ear and mind are conscripted to create 'music' both synesthetic and geometric. The word becomes as plenary in the fourth stanza of "Prelude: It Is The First Susurrus". By this point, we are aware that the 'first susurrus', a mysterious rustling in wintry fen, has 'cause unknown'. The sound presages something terrible; motifs have been attached of conquering legions marching in the white distance; instruments have been reduced to bare essentials: chords are taut and trembling, flutes are attuned, and drums slowly starting. These in the second stanza evoke fear and imminent danger, spears and warriors, premonitions and hammering. Thus, in the phrase, "it is the imperial music" [15], the crescendo has come to completion, tremolo to fortissimo; image with emotion, sensation and tune has joined to blare the imperial march. The word 'music' is thus compound, containing within it the various elements of sound. Even its rhythm is revealed in the metre of the final stanza, in "the pomp of Caesar, men/ And men and men advancing, men" [21-22].

The composite 'music' may be divided into 'song' and 'notes'. 'Song' is bodied 'note', symmetry voiced. The terminology prompts another comparison with Yeats. In "Among School Children", "World-famous golden-thighed Pythagoras/ Fingered upon a fiddle-stick or strings/ What a star sang and careless Muses heard" [45-46].[149] The poet implies that Pythagoras, the purported creator of the diatonic scale, cared only for the barren notes of music, playing not for man's pleasure but god's intrigue. Deriding his gig as mere fingering on strings, the poet describes it as, almost sarcastically, a private concert put on by and for the stars. Arriving finally at 'music', in the phrase "O body swayed to music" [61], or in "Sailing to Byzantium", "caught in that sensual music" [7],[150] the term in Yeats is made as whole as in Roberts: 'music' becomes precise rhythm exacting sensuous emotion.

Like Yeats's "singing school" [13]—where "soul clap its hands and louder sing" [11][151]—'song' becomes for Roberts naïve, cherubim joy. In "Jura in Islington", the poet, we shall recall, asks landscape to 'sing in my heart you pointed pines'. In "And These Our Matins", "We sing: Our souls disclose/ Bleak ecstasies, and wring/ clear song" [3-6]. In "Time and Crystal Image", "and near a thousand wings/ Are heard where some far chorus sings/ elusive words that I pursue" [2-4]. Whilst 'music' combines the formal and emotional, 'song' is sublime and elusive. "On

[149] Yeats, *Poems*, p. 212.
[150] Yeats, *Poems*, p. 191.
[151] From 'Sailing to Byzantium'

Reading Some Neglected Poets" directly equates "singing or sudden joy" [7];[152] the joy of song in the poems is more Elysian than Dionysian. Roberts manages to capture in his uses of 'song' that unique and bizarre institution, the choir of Christianity, wherein the wine and dance of Greek chorus is sublimated to heavenly joy, as if Eros, ascended from body, were to meet Agape in the clouds.

Set against the ethereal choir is the symmetry of symphony[153] in "Johann Sebastian". "Limpid notes/ Fell from the glowing dark, grew lucid, architectural,/ As in dusk we heard, growing logical,/ some fool precisely playing Bach" [12-15]. The poem grants to the symphonic form an elevation akin to choral music but shows in equal measure its reducibility to notes. Praising Valéry's "Cantique des Colonnes", Roberts said:

> There is no rush of passion, only line after line built up in sculptural integrity. There is detachment, the extreme of inhumanity, and yet it radiates its glory: it is more, not less than human; and to such a perfection we must needs return after each attempt to meliorate a world of imperfection, even as we return to the clear geometry of Bach after adventuring in Beethoven's last precipitous dark world of four dimensions.[154]

In plotting the impacts of Valéry, Roberts seems to approximate the range of affect in "Johann Sebastian". 'Limpid' carries innately a dual sense of melody and clarity; but 'limpid' grows 'lucid', which, apart from clarity, signifies also luminosity. Light, we know, symbolises passion, and dark, reason. Thus, with 'dusk', the music becomes 'logical', and *song* reverts to *notes*. Perhaps from the melancholy "Air" to the rigid "Fugue", the clear window to soul is enclosed by the stones of architecture.

3.1.7 Architecture

Architecture, our final cluster, is bound neither to matter nor spirit but is a symbol of definable boundaries, and immense consequence. Water and rock can also be considered symbols, but of the *referential* kind. Words in this cluster are as symbols purer. When the poet says the notes of Bach grew 'architectural', he extracts select connotations of the word 'architecture', namely hardness and symmetry, without actually referring to building. It is almost the reverse of Goethe's popular phrase, "architecture is frozen music".[155] Even "Artificer in Torment", a poem explicitly about the sculptor-mason, uses 'cathedral' in the abstract, as "the blind and bleak cathedrals of the

[152] Roberts, *Poems*, p. 65 (First published in *Poetry Review* May-June 1929)
[153] Or any music without song.
[154] Roberts, 'Symbolism', p. 38.
[155] Johann Wolfgang von Goethe, *Conversations with Goethe in the Last Years of His Life*, trans., Margaret Fuller, eds., Johann Peter Eckermann and Margaret Fuller (Boston: Hilliard, Gray, and co., 1839), p. 282.

mind" [5-6]. Cathedrals and their parts thus become for Roberts purely symbolic, a floating set of attributes he draws upon at whim to intensify his tenor.

> In the *Critique of Poetry*, Roberts explains the exact significance of symbols to poetry.
>
> > He [A. N. Whitehead] asserts […] that for the poet writing a lyric on trees, the trees are the symbols and the words the meaning. This is dangerously misleading. […] That which is immediately suggested is the name, the 'sign' of the experience. […] The sign is the symbol of that part of the experience which is objective and unemotional, the object of logical scientific reasoning. […] But the poet is not looking for signs (which are found with comparative ease), he is trying to find symbols which will adequately arouse the whole or a chosen portion of the 'consciousness', beliefs, emotions, and usages' which the trees themselves arouse in him.[156]

In agreement with this definition of 'symbol', the cluster is designed to light select regions of thought. In "Nicolas Flamel", the fifth stanza begins, "Beyond our ruined architrave/ behold the evil arrows fall" [17-18]. An 'architrave' technically outlines a portal, but the direct reference is to the poet's decrepit form, his sunken outline. Because outlines in general are precise and firm, Flamel modifies with 'ruined', perhaps to suggest faintly the weathered saints of old lining the gothic architrave. In "Time and Crystal Image", we shall recall the line, "my hawk of understanding sweeps,/ And swerves, […] cathedral-wise" [6-8]. 'Cathedral-wise', without qualification, is bizarre: it seems presumptuous of the poet to think the Gothic will have been digested to this degree. "Symbolism", he says, "is essential […] He [the poet] denies that words are the mere simulacra of objects and asserts that they are the components of the mind".[157] To thus express the wayward movements of his mind, the poet, using the symbol of 'cathedral-wise', invokes 'the hawk' of imagination—the reader's, that is—to trace the cathedral's anarchic outlines, its spiralling towers, and low-hanging grotesques.

The Gothic cathedral, with its dark silhouette and stained glass, massy stone and airy vault, is the very image of order and chaos. Its symbolic potential lies in the minutest details: "watch the arcing spandrel/ Swing into beauty there" [11-12].[158] Spandrels are sharp triangular regions enclosing the arches of architraves. Line 11 employs 'arcing' rather vaguely, given only the spandrel's hypotenuse can be said to 'arc'. This is clarified in the second line, where 'beauty' emerges in the passage from the angular to the curvy; the loveliness of design swinging into shape stiffens back in the poem to "beauty that is broken/ in cold analysis" [19-20]. The static and dynamic of the Gothic is also exploited in "Perspective": "Perspective through the Gothic dark/ The range of arch and column moves" [17-18]. The 'gothic dark', still and heavy, settles in the

[156] Roberts, *Critique*, p. 32.
[157] Roberts, 'Credo', p. 196.
[158] From 'And I have Turned Westward'.

second cluster, as the erratic arches and columns drift into the third. The symbol thus, from prior stanzas, synthesizes 'impulse uncontrolled' and 'mind quarrying stern fact'. The splintering arch in "Rugged Dawn"—"these facts are worse, arching the mind to splinters" [6][159]—lies in the fourth cluster, with 'broken crystal', except, again, the reference is to mind not an actual arch. The shattered formalism of cathedrals becomes for Roberts a symbol of the inner life, in some parts rational and others, broken: for "beyond the inhuman pattern" lie "men,/ Broken, ephemeral, undismayed" [20-21].[160]

It would, however, be inaccurate to label Roberts a symbolist. His use of cathedrals always draws upon historical memory. A symbolist's symbol, say, Yeats's mosaic or swan, is often private and individual, a covenant between poet and his devoted reader. The identification of Byzantium with old age,[161] or swans with virility,[162] is not commonplace—Leda, in the history of art, is taken by the swan's loveliness, never his forceful red-bloodedness. Unlike these, in "Artificer in Torment", the line "Where blank the broken the broken arches stare" [8] almost readily calls up Sonnet 73's "bare ruin'd choirs where late the sweet birds".[163] Empson explains,

> ruined monastery choirs are […] surrounded by a sheltering building crystallised out of the likeness of a forest, and coloured with stained glass and painting like flowers and leaves, because they are now abandoned by all but the grey walls coloured like the skies of winter, […] suits well with Shakespeare's feeling for the object of the Sonnets, and for various sociological and historical reasons (the protestant destruction of monasteries).[164]

By such simple allusion, a great well of history is opened to Roberts. Roberts believed a symbol rightly used will, far from becoming private, show the object in its truest sense: "It is not the poet's business to take a meaning and add to it decoration, but to take a symbol of which an allegorical interpretation will be a single aspect".[165] Ruskin says great architecture appeals to us by "the imprint of clumsy toilsome man";[166] they are, in other words, monuments of his wayward devotion to Divine geometry. Whether in the flying buttresses of Chartres or the domical vaults of Veselay, Roberts seems to have seen in Gothic that perfect balance of the medieval mind between precision and passion.

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159 Roberts, *Matins*, p. 42.
160 From 'Shining Dark'.
161 As in the two 'Byzantium' poems, amongst others.
162 As in 'Old Swans at Coole', 'Leda and the Swan', amongst other.
163 Shakespeare, *Sonnets*, p. 257.
164 Empson, *Seven Types*, p. 2-3; I am using Empson as analytic framework; the poem, published in the same year as *Seven Types*, was likely composed earlier.
165 Roberts, 'Decline', p. 862.
166 John Ruskin, 'The Seven lamps of Architecture' in *Works: Volume 8*, ed. E. T. Cook and Alexander Wedderburn (London: Allen, 1903–12), p. 82.

3.1.8 Eros and Logos

Roberts says in the *Critique of Poetry* that a set of words must be "tested not by its logical consistency […] but by its total value, its effect on the reader".[167] Individual words and clusters in Roberts's poems create an overall effect on the reader precisely by their remarkable consistency. As critic, Roberts agitated constantly against what seemed to him an indefensible trend in culture of segregating reason from passion, and precision from imagination. He laments that "the languages of poetry and science are still separating; the scientist is making his more precise, restricted and mathematical; the poet is making his more widely symbolic, more allusive, more capable of organising emotional states".[168] As poet, he was able to expand semantic fields, recover lost signification, impose unexpected meanings, and ultimately, in his poetic landscape, to dissolve the boundaries between the two cultures.

Roberts's poetry brings to bear the full moral, sensual, and intellectual range of words. The moral system of the poems is not entirely rid of the Paterian, Ricardian view, which we have discussed in the first two chapters. Although Roberts rejected Richards's calculations, his poems associate the good with a wider, though curated, range of impulses. In the word-clusters, 'hardness', for instance, can suggest rigidity, sublimity, or even form *in potentia*, and 'music' spans austere formalism to Romantic joy. By distending clusters and blending one into the other, the poems find balance with and fidelity to the manifest modes of experience. His early poems were not classical, in the Hulmean sense, save for their constant assertion of imperfectability. In their strict craftsmanship, they can be described as Parnassian; he once stated that he sides "with the Parnassians" who "aim above all things at being precise".[169] Roberts tried to make his clusters overlap precisely to the extent that the intellectual provinces they represent do.

As Eros drifted further from Logos in modern times, a separation he traced to the seventeenth century, Roberts seemed at times to favour the former: but this must be seen as an act of semantic revanchism. He seemed in this regard to follow Coleridge:

> Throughout his work, Coleridge takes terms from special sciences, words which have a definite function as counters in an exact calculus, and fogs them, adulterates them, in a desperate effort to give back to them all that richness of meaning which the scientist has carefully taken away in order to state his neat and syllogistic science.[170]

Besides 'adulterating' mathematical terms, Roberts tried also to raise the passions to virtues—accuracy and precision—reserved for the mathematical sciences. Fact and passion, as we have

[167] Roberts, *Critique*, p. 22.
[168] Michael Roberts, 'Beyond the Golden Bars', *Poetry Review*, 20.2 (March-April 1929): 109-18, p. 117.
[169] Roberts, 'Symbolism', p. 31.
[170] Michael Roberts, 'The Two Coleridges', *The London Mercury*, 32 (July 1935): 292-3, p. 293.

repeatedly seen in the early poems, are mutually dependant, as much so as light and dark. Peculiar to Roberts's poems is the belief that Logos and Eros are bound to substance—they are immanent in rocks, arches, air, and water: "Material imagery is always necessary to the writer who is concerned with spiritual reality".[171] In the tradition of Ockham and Campanella, Roberts is only secure in visions born of this world. There is a warning at the end of "And Is Familiar Country": "Secure beyond the range/ Of bleak abstraction, scattering light,/ The new mirage emerges, right, Heartrending, stubborn, slow to change" [65-68]. Thought departed from phenomena, 'bleak abstraction', is for Roberts dangerously illusory. It is usually a symptom of fear, an inability to come to terms with the facts of life; 'stubborn and slow to change', it always mutates to dogma.

Despite an unshakable faith in the reportage of the senses, we must note that Roberts's language rarely resembles the Elizabethans he so valorised. "Though Roberts praised the virtues of Elizabethan prose", notes Whitworth, "his own critical writing adhered to the Newtonian outlook, making little reference to smell or taste".[172] Extending this point to Roberts's poetry and its lack of interest in smell and taste, and given Roberts's principal tenet—that a collapse of the two cultures will require a "return to the vigour and integrity of Elizabethan prose"[173]—this seems a failing. But his reserved display of sensuous passion that never spills into lust is justified by the fact that Roberts did not wish to write personal poetry. Renaissance poetry, written to an individual lover, is too intimate for Roberts's humour. He feels there is too much bad poetry sharing feelings and seeking pity—particularly amongst his contemporaries. He says in *Recovery of the West* that

> Housman and Hardy, in spite of their incessant complaints about the nature of things, had still maintained a stoic dignity. The lesser writers of the nineteen-thirties, with no clear vision of the evil in the world and in themselves, lapsed into incoherence and self-commiseration. The pity that Wilfred Owen had asked on behalf of others, they asked for themselves.[174]

Roberts's love poems are more symbolic than personal; his description of lovers' union becomes at times almost synechdocal. In "Johann Sebastian", there is an image of "hand loving hand until black midnight struck" [10]; in "Note on θ, Φ and Ψ", when the poet and his estranged lady reconcile, "hand goes out to friendly hand" [23]—Donne's or Marvell's salacious innuendos seem unnecessary when the warmth of touch can be conveyed with such dignity. We have also discussed Roberts's uneasiness with Lawrence and Yeats's invocation to animal passion. He lists as "Other Symptoms of Decay", "Naturalism, its doctrines are expressed in the works of D.H. Lawrence"

[171] Roberts, 'Mountaineering', p. 29.
[172] Whitworth, 'Community', p. 253.
[173] Roberts, 'Seventeenth Century', p. 172.
[174] Roberts, *West*, p. 52; He stresses the failings of personal feeling in poetry in his review of Muriel Rukeyser's collection, *Theory of Flight*, when he says, 'her own experience is vivid, painful' but her poetry's 'feelings are immature and muddled' (Michael Roberts, 'Passion and Poetry', *The Spectator* (May 1936): 804 & 806, p. 804.

and the "strictly rational and sociological works of Wells and Shaw".[175] One extreme rejected the intellect, and the other, passion, and Roberts found both to be deeply flawed.

Truth for Roberts lay in the delight of experience, an acceptance of what is without retreat, affirmation sans discrimination. Cunningham says, Roberts "forces together his own activities as poet, mathematician, philosopher, critic and climber, and seeks pervasive analogies between writing and climbing".[176] If a philosophy can at all be got from the poems, it is that geology, mathematics, art, and language are varying manifestations of one truth. He once said, "I believe in the rational order of nature, in the economy of thought, and in the economy of symbolism. These are the fundamental principles of metaphysics, mathematical science and aesthetics respectively".[177] Because each is separate from and incomplete without the other, they are in perpetual dialectical tension.

The poet wonders in a "Reverie By Candlelight", for instance, what it would be if two of these realms, language and experience, were to merge: "Mark how each word must strain and bend/ To ape the vision that is caught:/ Would one perfection bring the end,/ And swing full circle, all to nought?" [17-20]. The poet suppresses his "vague unbounded lust" to seek a union between mind and nature, which upon reflection, required a union also of mind and language—this perduring gap was to Hulme a sign of the Fall: man "can never himself *be* perfect: he is endowed with Original Sin".[178] In the "Reverie", the poet fancies closing the gap, and like Empson's poetic persona, sinking to oblivion, and bringing 'all to naught'. If we are indeed to achieve the modernist goal of bringing representation in identity with reality, it will be done, the poet eventually realises, by releasing, not supressing, Eros: "Could lip but whisper, tongue lay bare,/ The stark emotion, pit and peak,/ Would mind itself unite and share/ That conscious love, could I but speak?" [25-28]. The sexual suggestiveness of this stanza, in pit and peak, moist lip and naked tongue, is sublimated to an erotic love of reality, as if substance was as unattainable as Beatrice.

In "Earth, Impact", says Whitworth, the poet "suggests that language can supply meanings where mathematics and quantitative observation fail".[179] But the poem seems to offer a more balanced view, wherein facts are as potent as words. The poet begins, as in "Reverie", with foredoomed hope, to "reveal the implicit gap […] in deep interstices of mind" [21, 24]. Here with Eros, Logos stands heroic in the lost struggle. The poet esteems the two alike, invoking clusters

[175] Roberts, *West*, p. 50 & 51.
[176] Cunningham, *Thirties*, p. 165.
[177] Roberts, 'Credo', p. 196.
[178] Roberts, *Hulme*, p. 44.
[179] Whitworth, 'Community', p. 281.

two, three, and six, as follows: "Hard structure, joy that cannot find/ Clear song in word" [27-28]—both hardness and joy fail to close the gap. Nevertheless, the poet entertains the possibility that "Earth/ all knowledge is, and earth reclaims/ In veins of grammar, science, fact" [29-31]. 'Science' here signifies any mode of thought unfolding in grammar, particularly statements of the form *substantia* and *accidens*. Fact emerges from grammar, as feeling, from words (through connotation). There isn't a preference, as the word 'reclaims' contains another seventh-type ambiguity: the Earth might consume fact or proclaim it—the poem at various points implies both.

True knowledge of imperfection, however, comes only from a lifetime of trying to attain it: the gentile, almost blasphemous hope of uniting mind with matter by reconciling Logos with Eros, remained with the poet to the last. In "And these our Matins", he prays: "And these our matins/ rise and ring,/ Austere and cold, the stony hills,/ Till words can shatter/ living rock/ And pent emotion recombine/ with stranger matter, torn from these/ its set Hermitic matrices!" [25-32]. Breaking through rock, emotion meets matter, and ends in mathematics. Although he on the surface describes the universe as consisting "of objects and of relations between these: Words and mathematical symbols",[180] in more honest moments, Roberts believed language and mathematics do more than merely correspond:

> The two contradictory aspects of the world are both necessary and both imperfect. In one, the world is seen as an organic unity in which nothing takes on its full significance unless it is seen in relation to the whole. In the other, we see the world as a machine, a mechanism that can be apprehended piece by piece. The first corresponds to a poetic use of words, the second to a scientific use; and there is no escape from this dualism, except on the one hand into moments of pure mysticism and on the other into moments of pure mathematics.[181]

We return now to the mystical vision in "Kanchenjunga". Beyond the calm seriousness of his register, it would be to misunderstand Roberts entirely, if the scrupulous constructions of word-clusters are not ultimately viewed as enshrining a religious view towards reality.

> *Out of this chaos I decree*
> *Order, and so let order be—*
> *But the bird that sings is a part of me*
> *And it sings, it sings, in ecstasy.* [35-38][182]

The visions in the shapes and numbers, winding brooks, the frosty peaks and stony places all revealed to the poet God's grand and precise design, whose praise his poems sing in an ecstatic yet mannered hope.

[180] Roberts, 'Credo', p. 194-95.
[181] Roberts, *West*, p. 149.
[182] From 'Darkness in Stony Places'

We have seen in this section that Roberts's poems try to place the facts of daily and natural life on equal footing. By dividing his early oeuvre into semantic clusters, we have been able to learn how the human mind and body respond to the realms of landscape, language, architecture, music, and mathematics, with a rich mixture of emotion. One might see logical order in musical notes and feel erotic love for the beating earth beneath our feet. By re-populating these regions of experience with an intricacy and diversity of sensuous register—what we in this section have called Eros—, Roberts shows how unjust and limited has been the strict appointment of reason to the material world and imagination to the spiritual.

In the following section, we shall remain concerned with the problematic imbalance of the faculties and partiality to reason in the culture of modernity. But we move beyond the immanent god of the rocks to the heavenly spheres, from which, theatrically, a mathematician poet deigns to apply for erotic love.

3.2 Of Those Divine States

In the previous section, we studied the ways in which the semantic field of modern English has no longer the tools for signification through Eros. We defined Eros as the capacity for sensuality and emotion; the present section will focus on the other aspect of Eros, erotic love; we shall study a most curious love lyric by Empson and see how Metaphysical and even troubadour style persuasion and praise would look if the powers of the poet were reduced entirely to geometric description.

I have attempted to show in this thesis that Empson's enduring achievement as poet is in demonstrating to what extent the poetic form is an arena suitable for the contestation of philosophy, from epistemology, axiology, mereology, ontology, and—he is seldom acknowledged for this—Eros. John Haffenden says, "Empson believed that the best poetry (in particular his favourite metaphysical poetry) handles philosophical and ontological problems, being interested in far more than the process of mind—the apotheosis of the individual sensorium—and striving beyond egoism to articulate ideas and statements of meaning".[183] This was, of course, what first struck the readers of Empson's criticism, which seemed to treat poems as possessing a hitherto unknown substantiality, as if full slices of lived worlds past. His own poems feel like registers of intellectual history: "Letter V", for instance, nominally a love poem, quickly turns into a switchboard, its various regions going lambent with analytic, visual, linguistic, and sensuous voltage. To come to terms with its peculiar ethics, one passes through mathematics, science, philosophy, art, semiotics, and poetics, in a circuit engineered meticulously with the whole arsenal

[183] Haffenden's introduction in Empson, *Argufying*, p. 16.

of Renaissance techne: catachresis, endophora, verbal puns, grammatical puns, prepositional and pronomial ambiguity, and indeed, the seven types of ambiguity, and more.

Such a haunted, neurotic project throws up unique challenges to literary criticism, principal amongst which are its modes of disclosure. Reading, re-reading, and back-reading, all effect subtle alterations to the poet's emotional state, which in turn affect the eventual, albeit fleeting, meaning of the poem. Close-reading today proceeds primarily through paraphrase, which proves inadequate to countenancing the graduated hermeneutics demanded by Empson's poems—this can be seen in how facile Empson's own paraphrastic endnotes often seem. Roberts once said that to Empson, "meaning is not any of these readings [the series of paraphrases], nor is it their arithmetical sum, it is the result of having all these in mind at one time"—my method hopes foremost to achieve this effect.[184] I shall try to modulate the present reading to the phenomenological disclosure of the poem, which may be summarised as follows: "Letter V" hopes to show how a mathematical love poem is absurd. To show absurdity without becoming farcical, a convention must be found where it would not seem strange to express love mathematically. To sing 'geometric praise', thus, the poet revives a largely forgotten Renaissance technique of periphrasis, and contrasts it with poetry's natural mode, the metaphor. An even more difficult task is to confess within the lines of a poem its own folly. To announce its own amatory failure, two dramatic reversals are affected: the poem (1) projects a sculptural image and (2) rejects all metaphors, only to then retract both gestures. Broadly speaking, the present reading is designed to shadow the eloquence of these operations.

"Letter V"

1. Not locus if you will but envelope,
   Paths of light not atoms of good form;
   Such tangent praise, less crashing, not less warm,
   May gain more intimacy for less hope.

5. Not the enclosed letter, then, the spirited air,
   The detached marble, not the discovered face;
   I can love so for truth, as still for grace,
   Your humility that will not hear or care.

9. You are a metaphor and they are lies
   Or there true least where their knot chance unfurls;
   You are the grit only of those glanced pearls
   That not for me shall melt back to small eyes.

13. Wide-grasping glass in which to gaze alone
    Your curve bars even fancy at its gates;
    You are the map only of those divine states

[184] Roberts, *Critique*, p. 26.

You, made, nor known, nor knowing in, make known.

17. Yet if I love you but as Cause unknown
Cause has at least the Form that has been shown,
Or love what you imply but to exclude
That vacuum has your edge, your attitude.

21. Duality too has its Principal.
These lines you grant me may invert to points;
Or paired, poor grazing misses, at your joints,
Cross you on painless arrows to the wall.

Although four "Letter" poems preceded, the fifth, with 'envelope' and 'enclosed letter', is the first to reflect on its title. The poet says he shall not address the 'points' made, likely from previous correspondences, but focus instead on the surrounding envelope; that his response, the poem itself, is concerned not with the contents of the 'enclosed letter' but the ideas they suggest, the 'spirited air', where he will conduct an experiment to convert the actual into the Real. It is a rather slant continuation of the theme in the other "Letters", namely, the troubles to communication in modern times.[185] However, to begin a diegetic dispute on metaphysics, the poem quickly supresses its postal context by bringing to the surface the mathematical obscurities embedded in quotidian words. Seemingly interested in communication, at least as a function of Eros, the poem's concern soon passes beyond its addressee. The experience of space-time having been irretrievably warped by Relativity, "Letter I" begins the series with a 'non-Euclidean predicament' to lovers' communion. By "Letter V", the poet has realised that commitment to the ideas which set the first letter in train bring his lover's very existence eventually to doubt. Thus, in the final vision, surrendered completely to abstraction, the poet announces the futility of his penumbral adoration.

This bears on the larger question of this chapter, namely, how the fineness of description made available by modern mathematics conditions human intimacy—at least as perceived by poets.[186] We have seen Roberts projecting a bridge between the poet and his companion using matrices and quaternions.[187] "Letter V" assumes the subject of love in a world of geometry. Veronica Forrest-Thomson, for instance, reads the poem as saying, "if one attempts to give an external meaning [in mathematical terms] outside the structure of the poem, outside the standards of truth created by poetic lying, the strands of ideas lose any validity; in the poem, like Sir Lancelot,

[185] Katy Price, 'Monogamy and the Next Step?: Empson and the future of love in Einstein's Universe' in Bevis, *Versions*, p. 245.
[186] See section 1.4 for a discussion of 'modern mathematics'.
[187] See section 3.1.

faith unfaithful keeps them falsely true".[188] Although "Doctrinal Point" traded in internal standards of truth, "Letter V" does not quite agree with Forrest-Thomson's formalism. Rather, it contests 'standards of truth' by ironising the conventions of sensuous love poetry and rendering its subject in a language opaque to carnal appetite.

Reading Empson's poetry against the Metaphysical tradition is démodé. After an initial flurry of enthusiasm for his poems, provoked in part by F.R. Leavis's strong recommendations,[189] by the 1950s, John Wain and Alfred Alvarez had "set the terms for the post-war influence of Empson's poetry": that he was the heir to Donne.[190] In critical circles, Empson's poems languished until the noughties, as no fertile branch of re-evaluation emerged. Although John Fuller argues that Empson cast a long shadow on poets whom he dubs "neo-Empsonians", throughout the latter half of the twentieth century, it was Empson's literary criticism that was the chief influence.[191] This owes to the confusion we discussed when reading "Doctrinal Point", about Empson's supposed tirade against distinctions between poetry and prose. In actuality, the brand of plain-speaking, common-sense poetry called 'neo-Empsonian' seems to bear very little resemblance to poems like "Letter V". Recently, critics have seen Empson's early poems as representing a modernist enthusiasm for science, and the late poems as belonging to the committed verse of the 1930s.[192] Despite the revival of interest in Empson's poems, particularly in the field of modernism and science, "Letter V" has been ignored. I would venture that the poem's labyrinth of pure geometric imagery is not readily available to an interpretation in physics. A concentration on mathematics, however, allows attention to aspects crucial to Empson's love poems, which can only be glossed in general terms when the focus is science, as in Kitt Price's and Michael Whitworth's essays in *Science in Modern Poetry*.[193] Reading "Letter V" as tweaking Metaphysical tropes to contend with the modern surrender to mathematical description, I hope to offer a synthesis of the old and new critical traditions.

J.H. Willis says that it in "tone, imagery and structure […] 'Letter V' is one of Empson's most metaphysical poems".[194] The critical consensus agrees with Willis. Joseph Duncan, in *The Revival of Metaphysical Poetry*, spots "Donne's familiar compass conceit" in "Letter V" and says the "poem also fits into the later metaphysical tradition".[195] Forrest-Thomson, similarly, twists the

188 Forrest-Thomson, *Artifice*, p. 95.
189 Leavis, 'Cambridge Poetry', p. 318.
190 Haffenden, *Christians*, p. 352.
191 John Fuller, 'On William Empson', *Encounter* 43.5 (1974), p. 75.
192 Examples here are Kitt Price's work on Empson which will be cited presently and Kohlmann's *Committed Styles*, respectively.
193 Holmes, *Science*, p. 94-5 and 116-119.
194 Willis, *Empson*, p. 37.
195 Joseph Duncan, *The Revival of Metaphysical Poetry* (Minneapolis: University of Minnesota Press, 1959), p. 198.

locus-envelope complex of the first line to fit Donne's compass conceit.[196] Although the legacy of Donne is unarguably pregnant in its lines, strapping the poem to a single antecedent leads to deceptively easy resolutions, as when Duncan says, "Empson's lady [in the poem]—so unknowable and perplexingly separate—is at last known and caught through the logic of his geometry".[197] From his jilted state, we shall see, the poet finds no release, either in 'knowing' or 'catching' his lover, save for a brief epiphany that in the end offers no resolution. As regards Donne's influence, I am, on the whole, in agreement with Leavis, who "hasten[s] to disavow the suggestion that he [Empson] is derivative [of Donne]".[198] Only upon bringing to mind the range of Empson's historical references can we follow the Metaphysical play on words in the poem. I shall argue in this section that the poem's central dispute between mathematical and metaphorical description can best be understood in dialogue with John Cleveland's "The Hecatomb to his Mistresse", a source previously unrecognised by Empson's critics.[199]

3.2.1 The World is your Periphrasis

In humanist tradition, the mistress of "Letter V" remains unattainable. Although sex is hardly relevant in the poem, we shall require it for shorthand: interpreters have mostly used 'she', but 'he' seems more appropriate, when the arrows of the final line bring to mind those transfixing St Sebastian, a gay icon.[200] Kitt Price identifies the addressee of the "Letter" poems as a certain Desmond Lee, if such biographical particulars should help in grasping an object so obstinately general.[201] Having 'less hope' that this Desmond will 'melt for me', the poet addresses instead the boy's ideal Form. The Renaissance mistress unattainable to Troubadour persuasion is an attractive, yet fraught, model for the youth of "Letter V"; at first, Petrarch's Platonic Laura seems to parallel 'the Form' with 'Cause unknown' [17-18].[202] Leah Whittington records a shift in Italian love poetry

196 Forrest-Thomson, *Poetic Artifice*, p. 93.
197 Joseph Duncan, *Metaphysical Poetry*, p. 198.
198 F. R. Leavis, *FR Leavis: Essays and documents*, ed. Ian MacKillop and Richard Storer (New York: Continuum, [1995] 2005), p. 16
199 Our use of 'metaphysical' is mainly in keeping with some modernist uses of the term, as the argument depends on how Empson saw himself modifying the tradition. With regards to the effect, subject and mode of metaphysical poetry, respectively, T.S. Eliot's development of George Santayana's idea that metaphysical poetry combines the 'philosophical' and the sensual (*The Varieties of Metaphysical Poetry*, ed. Ronald Schuchard (London: Faber and Faber, 1993 [1926 and 1933]), p. 47-49; also see Eliot, 'The Metaphysical Poets', p. 669-70), Herbert Read's distinction of 'metaphysical' from 'lyric' as poetry that "deals with [abstract] concepts" (*Reason and Romanticism* (London: Faber and Faber, 1926), p. 33) and Empson's notion that the metaphysical mode was to argufy in verse (Haffenden, *Mandarins*, p. 359), will appertain to our uses of the term. See also George Santayana, *Three Philosophical Poets* (Cambridge: Harvard University Press, 1910).
200 In Christopher Ricks's introduction to T.S. Eliot, *Inventions of the March Hare: Poems by T.S Eliot 1909-1917*, ed. Christopher Ricks (London: Faber and Faber, 1996), p. 267-70. Ricks, however, is adamant to domesticate Empson's love poems in 'Empson's Poetry' in Gill, *Empson*, p. 145-207.
201 Price, 'Monogamy', p. 244.
202 Robert Valentine Merill, 'Platonism in Petrarch's "Canzoniere"', *Modern Philology*, 27.2 (1929): 161-74, p. 161.

upon the arrival of neo-Platonism in Florence: "the supplicatory mode of addressing the beloved, with its concomitant hope for an erotic response" was replaced by "laudatory speech […] celebrating the lady's divine virtue".[203] The poet in "Letter V" likewise has 'less hope' for carnal success, and so as a matter of course, moves on to 'the divine states'. However, the 'ladder of love' as framework fast exhausts its explicative potency, as the deeper concern of "Letter V" lies, beyond the adoration itself, in the psychological effects of loving vacant Form. And we must accordingly look further. When Shakespeare had finished toying with the Petrarchan tradition, his "mistress' eyes" being "nothing like the sun", the Metaphysical poets began to recognise in the unapproachability of the lady a limitation to language itself. Sensing this, Donne, according to Frank Doggett, modified the trendy neo-Platonism of his day by reintroducing sensuality to the hitherto pious exaltation of virtue.[204] Read against the heady sexuality of Renaissance verse, "Letter V" seems a conscious reversal of Metaphysical aims: to impress how distant to sober mind the body seems in its twentieth century context—the 'grit' of line 11, placing the incarnation of the 'divine states' further from sensuous apprehension than perhaps it has ever been in a love poem.

The Gardners say, "what force the poem has comes not from Empson's intellectual attempts to define the indefinable, but from the reader's sense of an amatory failure".[205] Forrest-Thomson uses Duncan's surmise of a 'lady caught by geometry' to, like the Gardners, criticise the mathematical images in the poem as dulling the dynamism necessary to a love poem.[206] But the amatory failure from 'attempts to define the indefinable' is plainly intentional. To endure rejection, the poet petrifies his lover into abstract shapes. A reading that doesn't recognise this presumably implies that Empson is oblivious to the alienating effects of his devices.

The poem from start creates a dissociative register by describing in periphrasis rather than metaphor. In the Renaissance, 'periphrasis' was used to express inexpressibility. Dorothy McCoy defines it as "a figure which usually is considered to elaborate, elevate, or decorate".[207] But the term has historically signified both euphuistic surplusage and circumlocution. In 1560, Thomas Wilson illustrated the relation between the two senses; periphrasis, he says, can be a "large description, either to set forth a thing more gorgeously, or else to hide it".[208] From John Hoskins's later theories of rhetoric, 'periphrastic' has also come to mean "strange and admirable".[209] Derek

[203] Leah Whittington, *Renaissance Supplicants: Poetry, antiquity, reconciliation* (Oxford: Oxford University Press, 2016), p. 90.
[204] Frank A. Doggett, 'Donne's Platonism', *The Sewanee Review* 42.3 (1934): 274-92, p. 281-2.
[205] Gardner and Gardner, *God Approached*, p. 147.
[206] Forrest-Thomson, *Poetic Artifice*, p. 93.
[207] Dorothy Schuchman McCoy, *Tradition and Convention: A study of periphrasis in English pastoral poetry from 1557-1715* (The Hague: Mouton & Co, 1965), p. 14.
[208] Ibid., p. 175.
[209] Ibid., p. 24.

Attridge detects its presence even in modernism, particularly in *Ulysses*, where the narrator uses "elegant variation or periphrasis".[210] The conceptual tension in the term, between setting-forth and concealing, was also an aspect of early Symbolism, which saw poetry as "endowed with the power to see behind and beyond the objects of the real world to the essences concealed in the ideal world"[211]; but Symbolist strategies were markedly different from Renaissance rhetoric. In "Letter V", the poet uses periphrases—'envelope', 'paths of light', 'detached marble'—to speak indirectly of, and in some ways to hide the physical object—'locus', 'atoms of good form', 'the discovered face'—but in the process, the object of his elevated circumlocutions comes to seem 'strange and admirable'. McCoy says the "periphrastic treatment of a word or an idea is often unwieldy. Its failure is likely to be more evident and its triteness more annoying than that of other figures".[212] Stanley Fish, distinguishing the types of poetic meaning that issue from syntax and impact,[213] ventures the possibility that failure can in fact be a persuasive mode of argument.[214] This is evidently so in "Letter V"—and whilst critics cite the failure to dismiss the poem, we shall proceed to see it as an effect scrupulously achieved.

The seventeenth century poet John Cleveland exploited periphrasis to highly comic results. Herbert Grierson, in his introduction to *Metaphysical Lyrics and Poems*, promotes the importance of Cleveland—this was possibly Empson's first encounter with the poet.[215] In the practice we have discussed, of separating body and Form, Grierson describes Donne as an exponent in "ironical fashion", William Habington, "with tedious thin-blooded seriousness", and Cleveland, "with naughty irreverence".[216] Whilst the puffery in "Letter V" lies somewhere between Donne's "Negative Love" and Cleveland's "Hecatomb to his Mistress", its tone is more irreverent than ironical. Colin Burrow argues that Cleveland was very influential in the historicization of the Metaphysical genre:

> 'Hecatomb to his Mistress' is perhaps the point at which metaphysical poetry first shows signs of defining itself as 'metaphysical' […] In a passage which Johnson cites in his definition of 'metaphysics' in his *Dictionary* of 1755, Cleveland urges poets to set aside hyperbolic praise of their mistresses, since his mistress exceeds

[210] Derek Attridge*, Peculiar Language: Literature as difference from the Renaissance to James Joyce* (London: Methuen & co, 1988), p. 164; also see a later use by Eliot in 'East Coker': "That was a way of putting it—not very satisfactory:/ A periphrastic study in a worn-out poetical fashion,/ Leaving one still with the intolerable wrestle/ With words and meanings."
[211] Charles Chadwick, *Symbolism* (London: Routledge, [1971] 2018), p. 3.
[212] McCoy, *Periphrasis*, p. 12.
[213] Stanley Fish, *Is There a Text in this Class?: The authority of interpretive communities* (Cambridge: Harvard University Press, 1980), p. 76.
[214] Ibid., p. 238.
[215] Herbert Grierson, *Metaphysical Lyrics and Poems of the Seventeenth Century* (Oxford: Oxford University Press, 1921); Haffenden affirms Empson's intimate familiarity with Grierson in *Mandarins*, p. 361.
[216] Ibid., p. xxxv-xxxvi.

> any possible extremity of comparison: 'Call her the metaphysics of her sex, And say she tortures wits'.[217]

"Hecatomb", as we are about to see, can be used as an analogue text to "Letter V".

The poet of "Hecatomb" begins with a rather arrogant dismissal of his peers, telling them to "Be dumb ye beggars of the rhiming trade" [1].[218] He promptly qualifies the derision as directed specifically to those who trade in metaphor, and prays the reader suffer him 100 lines of circumlocution to demonstrate why periphrasis is better fitted to capturing the true lineaments of his mistress.

> My text defeats your Art, ties Nature's tongue,
> Scorns all her tinsil'd metaphors of pelf,
> Illustrated by nothing but her self.
> […]
> So is it with my Poetry and you.
> From your own essence must I first untwine,
> Then twist again each Panegyrick Line. [8-10, 14-16]

"Letter V" begins just so, manifestly rending its addressee into attributes essential and expendable. It was similarly not uncommon in the seventeenth century for lines of verse to backwardly acknowledge their own distortions, confessing in their art a tendency to veer autonomously from the notional subject of the appraisal. For Shakespeare, it was the Original Sin of his trade: "And almost thence my nature is subdued/ To what it works in, like the dyer's hand".[219] However, in the reverse attempt, as in Cleveland, to observe supreme fealty to essence, Empson recognises a nigh erasure of subject from imagination. "These lines [of praise] you grant me" in "Letter V" become as slippery as the 'panegyrick line' that Cleveland unwinds from his mistress. The circumstance is glaring in the following stanza.

> As then a purer substance is defin'd
> But by an heap of Negatives combin'd,
> Ask what a Spirit is, you'l hear them crie,
> It hath no matter, no mortalitie:
> So can I not define how sweet, how fair,
> Onely I say she's not as others are.
> For what perfection we to others grant,
> It is her sole Perfection to want. [31-38]

After an initial bluster, the poet finds soon enough that to love pure spirit poses an almost insurmountable challenge to the familiar diction of poetry—that is, once words like 'sweet' and 'fair' are no longer available. Just so, in "Letter V", the 'paths of light' conspicuously lack the

[217] Colin Burrow, ed., *Metaphysical Poetry* (London: Penguin, 2006), p.ii.
[218] My source for the poem is John Cleveland, *The Poems of John Cleveland*, ed. Brian Morris, and Eleanor Withington (Oxford: Oxford University Press, 2013), p. 50.
[219] Sonnet 111 (Shakespeare, *Sonnets*, p. 317).

semantic concomitants of 'atoms of good form'—however sharp the poet's protractor, the lover's outlines never become sufficiently buxom.

In the manuscript version of "Letter V", Empson had included in the poem the line, "I have loved the sea-mark of a standing negative".[220] This seems to have been an attempt to develop line 7, namely, 'I can love so for truth, as still for grace'. Taken together, the lines assure himself and the quizzical reader that he *can* love a bare truth, for he has already loved a symbol without instance: a 'sea-mark' is the high tide line and a navigation sign for sailors lost at sea; and a 'standing negative' seems to suggest a paradox: a 'negative', non-existent and to sense inconceivable, yet stands up to assert its presence. In other words, the poet not only infers what is absent—the negative—by a mark, the silhouette of the tide line—, but he is then able to love it. The cerebration elicited by the unpublished line was also meant to prepare the 'vacuum' in line 20 that 'has your edge'—being able to recognise a negative mark, he can also to discern an outline of vacuum.

'Metaphors', in "Hecatomb", are 'pelf' and in "Letter V", 'lies', and so are replaced by periphrases—the writing around a 'standing negative' to disclose, however tangentially, 'a purer substance […] defin'd/ But by an heap of negatives combin'd'. Defining through negatives—or showing by concealing—, we shall recall, is how periphrasis was defined in the Renaissance. Donne used it in "Negative Love": "If that be simply perfectest,/ Which can by no way be express'd/ But negatives, my love is so" [10-12]. Remembering the once incarnate lover of "Letter V" as the 'positive presence', representing him from without, through tangents, may be seen as loving the 'standing negative'.

Cleveland goes on to develop his apophatic paean in a manner cognate to "Letter V": "She that affords poor mortals not a *glance*/ Of knowledge, but is known by ignorance" [93-94] [Emphasis mine]. According to Haffenden, the 'glanced pearls' of "Letter V" carries the suggestion of 'glimpsed' and a secondary one of 'polished'.[221] In both poems, the former sense is used to suggest how fleeting a glimpse of 'true' form can be. The implication of 'glance' in "Letter V", however, is primarily visual, as in the tangents of the envelope glancing off the lover's body and scintillating his outline. Our analysis of negative expression is similar to Derrida's sense of "tangentiality", whereby presence is made sensible by a series of glancing blows at "the limit".[222] Periphrasis is thus used to hold in place the acutely provisional form revealed to a rational mind; as Being begins to dissolve in the advancing margins of the intellect, the poet scrambles to write

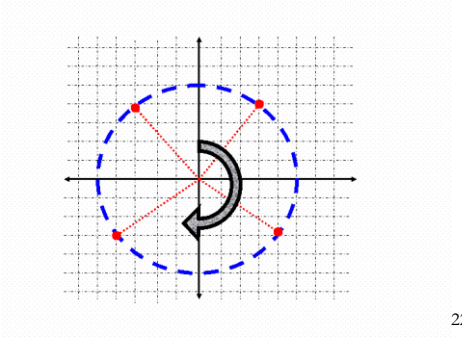
[220] Haffenden, *Poems*, p. 284.
[221] Ibid., p. 286.
[222] Jacques Derrida, *On Touching—Jean-Luc Nancy*, trans. by Christine Irizzary (Stanford: Stanford University Press, [2000] 2005), p. 136.

around and round her, "Till bafled Poetry hangs down her head,/ She, she it is that doth contain all bliss,/ And makes the world but her Periphrasis" [98-100].

Cleveland saw mathematical description, with the attendant precision and abstraction, as an appealing mode of periphrasis: "Call her the *Square Circle*, say/ She is the very rule of *Algebra*" [83-84]. Her essence makes a mockery of geometry—the branch of mathematics nearest to sense—and testifies to the axiom of algebra: that is, the replacement of the concrete with fungible abstract symbols. Empson similarly announces his periphrastic design with mathematical description—in the words 'locus' and 'envelope'. The poem groups the arcane, technical senses of phrases—for instance, of 'envelope', 'paths of light' and 'spirited air'. It uses an exaggerated version of the technique known as catachresis, which was often employed by Donne. Like Empson, Donne used the tool to "extend the comparison far beyond rational bounds so that the mind may on its own discover the truth or the 'unspeakableness' of the relation".[223] The poet of "Letter V" begins in a rather smug mood; his resort to geometry doesn't seem a confession of inadequacy, but a demonstration of higher perception. For unlike Empson's endnote paraphrases, which concede by their derivative nature, an inferiority to the poem, periphrases fancy themselves reaching beyond their disdained source.

Empson glosses line 1 as follows: "a locus defines a surface by points and an envelope defines it by tangents".[224] Whilst supplying the context, the note does not account for ambiguity. Taking locus to image a 'moving point' is more consistent with line 11, where the poet refers to his lover as 'grit'. The locus and grit picture a body as seen from the poet's heavenly vantage.[225] A conceptual change in the twentieth century with the popularisation of set theory gives 'locus' added layers of meaning. Modern mathematics re-defined 'locus'—which had simply meant 'place'—to a set of points that satisfy a particular condition.[226] Let us take the circle around the origin (0,0) as simple instance here.

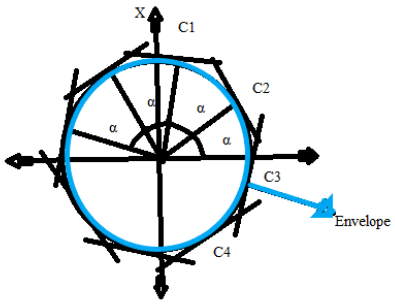
[223] Thomas O. Sloan, 'The Rhetoric in the Poetry of John Donne', *Studies in English Literature, 1500-1900* 3.1 (1963): 31-44, p. 42.
[224] Haffenden, *Poems*, p. 285.
[225] And not, as the Gardners seem to think, "her invisible interior essence" (Gardner and Gardner, *God Approached*, p. 149).
[226] Roger Cooke, *The History of Mathematics: A brief course* (New Jersey: Wiley, [1997] 2013), p. 459.



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The locus in the diagram above is rendered in blue; its condition is the equation of a circle: $x^2+y^2=r^2$. The double sense of locus emerges by taking the dotted blue line as (1) the set of points equidistant from one central point, namely, the origin[228] and/or (2) the path traced out by one point such that it remains of equal distance from the central point.[229] In various lines of the poem, either sense is implied, as if the dual sense of locus was a legend to map the other members of its set: 'Grit only' pictures the body as an insignificant point, whose ineffable aura, polished by negative periphrases, gradually glistens to an abstract, other-worldly 'pearl'—and thus, the lonely hell of the mathematician becomes "darkness visible"; and the phrase 'atoms of good form' agrees rather beautifully with the Democritean picture of human being as a collection of points.

Points, atoms and grit are, of course, what his lover will *not* be praised as. The poet's 'tangent praise' will instead form an envelope, a line or curve that touches all the members of a family of curves or lines.



In the diagram, the curve labelled 'envelope' is a circle tangent to each member of a family of lines, C_1 to C_n. A collection of lines or curves is known as a family when they are collectively defined by one function, or a set relation to the two axes (x and y); in the case above, this commonality is visible in the uniform angle 'α' between the perpendiculars of each line in the family. This poses a problem to the distinction asserted in line 1, because an envelope may just as well be a locus. The

227 Image distributed under a CC-BY 2.0 license.
228 A.N. Whitehead, *An Introduction to Mathematics* (London: Williams and Norgate, 1911), p. 97.
229 John Casey, *A Sequel to the First Six Books of the Elements of Euclid Containing an Easy Introduction to Modern Geometry with Numerous Examples* (Dublin: Hodges, Figgis, & co., 1886), p. 5-6.

set of tangents that form an envelope can amount to a locus whose moving point simply has the condition that it be an envelope—that, in other words, the moving point must travel along a path tangent to a family of lines; we may recall in the previous diagram the circle as a locus. Indeed, the *OED* defines an envelope in these very terms: "The locus of the ultimate intersections of consecutive curves in a family or system of curves". However, the terms are opposed with such analytic precision in their two groups that a clear antithesis yet emerges in the poem—broadly saying, "I shall comprehend you as a collection of grazing tangents encircling your form, not as the atoms I can see and feel".

The contrast in line 2 between 'paths of light' and 'atoms of good form' hauls even quantum physics into the discursive arena of the poem. The poet insists that his mistress appears to him not in any avatar of light, but specifically as waves, for no point or particle shall impede the geodesic he is about to trace.[230] The subtext of physical discourse in line 2, coupled with a nod to set theory in line 1, declares the vision as emerging from the deep isolation of a mind captive to the mathematical and scientific pictures of the world.

Empson's habit of using metaphors from Einstein and Heisenberg derived from Donne's use of Copernicus and Galileo.[231] Association with the often-strained sophistry of Donne has at times led critics, as we saw with the Gardners and Forrest-Thomson, to accuse Empson's poems of lacking feeling. In *Renaissance Literature*, Empson said of Rosemond Tuve,

> As I understand her, she treats the Donne line of talk that the idealised woman is a world, or that the two happy lovers are a world, as a straightforward use of the trope amplificatio. […] I do not think you get anywhere with Donne unless you realise that he felt something different about his repeated metaphor of the separate world; it only stood for a subtle kind of truth, a metaphysical one if you like, and in a way it pretended to be only a trope; but it stood for something so real that he could brood over it again and again.[232]

Just so, in the sleepless world of Empson's poems, mathematical images 'pretend to be only a trope' but reveal the poet rancorously inching to some 'subtle kind of truth', 'brood[ing] over it again and again'. Geoffrey Hill marks his "astonishment that Empson's poetry was once considered to possess the 'neutral tone' when his lyrics strike one as being lit by a baroque protean gleam".[233] In Empson, as in Donne, "there is a recreation of thought into feeling"[234] or "felt

[230] We shall recall that Empson borrowed another aspect of quantum theory, namely Indeterminacy, for "Doctrinal Point".
[231] Price, 'Empson's Einstein', p. 98.
[232] William Empson, *Essays on Renaissance Literature: Volume 1*, ed. John Haffenden (Cambridge: Cambridge University Press, 1994), p. 5.
[233] Geoffrey Hill, 'The Dream of Reason', *Essays in Criticism* 14 (1964): 91-101, p. 92.
[234] Eliot, 'Metaphysical Poets', p. 379 (1921).

thought".[235] The adopted metaphysical label allows Empson to refine his wit-induced emotion by modifying convention. He writes that in Donne's poetry,

> The individual praised is the Logos of the virtues he or she typifies, he or she is the abstract idea Beauty or Virtue itself, and therefore constitutes the reality of those qualities in any person who possesses them. The lovers who are a separate planet get part of their dignity from this process, because they epitomise the actual world and are partly its Logos; this is what equips them to be a complete planet.[236]

The youth of "Letter V", however, becomes far displaced from the liminal state between world with Logos that the Renaissance lady once occupied. First of all, in loving pure Logos, there is 'less hope' "of getting to bed together".[237] The poem mentions no physical, or indeed even intellectual, meeting of lovers: as in "Letter I", one imagines the poet, far from fusing into one planet with his lover, as an isolated star folding unto himself.[238]

The act of defining Eros in the poem, bordering on the neurotic, develops yet another metaphysical trope.[239] This was tried by other twentieth century metaphysicals such as Herbert Read, in his "The Analysis of Love". Bradbrook and Thomas say the word 'definition' in Marvell's "The Definition of Love" would have sounded to its readers as technical pedantry, since the idea of rigidly circumscribing denotation was alien to Renaissance English. That "love, the unruliest of the passions, is to receive a definition",[240] might have seemed to the mid-seventeenth century as absurd as passionate praise in geometry, to the twentieth.[241] Although "The Definition of Love" influenced "Letter V", the poem is designed to ironise, mostly through hyperbole, a set of seventeenth century conventions rather than any individual poem. In *Elizabethan and Metaphysical Imagery*, Tuve points to a similarly jarring exercise in Robert Herrick's two-line poem, "The Definition of Beauty":[242] "Beauty no other thing is, than a beam/ Flash'd out between the middle and extreme". The poet of "Letter V" likewise defines beauty from the extremes, with 'such tangent praises', and unsurprisingly, the results are 'less crashing'.

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235 Read, *Reason and Romanticism*, p. 40.
236 Empson, *Renaissance*, p. 74.
237 From Empson's letter to Maxwell-Mahon (Haffenden, *Poems*, p. 286).
238 Reading given by Price, 'Flame', 312-322.
239 The Gardners say Marvell's 'The Definition of Love' stages the "human conflict" in 'Letter V' (Gardner and Gardner, p. 147).
240 M. C. Bradbrook and M. G. Lloyd Thomas, *Andrew Marvell* (Cambridge: Cambridge University Press, 1940), p. 45
241 It slowly stopped seeming so with the advancing influence of The Royal Society in the latter half of the seventeenth century; take, for instance, Thomas Spratt who in his *History of the Royal Society* (1667), asked for a return to "a close, naked, natural way of speaking [...] bringing all things as near the Mathematical plainness, as they can" (qtd in Reinhold Schiffer, *Oriental Panorama: British Travellers in 19th Century Turkey* (Atlanta: Radopi, 1999), p. 344).
242 Rosemond Tuve, *Elizabethan and Metaphysical Imagery* (Chicago: Chicago University Press, 1947), p. 302; this source has not been identified by critics.

The parody of convention often takes the form of hyperbole because the barrier to lovers' trysts in the twentieth century was not the region cloud of puritanism, but the accustomed torpor of rationalism. While in "The Definition of Love", "the love which us doth bind/ Fate so enviously debars" [29-30], in "Letter V", the mind that sees 'curves bars even fancy at the gates'. The distinction is marked even in the different geometric metaphors that are employed. Marvell uses Euclid's fifth postulate:

> As lines (so loves) oblique may well
> Themselves in every angle greet:
> But ours so truly parallel,
> Though infinite, can never meet. [25-28]

In the Euclidean world, Marvell is able to rely on the dogma that parallel lines never meet to symbolise the eternal separation of lovers but the twentieth century poet of the "Letter" poems is dispelled even of the illusion that 'we have space in common'; he is left with visions of fantastical shapes in a 'wide-grasping glass in which to gaze alone'. Empson glosses this phrase as giving "the reflection an odd geometry as in non-Euclidean space, so that you can't imagine yourself inside it".[243] All Empson's "Letter" poems end on a desolate note but in "Letter V", the cosmic loneliness seems almost directly induced by the poet's mathematical cast of mind.

3.2.2 The Marble Detached

Having discussed how Renaissance conventions are ironised to intone a cultivated mood, sliding from arrogance to loneliness, we turn now to the second burden assumed for this reading, namely, to show the radical transformations to image and sense by shifts in register and tone. First, to the image. The poem projects a figure in the first 4 stanzas, which it then retracts in the fifth—the procedure sensually rehearses for the reader the emotional narrative of the poet who introverts from Eros to Logos. The effect is achieved via a series of periphrases, or 'standing negatives', that modify one another, not necessarily per chronology. The word 'gaze' in line 13 has an intentional force which secures our sense of 'glanced'—the negative definitions as vectors 'glancing off' the body of the youth.[244] Taking locus as moving point, we imagined the pearl of line 11 forming around a mote of dust, the body. It is important to visualise the vectors of the poet's gaze (recorded in the lines of the poem) as *sculpting* the pearl into being, a circumstance which backwardly clarifies the curious phrase of line 6, 'the detached marble'. Rather, the impersonal eyes are *insculped*[245] into apparition by the poet's negative periphrases—the sense of eyes as pearls can also be found in

[243] Haffenden, *Poems*, p. 285.
[244] Intentional as in Husserl's intentionality, being directed towards something.
[245] The regular term 'engrave' shall not suffice here because the poem, as we shall see, specifically requires the reader to imagine a sculptural image as *not* being sculpted.

"Letter III", "you heal the blind into a round of pearl" [16] and *The Tempest,* "those are pearls that were his eyes"; pearls which to Ariel, as to the poet of "Letter V", become more attractive than the pupiled eyes of people. The Gardners argue that "'detached marble' conveys coldness more than the potentiality of a sculpture in the making".[246] They do not, however, say why coldness and sculpture are mutually exclusive; Hulme described sculptures as impersonal, Russell, as we have quoted, even compared mathematics to sculpture: "mathematics, rightly viewed, possesses not only truth, but supreme beauty—a beauty cold and austere, like that of sculpture", connecting, as it were, the chisel and marble of "Letter V". We, at any rate, take the reference to sculpture as crucial to the poem's doings. When writing the poem, Empson likely had the Afhgani Buddhas in mind, which inherited their art from Attic design. The statues, with pupil-less eyes lacking all speculation, were to Empson the highest symbols of Buddhist impersonality.[247] The unpublished stanza from the manuscripts of the poem even contain the line, "those depths in Buddhas".[248] The poet, in the first 4 stanzas consummately achieves the unearthly extreme that the Fire Sermon—which, as we have seen, headlines the first edition of the *Collected Poems*[249]—represented to the young Empson.[250]

Although the recently published *Face of the Buddha* has not as yet provoked much critical attention, it allows for a much-needed re-evaluation of his poetry. To the young Empson, the Gandhara Buddhas, with their blank, pearly eyes, represented an extreme form of spiritual detachment.[251] "Letter V" is the poet's attempt to compose these statues in words; with 'tangent praise', to erect a 'non-figural figure'—I concoct this oxymoron to register difficulty in reconciling the solid connotation of 'marble' with the spectral monstrance of the poem. The family of curves, the 'envelope', girding the young boy, completes the 'detached' sculpture in line 20, where 'vacuum has your edge, your attitude'. The terms require a careful gloss. The idea that 'vacuum' defines the boundary of form approaches contradiction: you are made visible by the invisible (you thus bar even fancy at the gates). But in the disembodied mind of the poet, his lover has miraculously just flickered into abstract existence. The poet tries to reveal this ignis fatuus to the reader; but we can only acquiesce this invitation disincarnately—line 20 thus brings about something like a methexis-

246 Gardner and Gardner, *God Approached*, p. 148.
247 Empson, *Buddha*, p.8-9. Even if Empson had not written this section at the time of writing 'Letter V', this idea is discussed in his main source in *The Face of the Buddha*, which he had definitely read by 1932, namely, Ananda Coomaraswamy, *History of Indian and Indonesian Art* (Mineola: Dover, 1927), p. 23.
248 Haffenden, *Poems*, p. 284.
249 William Empson, *Collected Poems* (New York: Harcourt, 1949), p. 1.
250 See section 2.1.
251 Empson had a manuscript of the book in 1932 (Arrowsmith, *Buddha*, p. i), around the same time when he was writing 'Letter V' (Haffenden, *Poems*, p. 283).

in-reverse.[252] The entreaty to disincarnate imagination emerges from the equation of 'edge' with 'attitude'. The *OED* says 'attitude' was originally a technical term in art and design used to denote "a 'disposition' of a figure in statuary or painting"; in art history, it has been carefully distinguished from the term 'posture', which invests psychology to the action. In *Buddha*, Empson discusses in detail the various meanings of the Buddha's 'mudras'—or "position of hands and arms";[253] these poses, he observes, communicate meaning through pure convention which was not conceived as an extension of the individual character being depicted.[254] The 'attitude' of the figure in the poem, in concert with the pupil-less pearls for eyes, thus drains the lover of all individual characteristics. We are to somehow detach the 'attitude' or deportment from the 'marble', or material. There is a latent sense from Renaissance humanism, in which the detached marble could be seen as the bits of marble removed from the edges of living form, which Michelangelo says is "the task of the sculptor to discover" in irregular blocks of marble. The edge as vacuum in the poem's figure, however, needn't shed crumbled refuse to free the figure: it brings the attitude of a conceptual being, a general personality, into relief: an advent which the poets believes can be achieved satisfactorily, if not entirely, in the abstract science of geometry. To conceive what cannot be imagined, of course, is the natural occupation of the non-Euclidean geometer. The poem's anaphoric modifications to its meaning thus entirely defeat critical paraphrase.[255] Unless the retraction of image, the entelechy-in-reverse, is squared in time by a reverse-in-methexis, the poem willll remain impenetrable to the embodied reader.[256]

The geometric daemon reveals the 'divine states' by his 'attitude'. T.E. Hulme explains how qualities human and divine were distinguished in Phidian Greece.[257] Empson knew that the Gandhara Buddhas descended from the Greek Kouroi,[258] so the ideas in Hulme are transferrable:

> It is necessary to realise that there is an absolute, and not a relative, difference between humanism (which we can take to be the highest expression of the vital), and the religious spirit. The divine is not life at its intensest. It contains in a way an almost anti-vital element; quite different of course from the non-vital character of

[252] Methexis is a term from Ancient Greek theatre. It denotes the participation of an audience in the ritual unfolding of the art: by methexis-in-reverse, I mean the poem repels the embodied participation of the reader from the world of the poem.
[253] Arrowsmith, *Buddha*, p. 7.
[254] Ibid., p. 8-9; He makes a similar argument about worldliness and the Greek eye of the Gandhara Buddha on page 66.
[255] Such as Forrest-Thomson's, that the "best truth is knotted-up in image-complexes" (Forrest-Thomson, *Poetic Artifice*, p. 95).
[256] See chapter 1 for a long discussion of Empson against the imagists.
[257] In Read's collection, *Speculations*, which Empson read before beginning work on the *Seven Types* (Christopher Norris and David B. Wilson, 'An Interview with William Empson' in Bevis, *Versions of Empson*, p. 304). It must be noted that Empson says in this interview that he was very sceptical of Hulme at the time; his inclusion here is only to show that Empson could expect his readers to make the distinction between detachment and vitality in sculpture.
[258] Arrowsmith, *Buddha*, p. 18-19.

> the outside physical region. The questions of Original Sin, of chastity, of the motives behind Buddhism, etc., all part of the very essence of the religious spirits, are quite incomprehensible inner and outer zones, and tended to treat them as one.[259]

The poem likewise builds an iconoclastic image entirely from the 'outer zones', generating an 'anti-vital' presence. The 'glanced pearls', braced by 'detached' and 'attitude' thus briefly picture, if only to erase, the Buddha's bulbous and impenetrable eye, which 'not for me shall melt back to' the 'small eyes' of the individual his lover once was.

3.2.3 Metaphors are Lies?

Running parallel to the dramatic inversion of image is an argument on the nature of poetry whose position is also reversed in the fifth stanza. To interpret this, we must focus on the arrival and adventure of 'you', the addressee, of the poem. The second person is addressed almost as afterthought; the schizophrenic deployment of personal pronoun bespeaks the inner states of the poet, which in turn conditions the larger movements of meaning in the poem. Until line 8, there is no interlocutor, at least referred to in pronoun; the first seven lines are entirely solipsistic. At last, a nominal other, a 'you', appears in line 8. This is rather unusual in love poetry; the prolonged disregard comes across as disdain. In the various interpretations of the poem, confusion as regards the referent of stanza 3's 'metaphor' has been unanimous—this disappears if one takes the tone and mien of the poet into account. The consensus is that 'they' in 'they are lies' refers to the metaphors[260]—although on cursory glance, the grammar of the assertion promotes a reading that instead accuses the non-metaphorical periphrases in the poem of lying. The rival senses are in fact both implied by the mechanics of the poem; but the periphrases only become 'lies' once a diametric movement in attitude has been registered in line 21.

Line 7, 'I can love so for truth, as still for grace' can be interpreted—if 'so' is read as 'thus', as indicating what has come before—as the poet explaining his choice to ignore body to seek a higher truth granted by grace; for a glimpse of the 'divine states' would be, in the Christian sense, a bestowal of Grace. But the syntactic slipperiness of Empson's poems often promote subordinate clauses to the main: there is a latent sense between lines 7-8 that the lover is the one granted grace by the poet, who exalts the meek creature to the heavenly states of geometry ('for' the sake of his 'grace')—the word 'humility' in line 8 recalls Matthew: "He that shall humble himself shall be exalted".[261] The imputation of Christian humility to his lover allows even a reading of the 'poor grazing misses' of line 23 as the impudent poet styling his misses as lamb (a member of the saved

[259] Hulme, *Speculations*, p. 8-9.
[260] See Haffenden, *Poems*, p. 285; Gardner and Gardner, *God Approached*, p. 149.
[261] Mathew 23:12, KJV.

flock). The sentiment in line 7—"I will see you as I must despite who you may think you are"—brings to light the peculiarity of the poet's sneering supplication.

The limitless arrogance and cultivated indifference to the individual behind the poet's mathematical lens is the principal catalyst of movement in the poem's meaning, which occurs in the line, 'you are a metaphor and they are lies'. In the form "you are x", especially in courtship, we may take x as the metaphor.[262] For example, in the phrase "you are a rose", the 'rose' is a metaphor for 'you', which could mean, "you are beautiful and your beauty pricks me". For analytic shorthand, let us recast this in Ricardian terms, wherein x is the vehicle whose pertinent qualities are mapped on to 'you', the tenor.[263] To the complimented party, it is obvious that the vehicle, the rose, is not in itself significant, but only insofar as it reveals or emphasises some special characteristic about 'you', the tenor. But in "Letter V", 'you' *is* the metaphor—in other words, the tenor becomes the vehicle. 'You"s only purpose now is to 'evoke' the qualities of 'truth' that become the poet's real concern. The reduction of the individual to a vehicle thereby renders him a mere instrument to the poet's divination. In like fashion, everything else in the poem of the form 'you are x' is also a metaphor: in 'you are the grit', the grit is the vehicle that suggests the enlightened orbs of the Buddha; 'you are the map only'—'only' means 'merely' here—takes the 'map' as the metaphor, transporting the poet to the 'divine states'. By deeming him a metaphor, the poet manages to love 'what you imply', only 'to exclude' you entirely—just as one discards the vehicle once it has evoked its assigned qualities. To siphon 'you', as metaphor, "repeats the idea of defining a volume by tangents all outside it".[264]

In a metaphor, the vehicle and tenor are not intrinsically alike; the former simply happens to possess an appropriate weight of attributes salient to the comparison—that is why the 'knot' is established by chance. In other words, the individual and the form he implies are connected as provisionally as the 'rose' and 'you' in our earlier example. This parallels at the level of theory the separation we saw of the figure's 'attitude' from his 'body', at the level of image. Because metaphors or vehicles are in themselves lies, their evocative potential merely a function of accidental similitude to tenor, the poet chooses instead to describe his object in periphrases—to write around and outside the 'true' self, bringing the invisible into relief. In "Letter III", the poet confesses that "my pleasure in the simile thins" [9], and by "Letter V", declares all metaphors untruths.

[262] X is also the metaphor (the pregnant word) in Empson's later account of metaphor in *Complex Words*, p. 337-39.
[263] I.A. Richards was Empson's supervisor in English at Cambridge and invented the tenor-vehicle scheme to anatomise the metaphor in I.A. Richards, *The Philosophy of Rhetoric* (Oxford: Oxford University Press, 1936), p. 132.
[264] Quoted from Empson's original notes to the poem (Haffenden, *Poems*, p. 285).

However, in stanza 5, the finally achieved metaphysical certainty in his discarnate Idea is suddenly unsettled. The 'yet' of line 17 signals, as a volta in the Renaissance sonnet, a dramatic shift in argument. The phrase 'cause unknown' implies that the divine state is no longer even associated to the original by causation. If 'you' are merely a metaphoric lie, then the connection between physical being and true form is accidental, not causal—this is confirmed by the collocation "knot *chance*" [emphasis mine], which acts as a temporary definition of 'metaphor' in the poem; but even if 'chance' is read as unfurling the 'knot', it does not contradict our argument—metaphors are 'true least' when their parts—vehicle and tenor— are connected by pure luck. With the volta, the poet at last stirs from his ivory tower, conceding that 'cause has at least the form that has been shown'. He begins, in other words, to doubt his own conceit and suspect that the body and its geometry may yet bear some indispensable connection.

Empson notes, "*That has been shown* by the effect of the cause, as in the argument that there must at least be a structure in the external world corresponding to that of our sense-impressions".[265] By carefully tailing the poet's emotional states, the significance in the change from 'chance' to 'cause' becomes intelligible. Finding comfort from an unrequited love in the sureness of mathematical vision, one that helpfully reduces the boy to fiction, the poet becomes suddenly possessed with doubt, and his icy shield begins to thaw. The resolution had already begun to waver in stanza 4 when the poet briefly entertained the possibility that in trying to grasp too generally, his lonely gaze may be distorting reality. Empson notes that 'knot chance' has a 'pun with 'not".[266] This confirms that lines 9-10 contain a secondary, contradictory sense, namely, that associations between the metaphor (vehicle) and subject (tenor) are 'not chance'. The punned sense on 'knot' and the seventh-type ambiguity in 'they' (whether it refers to poetic metaphor or mathematical periphrasis), is initially dormant and retroactively activated by line 18, when the poet first registers uncertainty: maybe you, who are a metaphor, and your Eidos are related by something more than chance, and 'they' that are lies are actually my fantastical periphrases? And insofar as the comparison between poetic metaphor and mathematical periphrasis can be extended to poetry and mathematics in general, as modes of representation that work through momental, sensuous association and sequential, logical connection, respectively, the ex post facto reading of lines 9-10 demanded by the volta in lines 17-18 reverses the aspersion earlier cast on poetry.[267]

[265] Ibid., p. 285.
[266] Ibid., p. 285
[267] This is why, incidentally, it is incorrect, as the Gardners do, to read metaphors as having "some hidden-logic" (Gardner and Gardner, *God Approached*, p. 149). It isn't the logical, but the sensuous connection in metaphors that is pertinent to the argument at hand.

Lines 17-18 essentially ask whether the lively impressions of the poet are related, at least as an antecedent stage, to the routine of his reflective conceptions. It is important to state that the poet does not find a true or false picture of the world from his sense-impressions. The lines are only designed to query the poet's prior conclusion that the individual thrown up by sense-impression is unconnected—or only connected by chance—to its eidetic abstraction. In "The Hecatomb to his Mistresse", the poet engages in a similarly sophistic exercise:

> As your Philosophers to every Sence
> Marry its Object, yet with some dispense,
> And grant them a polygamie withal,
> And these their *common Sensibles* they call:
> So is't with her who, stinted unto none,
> Unites all Sences in each action. [45-50]

The term 'common sensible' refers to Aristotle's distinction between properties perceptible to single and multiple senses. For instance, the shape of an object can be ascertained by sight and touch, whilst colour is only known to sight. The shape would thus be considered a 'common sensible'.[268] The poet of "Hecatomb" argues that his mistress's essence, or spirit, which "hath no matter, no mortality", is unbound to a single sense and will thus only reveal her character to synesthetic apprehension. In the final stanzas of "Letter V", the poet likewise concedes that thought alone will not capture his object's essence, wherefore he considers 'uniting sense' with thought.

Seen from Empson's poetic world, the bleak love affair of "Letter V" fits into his larger critique of modern science as being in danger of leaving the world behind; the poet, caught in the line of his mathematical reverie, is thus stopped in track by the volta. The duality of 'objective' and 'subjective' description resolves, in the final stanza, to a 'Principal'. The reader is held fast from preferring one over the other by a pun in line 21. Its phrasing expressly evokes the rule in geometry known as the Principle of Duality. I refer the reader to section 2.1 for an explanation on how a statement in projective geometry is valid in equal measure whether in the form of lines or points. The subtext of the Principle of Duality in the assertion of line 21 undoes the opposition between lines—envelopes—and points—locus—with which the poem began. After the gaunt praise of geometric husk in the first 4 stanzas, the reversal reignites a reciprocity between individual and Idea.

The implication, by the Principle of Duality, of equivalence between lines and points brings the warring metaphysics of the poem *pari passu*. The word 'grant' in line 22 registers the dramatic shift in the poet's attitude to his lover. The lover's lines, his 'truth' disclosed to the poet by 'grace',

[268] Michael Tye, 'The Problem of Common Sensibles', *Erkenntnis* 66.1/2 (2007): 287-303, p. 287.

is suddenly granted by the lowly 'you'; the boy seems to have thus re-entered his gates of fancy. As flesh emerges from the diffusing outlines of form, the 'lines you grant me', the lines of the poem, invert through projective transformations, from mathematical contours to sensible points. Or, as per line 23, the lines are 'paired' with points: in other words, matter and form, idea and instance, when delineated *and* felt, pin Being to the wall. Even so, the capture, with 'poor grazing misses' no less, is precipitously slant, and yields no closure: however unceremoniously the archers of Diocletian arrested St Sebastian, his soul remained bound to Heaven. So alas, we mortals, amongst whom the poet in the end counts himself, shall never know what that tantalising 'Principal' is. Nonetheless, the intellectual retreat from points to lines and the sudden disclosure of Eros issuing from pointy arrows to sensuous apprehension, is a reversal sufficiently dramatic to suggest that the poet has stirred from his mathematical dream; a dream that ended in amatory failure.

3.3 Conclusion

The many challenges to that domain of sensual and amorous life that the poet fancies belongs to him, posed by the orderliness of rational society, do not need repetition here. But we have seen in this chapter that this underlying problem has been approached by two poets of similar dispositions in different ways.

Roberts is concerned principally with the semantic fields of poetic diction and with reorienting the philological formations of a great passage of European history. If the chief effect of the rise of science has been to atomise and classify the domains of thought, Roberts responds in his poetry by forcing them back into one another's society. He unifies currents of thought, in the mind's conception of such things as language, landscape, and mathematics, by the governing principle of sensuality, or sensual awareness. Empson, on the other hand, always orchestrates his most interesting manoeuvres in the process of creating meaning. By demanding of his reader almost a gyrating hermeneutic, he posits a spectral image of his lover, retracts it, and then resurrects a sexual one, and questions and exalts metaphorical truth, all in the space of a few lines. This calls up another distinction between the two: Empson's poem is almost physical in its exploits of form for meaning: his periphrases send the reader moving upwards and downwards to create meaning, and the space of the poem comes to acquire at least the corporeality that surroundings have when dizzied in them. Roberts, apart from innovative uses of first-person narrative,[269] and the rhyme schemes by which he makes suggestive groupings like fact-and-act—the oxymoronic tendency lies

[269] Whitworth, 'Community', p. 259-60, argues that first-person narrative was better exploited in his later poems: through the use of simultaneity, the idea of individual personality is confounded, after a high modernist fashion.

in his critical works as well, with frequent phrases like 'sensuous concrete'—, exploits form relatively less in his early poems.[270]

What most governs the aesthetic impulse of both is an exaltation of failure and imperfectability. In poems like "Nicholas Flamel" and "Mona Lisa", and "Letter V", we see that what is ultimately conveyed is done so through failure: the whisper of an abiding message is the beauty in futility. This is crucial to the business of love that so greatly preoccupied the poets, because they saw the exclusive reverence towards abstract meaning and rational order in their culture as fundamentally incompatible with the undulation and scatter of erotic emotion.

[270] "At some point around 1935 Roberts began to use less-regular forms" (Whitworth, 'Community', p. 255).

Chapter 4: Logos: The word in Laura Riding and Charles Olson

In the last two chapters, we have seen how poetry and mathematics can as modes compete over their purchase on knowledge, ethics, being and sensuality. In this chapter, they will no longer act as conduits to philosophical or phenomenological insight: a poem was regarded by the poets we are to discuss as being either true or not, an end in itself. And it is that end—so starkly opposite in both poetic visions—that we shall term Logos.

The term logos has multiple senses that appear disparate: in this chapter, amongst other things, we shall see how they are both related and mutually dependent in the works of Laura Riding and Charles Olson. *The Cambridge Dictionary of Philosophy* says the dominant sense of 'logos' is 'word' and that it has been historically attended by several others: (1) rule, principle (metaphysical rather than legal or moral), (3) reason, the intellectual part of the soul, (4) measure, proportion.[1]

Moving in ascending order, both Riding and Olson are concerned primarily, and almost exclusively, with the word—particularly, the poetic word. The type of law or principle in sense 1 is philosophical; and from its first use by Heraclitus in this manner, into its avatar in Christianity, it has largely signified 'eternal truth'. G.T.W. Patrick, summarising past translations of Heraclitus, says they used "Logos as the eternal pre-existing law of the identity of being and not-being".[2] This sense will be central to the present chapter, because unlike Empson and Roberts, both Riding and Olson are not abashed to assert a full doctrine of the 'truth of being'—doctrines that are bound, inextricably, to the word.[3]

The third sense of 'logos', 'reason', is the one upon which the two poets of this chapter most differ. For a first hint of this disagreement, we may say that being is disclosed to Riding in thought, whereas to Olson, in speech; Riding affirms, and Olson denounces reason. The fourth sense, 'measure', brings us to the topic of this thesis. Both Riding and Olson develop their view of the relationship between word and truth by a corresponding conception of measurement. Particularly, nineteenth century mathematical theories will play central roles in this chapter. To Olson, the non-Euclidean geometry of Bernhard Riemann and to Riding, Georg Cantor's theories of the transfinite became theoretical apparatuses crucial to their unique conceptions of the poetic word.

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[1] Robert Audi, ed., 'Logos' in *The Cambridge Dictionary of Philosophy* (Cambridge: Cambridge University Press, 2015):572-619.Online.https://www.cambridge.org/core/books/cambridge-dictionary-of-philosophy/1/5BBE97279E08E4DD1FCD01F5CF1A0303/core-reader; sense (2) is the most discursive of the lot : 'proposition, account, explanation, thesis, argument'; and does no appertain to this chapter.

[2] Heraclitus, *Fragments*, p. 116 (footnotes).

[3] Carla Billitteri was the first to group Riding and Olson on the criterion of the truth-telling capacity of words in their respective systems (*Language and the Renewal of Society*).

4.1 Numbers are Detail, Words are Nothing

Barbara Adams says "[Laura] Riding's poetry" is characterised by "the search for a unified identity, an obsession with death and hope of transcendence through art".[4] The term 'transcendence', however, does scant justice to Riding's complicated view of meaning in art. 'Transcendence' was to Riding paradoxically bound to the concreteness of language. If one may be excused a preliminary precis of Riding's metaphysics, as the search for a unitary sphere beyond the fractured world of history, this elusive totality must be understood not as apart from its parts as in transcendentalism but rather as the quintessence to which the parts immanently point. The ability to commune between the noumenal and the phenomenal, a power that the Platonic number once was thought to possess, lay, to the young Riding, in the poetic word. And so, whilst denouncing mathematical Platonism, she borrows its attributes to construct her unique philosophy of the poetic word.

The biographical qualification of a 'young' or 'early' Riding comes to demarcate important shifts in thought. The dominant mood I will impute to the early Riding, however, lasts well into her late career. One abiding vexation for the late Riding was with the "shift to the scientific view of language" which "altered the quality of interest in its phonetical aspects".[5] Her lament for the decline of philology became more sombre with age, as she gradually came to terms with the fact that the study of language will inevitably be given to the care of 'academic linguistics'. In the late 1970s, she writes in an essay titled 'Mathematics as an Intellectual Master-Method',

> As the new modern intellectual confidence placed in the quantitative values of mathematics has manifested in attitudes to language, efforts have been made […] to purge language of its qualitative value-force, and to establish mathematical values, conceived of as universally authenticated basis of logic, as its critical norm. […] Never before the present era has the seat of logic been placed definitively in mathematics, with language bearing the character of an outlying region of logical activity.[6]

The gradual elimination of difference in the 'logical activity', or modes of correctness, in language and mathematics is a cause of disquietude throughout the course of her works.[7] But with respect

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[4] Barbara Adams, 'Laura Riding's Autobiographical Poetry: "My Muse as I"', *Concerning Poetry* 15 (Fall, 1982): 71-87.

[5] Laura (Riding) Jackson and Schuyler B. Jackson, *Rational Meaning: A new foundation for the definition of words and supplementary essays,* ed. William Harmon (Charlottesville: University Press of Virginia, 1997), p. 521. This is quoted from an essay, 'The Physical Aspects of Words' whose date of composition is hazy. Joyce Wexler states the Chapter in *Rational Meaning*, 'Truth', was written in 1975 (Joyce Wexler, *Laura Riding: A bibliography* (New York: Garland and Pub, 1981), p. 82). Based on the essays quoted in 'The Physical Aspects of Words' it must have been written around this time. The first bits of *Rational Meaning* were begun in 1948 (Charles Bernstein, 'Introduction to *Rational Meaning*', p. xiii).

[6] Riding, *Rational Meaning*, p. 497; The essay's date of composition seems to not be available, but from her discussion of 'contemporary academic linguistics' (p. 497-499), in which she cites W.W. Bartley's 1974 works, we can tell it was probably written in the late 1970s.

[7] Mark Jacobs has informed me of his interactions with Riding which assured him that she was "very interested and knowledgeable about the subject" of mathematics (Mark Jacobs, interviewed by Anirudh Sridhar,

to attitude, the rather reasoned objection here, read in continuum with her early remonstrances over academic linguistics, shows advancing age as having preferred a begrudging forbearance towards the accruing authority of 'mathematics as a master-method'. The early Riding shows more bluster in dismissing the quantitative treatment of language. In "Mr. Doodle-Doodle-Doo", for instance, she spoofs a calculation by a mathematical linguist who equates "honey, goney, lone(l)y and money".[8] To the young poet, language was the very central 'region of […] activity'. Much of her poetry in fact made language itself the subject of concern. In this section, by reading some exemplars from *Love as Love: Death as Death* (1928)*, Though Gently* (1930) and *Poet: A Lying Word* (1933), we shall attempt to uncover her radical philosophy of poetic truth-telling. These will be read alongside her prose manifesto *Anarchism is not Enough* (1928). Our focus, therefore, is on the period from 1928 to 1933, when her commitment to poetry was at its most intense.

In *Experts are Puzzled* (1930), teasing a flourishing reputation, Riding says, "Am I a mystic? No, I am not a mystic, I am Laura".[9] Even so, in her youth, Laura Riding was a mystic. And long after the curtain of mysticism was lifted, she maintained an enigmatic persona to the last.[10] Having once held a unitary vision of language and reality, she abandons it midway through life, and proceeds to a more practical view on the matter. But when a Cabbalistic mood was upon her, it cut across all that she wrote, binding the early works together under a recognizably grand philosophical system; as theoretical as they were, the later Riding's works never constituted a 'system'. This 'theory', for want of a better word, of the early Riding has in pieces been labelled, summarised, and even analysed by her critics.[11] But not one has offered a thorough-going representation of her metaphysics that explains how her ontology and epistemology hang together. This might seem a rather strange interpretive task concerning the works of a poet, but if any should demand such an undertaking, it is the mysterious young Riding.

Midway through life, when Riding forsook her philosophy, she also abandoned her poetic vocation. This Damascene moment has been retroactively dated to 1938, when her last collection of poems was published. She wrote in 1944, "I renounced it [poetry] 'as disappointing the hopes

13/12/2018); Also, before enrolling at Cornell University, she would have had to sit basic exams in mathematics ('Chronology', Elizabeth Friedman in Laura Riding, *The Laura (Riding) Jackson Reader*, ed. Elizabeth Friedman (New York: Persea Books, 2005), p. ix.)

[8] Laura Riding, *Anarchism is not Enough*, ed. Lisa Samuels (Berkeley: University of California Press, [1928] 2001), p. 23.

[9] Laura Riding, *Experts are puzzled* (London: Cape, 1930), p. 2.

[10] Peter S. Temes, "'Code of Silence" Laura (Riding) Jackson and the Refusal to Speak', *PMLA* 109 (January 1994): 87-99.

[11] See Paul Auster, *Collected Prose: autobiographical writings, true stories, critical essays, prefaces and collaborations with artists* (London: Faber & Faber, 2003), p. 526-539; Joyce Wexler*, Laura Riding's Pursuit of Truth* (Ohio: Ohio University Press, 1979), p. 63-64; Charles Bernstein, 'Introduction to *Rational Meaning*', p. ix-xxii; Lisa Samuels, 'Creating Criticism' in *Anarchism,* xi-lxxi.

it excites as seemingly the way of perfect human utterance, or articulate truth".[12] Michael Masopust says "few admirers have ever paid poetry the compliment of taking it so seriously, and probably no detractor since Plato's time has taken such pains to discredit it".[13] Temes even entertains the possibility that her "rejection redramatized, in larger scale, the central manoeuvre of her best poems: to escape from the role of the object, of the seen and judged"[14]—that the renunciation of her poems would deter their re-presentation in criticism to preserve the primacy of reading experience: if this plausible explanation is indeed the case, due apologies are made for what ensues.[15]

This binding of philosophy with poetry means that although a philosophical system is discernible in the young poet's elliptical prose, it is, on the whole, better exhumed from her poetry. For whilst a poet, Riding believed truth can be found only in the lines of a poem. The intolerance of this conclusion seems to epitomise a New Critical cliché by elevating the poem to a quasi-divine insularity.[16] Donald Childs has in fact recently argued that Riding's view of a poem as an 'object in itself' was crucial to the development of New Critical doctrine.[17] However, her faith was not a matter of procedural routine, to be replicated in class rooms, but rather an aesthetic vision of extreme rigour, such as those of Spinoza or the early Wittgenstein. Whilst sharing the New Critical belief in the poem's autarchic power, in *Contemporaries and Snobs* (1928), Riding criticises modernists of a New Critical persuasion, such as Tate and Ransom, for the conclusion that makes of the poem a stable object, a well-wrought urn, whose function it is to impart knowledge, after a scientific fashion.[18] Unlike philosophy or science, to Riding, a poem was a Pentecostal breach in the fabric of daily occurrence. "Philosophy is the past explaining the present to the future" and "science is the present explaining the future to the past"; both are, to her, implicated in a temporal loop, yielding in tandem to the other's theories of phenomena.[19] Already in her first collection, *The Closed Chaplet*, Riding began to betray the swing of an irrealist tilt that would intensify throughout the late

[12] Laura Riding, *The Failure of Poetry, the Promise of Language*, ed. John Nolan (Ann Arbor: University of Michigan Press, 2007), p. 27.
[13] Michael A. Masopust, 'Laura Riding's Quarrel with Poetry', *South Central Review*, 2. 1 (1985): 42-56, p. 42.
[14] Temes, 'Code of Silence', p.87.
[15] In my defence, Riding states that "the conversion of nothing into something is the task of criticism" (*Anarchism*, 18).
[16] Tom Fisher, 'Reading Renunciation: Laura Riding's Modernism and the End of Poetry', *Journal of Modern Literature*, 33. 3 (2010): 1-19, p. 5.
[17] Donald J. Childs, *The Birth of New Criticism: Conflict and conciliation in the early work of William Empson, I.A. Richards, Laura Riding, and Robert Graves* (Montreal: McGill-Queen's University Press, 2013), p. 12.
[18] Laura Riding, *Contemporaries and Snobs*, ed. Laura Heffernan and Jane Malcolm (Tuscaloosa: University of Alabama Press, [1928] 2014), p.115.
[19] Riding, *Puzzled*, p. 37.

1920s and 1930s.[20] Robert Fitzgerald says the following in his review of Riding's 1938 *Collected Poems*:

> The authority, the dignity of truth telling, lost by poetry to science, may gradually be regained. If it is, these poems should one day be a kind of *Principia*. They argue that the art of language is the most fitting instrument with which to press upon full reality and make it known.[21]

In the 1930s, Riding's poetry was thus received in a similar context as that of this thesis, namely, the agon between poetry and mathematics; but in recent criticism, the spirit of competition that is effusive in her poems seems to have been mostly ignored.

Secondary literature on Riding's theories of language has, however, tended more to her prose, *Anarchism*, *Epilogue* (1935-38) and *Rational Meaning*. In the present work, however, we shall heed the instruction in *Poems: A Joking Word* (1930), whose Preface dismisses itself—and all Riding's prose with it—as mere means to an end: "Before anything can be that has got to be, it has got to be preceded by something that hasn't got to be. These poems have got to be. […] My preface has got to precede these poems, though it hasn't got to be".[22] In other words, poems cannot double as their own defence—they simply *are*. Prose is thus relegated to the task of priming the reader to accept the poem, *as is*. Therefore, it is important to see how close-readings of her poems make manifest a theory that remains merely squinted at in prose.

Jo-Ann Wallace has attributed the dearth of critical attention to Riding's poems to "her insistence upon being the ultimate referent of her own work and because of her refusal to cede either interpretive or descriptive authority over her work".[23] Many poets are prone to thus jealously guard their works, but it is rarely accompanied by fear of contamination by all prose, including one's own. A range of poems in *Love as Love* and *A Lying Word* have nevertheless been anthologised and received a modicum of critical attention.[24] A prime focus on *Though Gently,* however, might require further justification. The paranoia about verbal contamination to which Wallace ascribes her critics' diffidence is perhaps at its fiercest in *Though Gently,* which, unsurprisingly, received next to no critical attention until very recently. Tim Armstrong has written an essay on the mathematics in *Though Gently*, which is the only substantial engagement with its philosophy.[25] *Though Gently* is mentioned by Joyce Wexler, who spends two pages on a rather unsatisfactory summary of the

[20] Laura (Riding) Jackson, *The Close Chaplet*, ed. Mark Jacobs (Nottingham: Nottingham University Press, [1926] 2018).
[21] Robert Fitzgerald, review of *The Collected Poems* of Laura Riding by Laura Riding, *Kenyon Review* 1 (1939): 34.
[22] Laura Riding, *Poems: A Joking Word* (London: Cape, 1930), p. 9.
[23] Jo-Ann Wallace, 'Laura Riding and the Politics of Decanonization', *American Literature*, 64. 1 (1992): 111-26, p. 111.
[24] Wexler, *Bibliography,* p. 101 lists the anthologies which include Riding's poems.
[25] Armstrong, 'Syntax', p. 1-29.

collection, as being a negotiation between Riding's private and public thoughts.[26] Jack Blackmore's recent book, which is "a study of the poetry of Laura Riding" has excluded "*Though Gently* and *Twenty Poems Less* as they are in the nature of experimental works in progress and do not aim to be representative selections".[27] We are not, however, told why an 'experimental' work is undeserving of attention, given that Riding hails experimental poetry in her manifesto, "A Prophecy or a Plea" (1926).[28] One might also wonder how poems 'aiming to be representative' are produced. If a poet endorses a collection to represent her, would that not render all other collections unworthy of study? Or perhaps Blackmore uses the word representative ineptly to mean resemble—even so, the premise does not avail. Having written three collections in 1930—*Twenty Poems Less*, *Though Gently*, and *Experts are Puzzled*—all in quasi-prosaic fashion, in a career that had then spanned only six collections, the middle member may at least be said to resemble Riding's early poetry.

One explanation for its scant reception is the difficulty of obtaining a physical copy: according to COPAC records, *Though Gently* is only available at 6 locations in the UK.[29] Only 200 copies were printed in the small coastal village in Majorca where Riding and Robert Graves had moved their private press, Seizin, after its founding in 1927.[30] But such circumstance also suggests minimal editorial interference with her primal vision, removing any doubts of its pertinence to the young poet's ideas. It does not reappear in the *Collected Poems* and later anthologies because each constituent part of *Though Gently* is conjoined to the other to an extent that extracted fragments would in isolation be meaningless. That is why, if we are to discover what this slim and mysterious volume contains, we must undertake the task of viewing it whole.

4.1.1 Word and World

Carla Billiteri characterises Riding's philosophy of language as Cratylic, in reference to *Cratylus*, the Platonic dialogue on the act of naming.[31] Cratylus, a mystical forbear of Socrates, advances in the dialogue an uncanny vision in which signifiers, to speak anachronistically, emerge physically from their signified, which allows signification to be judged on the standard of 'correctness'. According to Billiteri, the Cratylic position is that the

> reference and meaning of words were established by 'a power more than human' and given to the human race with the specific function of providing essential 'information about things' to those who would use them (*Cratylus* 438c, 435e). In Cratylus's system, the natural world, in its material state of sounds, shapes, and colors, is conceived as intimately connected to a nonhuman language of letters and

[26] Joyce Wexler, *Truth*, p. 63-64.
[27] Jack Blackmore, *The Unthronged Oracle: A study of the poetry of Laura Riding* (Cirencester: Mereo, 2016), p. 39.
[28] Riding, *Chaplet*, p. 51-2.
[29] Accessed, 14/12/2018.
[30] Laura Riding, *Though Gently* (Deya: Seizin, 1930), p. 30 (unnumbered page).
[31] Billiteri, *Renewal*, p. 78.

> syllables, each element of a language an emanation of a natural phenomenon carrying a precise, unalterable semantic content.[32]

Billiteri is interested primarily in Riding's later work, *Rational Meaning*, whose composition (1948) began long after Riding had forsaken her poetic vocation. Although we have mentioned some of the ways in which (Riding) Jackson—the name she assumed upon shedding her poetic persona[33]—retains her early linguistic mysticism, the late Riding chose to focus on regular human speech, abandoning the perfect poem as a youthful chimera. Billiteri's label Cratylic, however, remains a helpful frame when studying her early works.

Riding's first manifesto, "A Prophecy or a Plea", envisioned a spiritual renewal of society through poetry; she also co-wrote a foundational work of close-reading with Robert Graves in 1927—but her position became self-consciously Cratylic only in 1928, with the publication of *Anarchism is not Enough*.[34] Shuffling between prose and verse, *Anarchism* exhibits the first clear signs of a supra-historical theory of language. She separates "three historical levels" of words, namely, their "intrinsic sense", "logical" or "applied sense", and

> poetical words, of a misapplied sense, untrue and illogical themselves, but of supposed suggestive power. The most the poet can now do is to take every word he uses through each of these levels, giving it the combined depth of all three, forcing it beyond itself to a death of sense where it is at least safe from the perjuries either of society or poetry.[35]

Riding criticises poets that use words vaguely in the hope of an emotional response—she had primarily the Symbolists in mind. The cloud of Symbolism and other redundant conventions should be cleared away, she says, by evacuating all 'sense' but the intrinsic. By parting words into these unconventional categories, Riding also hopes to hold language at arm's length from 'scientific treatment', which may in this context be understood as the exaltation of the 'logical/ applied' senses of words. This was already the practice of a nascent structuralism in the likes of Ogden and Richards, and Saussure, whom she became acquainted with through the pages of *The Meaning of Meaning*.[36]

It will prove instructive to linger awhile on her disagreement with structuralism. Ogden and Richards are not usually classed as structuralists but they were very much in sympathy with

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[32] Ibid., p.21.
[33] Riding, *Failure*, p. 27.
[34] Laura Riding, *First Awakenings: The early poems of Laura Riding*, eds. Elizabeth Friedmann, Alan J. Clark, and Robert Nye (New York: Persea Books, 1996); Laura Riding and Robert Graves, *A Survey of Modernist Poetry* (London: William Heinemann, 1927).
[35] Riding, *Anarchism*, p. 12.
[36] In her introduction to *Anarchism,* Lisa Samuels notes Riding's disenchantment with structural linguistics, especially her intense engagement and disagreement with the conclusions of *The Meaning of Meaning* (p. xlv). We know Riding had read it by the time of writing *Anarchism* (1928).

Saussure's revolutionary act, which they see "as having for the first time placed linguistics upon a scientific basis".[37] This they say he accomplished by dividing language into two orders: *Langue* referred to the fixed meanings and structures of grammar and syntax, and *parole*, to how language is used in speech, written and vocal.[38] By characterising the relationship between signifiers and signified in individual use[39] as determined entirely by convention—'applied sense', as Riding puts it—Saussure sees it as subject to changes that are not measurable. Langue, however, could in Saussure's system be subject to 'scientific' study.

> Fredric Jameson says the "dilemma of linguistics" in the 1920s and 30s is
>
> part of a vaster crisis in the sciences in general: in physics for instance, where the alternation between the wave and particle theories of light begins to cast some doubt on the conception of the atom as a substance. […] Scientific investigation has reached the limits of perception; its objects are no longer things or organisms which are isolated by their own physical structures from each other, and which can be dissected and classified in various ways.[40]

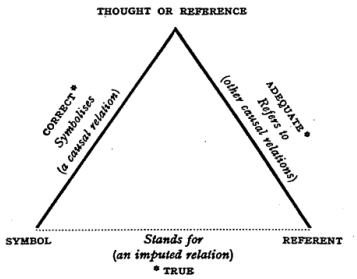
Although Jameson takes a rather broad brush to the period, there is a loosely comparable shift in paradigm that obtains: just as faith in a material substratum beneath symbols of representation was waning in science,[41] linguistics was maturing from a belief in the material provenance of words: words were becoming to the rational linguist plastic vessels carrying transferrable, liquid, meaning. The thrust of Ogden and Richards's attack is aimed at Cratylism: "much confusion has been caused by the habit of treating meaning as somehow inherent, or naturally present, in the signs which conventionally serve to convey it".[42] Insofar as Saussure helmed its capsize, Ogden and Richards are in agreement with him.[43] In fact, they sought to further his new paradigm: their relatively minor squabble with Saussure was that he pre-empts the empirical study of semiology; that "this theory of signs, by neglecting entirely the things for which signs stand, was from the beginning cut off from any contact with scientific methods of investigation".[44] In a somewhat circular fashion, they argue that an empirical study of how words are used will allow them to be better used—better, that is, by standards of communication rather than accuracy.

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[37] C.K. Ogden and I.A. Richards, *The Meaning of Meaning: A study of the influence of language upon thought and of the science of symbolism* (New York: Harvest, 1923), p. 4.
[38] Ferdinand de Saussure, *Course in General Linguistics*, trans. R. Harris (Chicago: Open Court Publishing Company, [1916] 1982), p 9-10, 15.
[39] 'Individual use' is to be distinguished from meaning which "exists in perfection only in the *mass*" [Emphasis mine] (Saussure, *Course*, p. 31).
[40] Fredric Jameson, *The Prison-house of Language: A critical account of structuralism and Russian formalism* (Princeton: Princeton University Press, 1972), p. 14.
[41] See 1.4 for a discussion of scientific realism.
[42] Thomas Sebeok and Jean Umiker-Sebeok, *The Semiotic Sphere* (New York: Plenum, 1986), p. 233.
[43] Ogden and Richards, *Meaning*, p. 5-6.
[44] Ibid., p. 6.

This brief excursus was to place Riding in the debate: she is at odds, fundamentally, with both Saussure, and Ogden and Richards as regards the arbitrariness of the sign but would have sided with the latter in their insistence on a fitter use of words through their intensive study. But as for method, she would disdain the idea that empirical science would be the deliverer of such knowledge—for Riding, true knowledge of words is only displayed in poetry; of course, 'knowledge of words', for her, is knowledge of the *existence* of words.

The Meaning of Meaning is a "confused mixture of philosophy, psychology, ethnology and literature", she declares, scoffing at the idea that meaning "is to be known scientifically only through symbols".[45] Her vitriol was likely amplified by Ogden and Richards's elegiac narration of Plato dismantling an archaic Cratylus.[46] They seem to agree with Socrates' conclusion that "the knowledge of things is not to be derived from names. No, they must be studied and investigated in themselves".[47] As Ogden and Richards were not in the trade of finding the 'essence of things', their only alteration to the Socratic dictum is to investigate the names of things. They find a means to rope even the human agent into the sphere of semiotics: that is, the use of words was to be studied through psychology and ethnology. Rather than a straight line of meaning between signifier and the signified, they concoct a triangle of reference. Words, or symbols, in this triangle remain Saussurian vehicles for the conveyance of a referent—the only difference is that the thought-process behind usage becomes part of their analysis.



48

Riding, by relegating the logical or applied sense to a mere third of a word's aspect, implicitly denies the flattening of words into transparent films. For Riding, poetic words have no referent; at their unreachable ideal, they are but themselves, in complete identity with their referent.

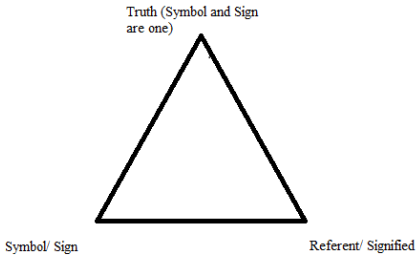
Lisa Samuels calls *Anarchism* "the most radical work of Laura Riding's early period", but I shall argue it is but an early feeler which matures into full force in *Though Gently*.[49] Whilst Empson might have resisted the vehicular conception of words by playing with ambiguities in their sense,

[45] Riding, *Anarchism*, p. 54-55.
[46] Ogden and Richards, *Meaning*, p. 33.
[47] Plato, (*Cratylus*) *Dialogues*, p. 473.
[48] Ogden and Richards, *Meaning*, p. 11.
[49] Samuels, 'Creating Criticism', p. xi.

Riding, in *Though Gently*, reached for the very opposite: a complete semantic streamlining. Billiteri says,

> The piling up of definitions for a single word, she [Riding] vehemently argues, amounts to a radical 'dissolution' of language's 'properties', which she sees as a social problem as well as a linguistic one. As in Plato's *Cratylus*, once the foundational rules of the proper and correct use of words are violated, language becomes mere noise.[50]

Were we to imagine a Cratylic triangle to approximate Riding's theory, it would look thus:



'Truth', in the position it is here afforded serves to underscore her antagonism to the subjective psychologism at the apex of the Ricardian triangle; it is to be taken only as a placeholder for her complicated theory of language which we shall hereafter elaborate. Ella Ophir says, "in light of the intellectual prestige of science, only truth-value could secure for poetry the authority Riding wanted for it. Any other formulation of its value would, she felt, render it precariously subservient, merely 'expressive' or ornamental".[51] Whilst we have similarly reasoned our way to the shorthand, 'Truth', the summary term 'truth-value' seems to impose an evangelical monotone to her theory, robbing it of any irony. Academic characterisations of Riding's theory, including the present work, are governed by a need for directness that caricature the exacting probity with which she tried to express what for her was inexpressible in language.

An analogy to Wittgenstein might elucidate the problem we are at present faced with.[52] In the *Tractatus*, the world is composed of atomic facts whose compositions are pictured by minds in

[50] Billiteri, *Renewal*, p. 104.

[51] Ella Zohar Ophir, 'The Laura Riding Question: Modernism, Poetry, and Truth', *Modern Language Quarterly* 66.1 (2005): 85-114, p.89.

[52] It is difficult to ascertain if Riding had read the *Tractatus Logico-Philosophicus* by 1930 but she grapples with some of its problems throughout the late 1920s. We may at the very least venture that she must have been familiar with passages of the Tractatus that are relayed in both editions of *The Meaning of Meaning* published in the 1920s. The fact that Bertrand Russell's summary of Wittgenstein's main arguments, and the central propositions of the Tractatus are itself quoted in full makes it a reasonable assumption that she had given him some thought (In the 1st edition (1923), p. 395-97; In the 2nd Edition (1927), p. 253-55); In my correspondence with Mark Jacobs, he says, "she may well have been aware of him [Wittgenstein] as early as the 1920s when she was very aware of Ogden and Richards" (Mark Jacobs, Anirudh Sridhar, 10/12/2018). This accords with Riding's suggestion in a footnote to *Anarchism* which suggests she has gone through the whole of *Meaning of Meaning* despite being appalled by it: "The conclusion of this study, if one has patience to extract a conclusion from this science-proud collation…" (p. 55). In my correspondence with him, Charles Bernstein informs me that when he asked Riding whether *The Telling* (1972) had any influence from the *Philosophical Investigations*, she rejected the idea. But this

the form of sentences, or language, in general. Wittgenstein argues, "That which mirrors itself in language"—the apposite agreement of language and world, that is—"language cannot represent".[53] In other words, the very central fact of language, that it conforms to world, which we in our daily intercourse with sentences may take for granted, reveals nothing about *how* language relates to the world—and what is more, this relation will always remain inarticulable *in* language: "what *can* be shown *cannot* be said".[54] The proposition might seem fairly straightforward if applied to music. When lilting to a cadence, we are immersed in emotion; but the relation of sound to emotion and how one comes to evoke the other cannot be explained *within* the composition. Riding reaches an analogous impasse when faced with the task of elaborating her theory discursively, as she must describe, using the 'applied sense' of words, why the latter obscures the 'intrinsic sense'. When faced with aporia, both Riding and Wittgenstein find ways of issuing warning: Wittgenstein declares all his propositions thereon as "senseless"[55] and Riding reduces herself to prattle—for nonsense is just as good as prose, maybe even better—when reaching beyond the pale of sense. She says, for instance, "doom" becomes "poem" if 'd' is replaced with a 'p' and the first 'o' with an 'e' and that a poem "is a vacuum and therefore nothing".[56] Whilst it is possible to unscramble these statements, they are better left sounding as absurd as intended, so we can look for clearer answers in her poems.

4.1.2 Word as Word

Paul Auster says of Riding's poetry, "Few poets have ever been able to manipulate abstractions so persuasively. Having been stripped of ornament, reduced to their bare essentials, the poems emerge as a kind of rhetoric, a system of pure argument [...] giving [...] formal pleasure".[57] The direct presentment of bare essentials before the reader, and the formal mode of argument in Riding's poems, allow us to develop something like a 'theory' of language even from her relatively non-theoretical poems.

Let us begin with the following lines from the titular poem of *Love as Love: Death as Death*[58]:

"Death as Death"
To conceive death as death
Is difficulty come by easily,
A blankness fallen among
Images of understanding

does not mean that in the 1920s, her position was not clearly separated from Wittgenstein and Ogden and Richards (Charles Bernstein, Anirudh Sridhar, 05/12/2018).

[53] Wittgenstein, *Tractatus*, 4.121

[54] Ibid., 4.1212.

[55] Ibid., 6.54.

[56] Riding, *Poems: A Joking Word*, p. 10; Riding, *Anarchism*, p. 17.

[57] Auster, *Prose,* p. 531.

[58] Laura Riding, *Love as Love: Death as Death* (London: Seizin, 1928).

The reader is challenged to conceive the idea of death just as it is: the no-longer-being of what is: 'blankness'—she had already defined death as nothingness in the poem, "Dimensions": "But death and *death is nothing at all*" [Emphasis mine].[59] Mental streamlining of a semantic field, holding in a single thought, a word and its meaning sans *difference*—that is, without a routine of tailing associations, poses 'difficulty'. Nevertheless, the word 'death' is unique in that 'for one instant', such a task is 'come by easily': unlike other denotations which might beget a stream of connotations, the fact that 'blankness' or 'nothingness' should so aptly illustrate the word 'death' is a happy coincidence—in other words, the word's meaning serves as an in-built pause that impedes slippage. Thus, the ____ that follows mention of death—both in the poem's line-ending and in the mental conception of 'death' as the advent of nothingness—understood in its truest sense, brings the word and idea, which to Riding are to always be in union *sub specie aeternitatis*, to be, for a moment, one to mind in *tempori*. This is similar, for instance, to the effect Beethoven achieves in his late works, simply by use of fermata in contravention of convention. Adorno says of a *Faust II* or *Wanderjahre* that "it leaves only fragments behind, and communicates itself, like a cipher, only through the blank spaces from which it has disengaged itself. Touched by death, the hand of the master sets free the masses of material that he used to form".[60] But of course, the *noesis* of death can only be ephemeral. As soon as psychology participates in its conception, a primed and emotionally sedimented mind sees "furnaces/ Roar in the ears, then again hell revolves/ And the elastic eye holds paradise", contaminating thus the fleeting purity of abstract linguistic truth.

To enjoin the mind to concentrate upon a single word, repetition, as in 'death as death', seems a rather coarse method for a poem, but it proves, nevertheless, quite effective. It is a strategy repeatedly seen in this volume—for instance, "love as love", "Earth rounds out Earth", "logic has logic". Her repetitions operate by a curious process that narrowly avoids tautology; the word, in its encounter with itself, reacts in two observable steps: the second iteration brings to mind the denotation, which voids the first of meaning, and leaves behind the bare word as residue; next, the evacuated word is replenished with the recently jettisoned meaning, like the act of springing out old batteries from a radio, dusting them off, and replacing them, for a better flow of charge. An example will illustrate the process: "Logic has logic, they remain/ Locked in each other's arms" ("World's End"). If 'logic' and 'logic' can be referred to in plural as 'they', they must be distinct. The *word* 'logic' is dismembered from the *concept* of logic by the possessive verb 'has'—it seems odd for a thing to possess *itself*, so we think the former must refer to something foreign. But as

[59] This poem appeared in *Fugitive* magazine (1923) but not in her first collection, *The Closed Chaplet* (Laura Riding, 'Dimensions', *The Fugitive* (Aug-Sept. 1923), p. 124).
[60] Theodor Adorno, 'Late Style in Beethoven' in *Essays on Music*, trans. Susan Gillespie, ed. Richard Leppert (Berkeley: University of California Press, 2002), p. 566.

soon as one stirs from the conjecture provoked by the pronoun 'they' and realises that 'logic' does indeed refer to 'logic', the concept 'logic' is reattached to the word 'logic', which had a moment before been ponderously floating, *eo ipso*. We shall note that both the work of separation and attachment is achieved by the same verb: 'locked in each other's arms', the word logic *has* the concept logic. Thus, the word ceases to be a vehicle, and an almost mystical union—only to be seen in poetry—occurs between word and meaning, language and reality.

We may take repetition to be one mode by which Riding shows the relation of language-and-world. The modus operandi of 'death as death' is somewhat more refined than her very early tactic of simply titling a poem, "The Definition of Love", in *The Closed Chaplet* (1926). This poem, sadly, has none of the poise and playfulness of its namesake, Marvell's "The Definition of Love". Riding's poem, in its neurotic literalness of purpose, is concerned to actually define the word 'love'; and this obsession seems to have persisted until 1930, when in *Poems: A Joking Word,* "The Definition of Love" is reworded with the self-same agenda. But this is not surprising as Riding holds directness in high esteem. Another poem with as literal a purpose but more profound an effect can be found in *Twenty Poems Less* (1930)[61]—it is also titled, straightforwardly, as "Meaning"

> […]
> Meaning words only
> Meaning not meaning
> Meaning an unseeming sense
> Meaning a conversation without talkers
> Meaning at last no more to say
> Meaning how like nothing is all
> Meaning a written a world
> Meaning a finished revelation
> Meaning less and less

This poem works differently: the lines have perlocutionary effects on one another, building into a kind of prayer for her religious view of language. For instance, the cryptic 'meaning not meaning' is transmuted by 'meaning how like nothing is all'; the incantation works by the former annihilating meaning to nothing—i.e., a lack of meaning—and the latter making of 'nothing', 'all'—in the way a Buddhist sutra might encourage the supreme elevation of nothingness or Emerson might describe the poet's mind. It might even recall Donne's poem—"And quickly make that, which was nothing, all"[62]—on how the geographer fills an empty sphere with the entire globe. But essence, we shall see, lies for Riding outside the physical world. Meaning is a 'finished revelation' when it becomes 'less and less', until only the word's Cratylic identity remains.

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[61] Laura Riding, *Twenty Poems Less* (Paris: Hours Press, 1930).
[62] Grierson, *Metaphysical*, p. 11; see discussion of the poem in the review of Grierson by T.S. Eliot, 'The Metaphysical Poets', *TLS*, (1921): 669-70, p. 670.

Aside from definition, repetition, and incantation, pure meaning is sought in even stranger ways. Take the poems presented as "Fragments", in *Poems: A Joking Word,* as an example:

> What a tattle-tattle we.
> And what a rattle-rattle me.
> What a rattle-tattle-rattle-tattle we-me.
> What a rattle-tattle.
> What a rattle-tattle.
> What a we
> What a me.
> What a what a
> What a
> What a
> What a
> What
> a

The effect of this lineal isolation of vocables has been described by Wexler as follows: "The repetition and gradual subtraction force the reader to consider, almost abstractly, the contribution of each element to the initial statement. The structure of the words is like an algebraic equation reduced to its simplest terms".[63] A similar method is used by William Carlos Williams in *Spring and All*, a volume touted as influential on the early Riding.[64] In the "The Red Wheelbarrow", words like "depends" and "upon" are brought into a molecular zone of interest by virtue of their isolation.[65]

The meaning-making, or unmaking, procedure of "Death as Death" is swivelled in "The Number", a later poem in *Love as Love*:

> The number is a secret,
> How many elements assemble
> To pronounce *Alive*—
> And leave *Alive* to count places,
> The conference adjourned
> And the ghosts inaccurate,
> Scattering poor memories.

The poem seems to invite an analytical reading by focusing on pronunciation, with the phrase 'how many elements': but simultaneously, it also undermines through its performance such scientific treatments of language. Rather than juxtaposing the word 'Alive' with itself, as in 'death as death', its pronunciation is contrasted with its meaning by first using the word as a noun and then, as an adjective. The 'elements' that assemble to pronounce any word are the mouth and the mind, but since the object of the question in the poem is specific, we shall consider the anatomic elements of the word instead; pronouncing 'Alive' requires two syllables, 'a' and 'live'. The poem means to

[63] Wexler, *Pursuit of Truth*, p. 59.
[64] Samuels, *Anarchism*, lxxi.
[65] William Carlos Williams, *Spring and All* (Paris: Contact, 1923), p. 74.

show how counting elements in the use of a word will tell us nothing of its meaning; this is sharply felt by the reader who first struggles to fathom the correct way to part '*Alive'* into 'elements' and is, at once, casually asked to parse the word in a sentence in line 4. What transpires is that the reader automatically comprehends the meaning of '*Alive'* in line 4, as 'to leave alive' is a common phrase. The process of *defamiliarisation* that the reader was led through in "Death as Death" is reversed in the meaning-making procedure of this poem by an intensification of *familiarisation*—being alive is, after all, more familiar to us than being dead. In other words, the familiarity of '*Alive*' as used in line 4 is sharpened by the unfamiliarity of its mathematical disseverance in lines 2-3.

We argued earlier that Riding would assent to Ogden and Richards's call for a thorough study of word-usage. This poem in turn allows us to distinguish the poetic mode of defamiliarisation, the kind of word-alchemy in "Death as Death", from the dissective defamiliarisation of 'mathematical lexicographers', as they are dubbed in *Anarchism*.[66] The word 'conference' in line 5 brings to mind a collection of professional linguists, where one might find an Ogden or Richards attempting to analyse language by rigorous quantification or empirical study. For instance, in *Anarchism*, Riding says, "To Mr. Ogden and Mr. Richards, […] language is this precise mathematical grammar".[67] They, in the poem, are forced to leave 'inaccurate', for how can numbers assemble words? Put differently, how can a 'ghost' feel what it is to be 'alive'? The image the poem raises is of a scientist of language rending words into morphemes to investigate etymological meaning, 'scattering [the] poor memories' in pieces: a fate, one might venture, common to the explananda of science in general.[68] The poem's critique, to term it ineptly perhaps, is that once quantification is under way, "no sooner known the number,/ There is division to prove the whole,/ But never reassembling." The exercise is likened at the end to "a precise madness distributing/ *Alive* to ghosts accurately"; the juxtaposition of '*Alive*' and 'ghosts' in the final line underscores the sense of the mathematical linguists' endeavour as in essence a contradiction.

4.1.3 Word as Number

Logos, the word as rule, reason, and measure, is the theme central to *Though Gently*. It exalts logos through a dialectic between mathematics and poetry. The dialectical mode used in poetry must have seemed in 1930 highly unusual. Unlike the poems we have read thus far, those in this volume unfold in paragraphs of cryptic postulates and pregnant aphorisms with only rare snatches of verse.

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[66] Riding, *Anarchism*, p. 23.
[67] Riding, *Anarchism*, p. 54.
[68] Riding parodies the scientific mind-set in similar terms in *Essays from Epilogue: 1935-1937,* ed. Mark Jacobs (Manchester: Carcanet Press, 2001): "Let us reduce the earth to the smallest conceivable space, so small that it cannot even be called space" (25).

As Fitzgerald saw fit to class Riding's later works with the *Principia*, *Though Gently* bears comparison with the *Tractatus*. The analogy has precedents: Samuels compares Riding's early prose-works with Wittgenstein's and Marjorie Perloff places the later Riding's tract on language, *Rational Meaning*, alongside the *Tractatus*. However, Perloff says Riding has "none of Wittgenstein's aphoristic brilliance"[69]—this blanket verdict is remiss for having not acknowledged the much closer analogue, *Though Gently*. Like the *Tractatus*, it is written in a series of terse aphorisms—arrogantly dubbed 'absolute statements'—which seem, as Anthony Quinton says of the *Tractatus*, "voiced off as if from a whirlwind".[70] The proclamations build to a severe doctrine on the nature of language and reality.

I.M. Parsons, reviewing *Though Gently* in 1931, described its idiom as "a hard, spare utterance, ascetic in its dry intellectuality. But it has, too, something of the confident attraction of a geometrical proposition".[71] David Perkins says "often they [Riding's poems] are argument; assertions are made, explained, defended, justified, sometimes questioned and countered".[72] But terms like explanation and justification seem alien to the closed nature of *Though Gently*: it constantly rejects the definitions of terms arrived at by convention and extends its arguments instead by imposing a private glossary; but treated as a formal system, provided the internal definitions are delimited correctly, the poems do in fact hang together. In "Mr. Doodle-Doodle-doo", the titular character says "by being a mathematical lexicographer and a lexicographical mathematician, I am therefore able to check the truth with the truth".[73] Although this was styled a satirical piece, it points to Riding's interest in mathematical formalism, whose formal procedure *Though Gently* resembles.

I have avoided the word 'axioms' to describe her premises in *Though Gently* because we are expressly forbidden by the poet from conflating 'axioms'—maligned as unproven conveniences in "Let"—and the 'statements' of the poems which are rendered absolute by fiat. The series proceeds by a careful manipulation of syntax and semantics surrounding words such as 'number' and 'God', whereby the infirm words are set alongside words synonymous with 'poetry', to arrive, as if by apophasis, at a definition of the latter. Even the semantic field of 'poem' is not spared her scalpel—as defined in *Anarchism,* a 'poem', in *Though Gently*, is 'nothing'. Just so, a hierarchy of meaning is erected on the ladder to Truth—literally, with a capital 'T'.

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[69] In Samuel's introduction to *Anarchism*, p. li; Marjorie Perloff, review of *Witch of Truth*, *Parnassus* 23. 1 (1998): 334-53, p. 334.
[70] Anthony Quinton and Bryan Magee, "Modern British Philosophy: Episode 1", *BBC* (1970).
[71] I.M. Parsons, 'Three Seizins', *Spectator* 147: 5396 (1931), p.739.
[72] David Perkins, *A History of Modern Poetry: Modernism and after* (Cambridge: Harvard University Press, 1987), p. 9.
[73] Riding, *Anarchism*, p. 23.

In keeping with the semantic streamlining previously exhibited in the collection *Love as Love*, the poems in *Though Gently* also shear plurality off signification. Parsons characterises her "method of prose composition" as "an attempt to arrive at conclusiveness, in a series of related statements, by the rigid exclusion of ambiguity or, more precisely, of all irrelevant constructions".[74] The severity of Latinate register is another factor that precludes melopoetic suggestiveness; *Anarchism* had already argued against the tendency amongst modern poets to transmit sense through sound extrinsic to Cratylic syllables. Riding believed a poem to, in some mysterious way, convert the phonetic into the phonemic, bringing to surface the oneness that inheres between verbal sound and reality. Michael Roberts characterised Riding's view of poetry "as the final residue of significance in language, freed from extrinsic decoration [and superficial contemporaneity]".[75] Having stated her distress at "the musicification of poetry", Riding argues that poems working through the interplay of sounds within the structure of a poem, say, in rigid rhyme schemes, signal a decadent betrayal of poetry's true purpose.[76].

Wexler says that to Riding, "poetry was humanity's ultimate means of articulating truth; therefore, poetic 'goodness' was a moral problem for her".[77] At the centre of *Though Gently* is a comparison of Plato's theory of number and the Cratylic theory (or so initially dubbed) of words. As with the structure of the world in Plato, for whom Goodness and Number dwelt as Essences without, the Essence of words was central to the young poet's ethics. To prosecute this argument, Riding erects the figure of Plato as her interlocutor: she challenges him directly in "I Grant You" and in another poem, teases the difference between "Ideas and Idea"; but to what degree he is her antagonist will remain for us a matter of speculation. Mathematical objects to Plato displayed a timeless existence accessible only to *nous,* or pure thought. He casts as "opposites", in the *Seventh Letter,* "every one of the circles which are drawn in geometric exercises", in whatever rude form the clumsy hand is capable of drawing, and "the Idea of the Circle".[78] Riding's rather odd comparison between words and numbers as regards their essentiality may have been provoked by her reading Ogden and Richards. In *Meaning*, they cast Heraclitus and Pythagoras to stage the conflict between Cratylism and mathematical Platonism. To Heraclitus, for whom, famously, all existence is flux, words, by achieving a remarkable stability of reference-to-things, provided a glimpse of an underlying reality.[79] Pythagoras, on the other hand, professed that numbers are the

[74] Parsons, 'Three Seizins', p. 739.
[75] Michael Roberts, ed., *Faber Book of Modern Verse* (London: Faber and Faber, [1936] 1951), p. 9.
[76] Riding, *Anarchism*, p. 32.
[77] Wexler, *Pursuit of Truth*, p. 112.
[78] Plato, *Plato in Twelve Volumes, vol. 7*, trans. R.G. Bury (Cambridge: Harvard University Press, 1966), p. 343a.
[79] Ogden and Richards, *Meaning*, p. 32.

only eternals and thus reveal the cosmic order.[80] It is the task of this strange collection of poems to challenge the mysticism of mathematicians with respect to their charge by advancing a realist philosophy of language.

Unlike our prior attempts at close-readings which analyse individual poems, or lyric corpuses in separate semantic clusters, this sub-section will be concerned with the collection as a whole, as, to reiterate, no individual poem can be read without reference to formulae and symbols defined in others. In 1928, Riding, co-authoring with Graves, argued that anthologies of poems regularly published at the time were bringing about a kind of commodification of poetry, treating them as assortments of flavoured cookies, for the puerile purpose of 'popularising' poetry.[81] It is not surprising that Riding's collection should be written such that individual poems not only merit from being read *in situ*, but that members are rendered opaque when separated from their cousins.

In "What is There to Believe In", the first poem of the collection, one may initially read the distinction between 'no-sense' and 'sense' in multiple ways.

> There is a no-sense and a corresponding sense.
> There is an irresponsibility and a corresponding responsibility.
> There is a question and a corresponding answer.
> There is an equality between sufficient opposites.
> There is an approximation and a corresponding exactness.
> There is a scripture and a corresponding authentication.
> There is not God because he does not correspond. He only refrains from discrepancy.
> He differs, but he does not differ sufficiently to agree with all that he differs from.
> There is T and ⊥.[82]

From the structuralist approach, a semiotic 'sense' corresponds to a thing—material or conceptual—as in word ⟶ sense ⟶ thing. There is also the perceptual 'sense' which similarly mediates two realms—in the latter's case, the internal and external world. The poem conflates the semiotic and the perceptual 'sense' to imply that words come to acquire 'senses' (meanings) because we attempt to understand the world using sense-perception. Read so, we are prompted to take 'no-sense' to eliminate the cumber of sense: that is, a direct installation of the thing-in-itself, *ding an sich* in Kantian terms, before being tainted by sense-perception when represented in language with 'a *corresponding* sense'. There is also the possibility that she is comparing the sensible and the nonsensical as both being 'There to Believe in'. But the strangeness of the vocable 'no-sense' necessitates a glossing somewhat beyond the realm of pre-existing concepts, such as 'thing-in-itself', 'pre-sense' or 'nonsense'; after all, word-choice in a prosaic poem is not metrically

[80] Ibid., p. 32.
[81] Laura Riding and Robert Graves, *A Pamphlet against Anthologies* (Hertfordshire: Garden City Press, 1928), p. 9-20.
[82] Riding, *Gently*, p. 1.

constrained. The phrasing of the title 'What is There to Believe In' promises a list of entities whose existence is 'there', as in readily available to 'belief', without the trappings of a thorny metaphysics. The world of objects outside sense-perception—requiring no-sense—is not readily 'there to believe in', philosophy having gotten no closer to proving sense-independent reality in Riding's time than when Kant had famously declared the failing a scandal. On the other hand, things as they are beyond words (and their senses), *if* taken to exist, announce themselves quite readily—they are simply there, as Samuel Johnson rudely reminded us by booting a pebble across the road. Therefore, this does not require 'belief' either.

Riding is more likely developing an idea that she presents rather clumsily in *Poems: A Joking Word*. "Poems mean doom but doom isn't a meaning. Poems mean but doom is".[83] The meaning of 'doom' is nothingness or annihilation, which allows us to read 'poems mean doom' as poems mean 'nothing'—they are outside the illusion of reality in which we recognise 'somethings'. 'Doom' is the only thing that really 'is', so poems mean what *is*. In the context of Riding's prior works—*Joking Word* and *Anarchism*—we may say that poems refer to no-sense, to doom, to nothingness. Since poetic words are thereby strictly forbidden from venturing outside themselves to the lived world, the 'no-sense' of these words leads not to *dinge an sich* but a thingly quality of words-in-themselves, lending to them a substantial reality—a being affirmed by the paradoxical declarative 'there is' followed by the hyphenated 'no-sense'. 'No-sense' is the direct object of the verb 'is' and although there is a corresponding 'sense', or reference to something in the historical/sensible world, no-sense subsists without, eo ipso. Words that possess 'sense', in the manner in which we have developed the term, are words that do not assert their own independent existence: as Riding puts it in "Language and Laziness", "it has no reality, it is an empty cipher"[84]—this is the 'logical', Saussurian aspect of a word. It is an 'empty cipher' because once it is occupied entirely by its referent, its historical sense, it leaves no residue behind.

'Correspond' appears six times in the poem, meriting a careful gloss. From its late medieval origins, 'correspond' means "to be in harmony with".[85] The fourth line shows the etymological definition to be a poor guide as the former allows agreement, an 'equality between sufficient opposites'; and it is not clear that 'irresponsibility', whatever be its object, is in harmony with 'responsibility'. So somehow, the 'no-sensical words' both subsist and coexist with 'sensical words', despite their being opposites. 'God', however, 'does not correspond' because his being is fearfully different from any *thing* in our world; although He declares Himself in various forms, his avatars do not differ enough to correspond with anything that *is*—in other words, no God has ever simply

[83] Riding, *Joking Word*, p. 20.
[84] Riding, *Anarchism*, p. 13.
[85] *OED*

existed in the manner of temporal beings. In *Epilogue*, following an elaborate disquisition on the philological, and especially phonetic genealogy of the word 'God', Riding summarises the aspect common to all his conceptions and incarnations, namely, that 'God' signifies a remote "something else" that man faces with "a central attitude of perplexity".[86] Poetic words, however, unlike God who does not correspond, flit between noumena and phenomena.

To explain how they do so, it will prove useful to see the later Riding's defence against the imputation of unreconstructed Platonism in her youth; it shall clarify for us her finer distinctions even if the taxonomy is rather involute. Similar to our delineation of 'no-sense' and 'sense', Riding had written in 1928 that "words in their pure use, which I assume to be their poetic use, are denials rather than affirmations of reality. The word *hat*, say, does not create a real hat: it isolates some element in the real hat which is not hat, which is unreal, the hat's self".[87] In 1974, when asked whether this is merely Platonic Idealism brought to language, the older woman replied as follows:

> A sympathetic interpreter could point to the reality that […] was evoked with the word, the realness of 'the hat's self' as distinguished from the realness of hat as 'thing' […] This was the reality of things as existent to the mind, which knew in terms of words. This is different from the Platonic conception, which involves an endeavour to isolate another reality from the reality of appearance. […] Plato reduced the numbers of things to idea-forms, and synthesised these into his counter-reality to reality—and had thus a purity abstracted from these. My reality counter to the conventional reality […] was that which the human self, not extracting its identity from the collective physical or social [...] environment, was in itself, as real of itself, thus unreal by the collective modes of definition.[88]

The analysis of the word 'hat' will remind us of the operation on the word 'death' in *Love as Love*. Riding argues that the Theory of the Forms—and the argument also applies to 'God' in *Though Gently*—carves for itself a separate realm of reality from our own, whilst with respect to words, Riding, to put it reductively, seeks to separate their mental and sensual aspects and, as in "Death as Death", shows how pure Logos can defy base Eros.

In *Twenty Poems Less* (1930), which she published immediately after *Though Gently*, there is a poem, "Then Follows", which reads:

> Because of being by name a poet,
> A creature before man and beyond God.
> Yes, such a creature by name,
> But by nature like yourselves and God,
> Like God, a creature of mind,
> Like you, a creature of mouth.

[86] Riding, *Epilogue*, p. 27.
[87] Riding, *Anarchism*, p. 98-9.
[88] Riding, *Anarchism*, p. 265-66.

Wexler describes the dilemma as follows: "As poet she faces a more trying task than either [God or man]: she must mediate between the two".[89] Since God 'does not correspond', as in communicate with man,—for He has no language—it becomes the task of the poet to transmute 'sense'— or meaning sullied by history—into 'no-sense', what is 'real of itself'. To posit existence by the construction 'there is' suggests the subject of existence participates, and thereby corresponds, with existence. Thus, 'there is a no-sense' but 'there is not God' (sans hyphen). So whatever T and ⊥ may stand for, they *are*, unlike God. Besides the existence of that to which these symbols refer, the symbols themselves have a more solid presence than algebraic variables. ⊥, or up tack, is a symbol in formal logic that denotes 'false', understood by practitioners as 'negative truth'. Although this sits well with how we are about to interpret the symbol, there is insufficient evidence to determine to what extent Riding was aware of its use in formal logic.[90] To see what it betokens, we are better served reading the second poem in the collection, "Let", where it is scrupulously defined.

> Let the sign ⊥ stand for that which all understand and express differently. ⊥ is the unmistakable. ⊥ is the exact fulcrum. Let the sign T stand for the interpretive world of leverage. ⊥ is that which is. T is that which is going on. Therefore T is in immediate opposition to ⊥ but in ultimate reference to ⊥. This is a statement not a hypothesis.[91]

'⊥' is defined as a fulcrum. It is where language is in union with reality: minds grasp it unaided by sense, but express it varyingly, as when speaking, they are limited by the physical and social forces that govern speech, making it a stochastic medium (unlike poetry, wherein meaning can be made exact). In the poems, graphemes signify not only as conventional elements of signs but also as diagrams of physical objects. The symbol ⊥ thus resembles a fulcrum placed upside-down: rather than the teetering balance of an object placed upon a fulcrum, the upside-down image imposes a stability to the connection between word and mind. On the other hand, T, which stands for historical Time, is what 'is going on', the world in a Heraclitean flux. Unweathered by the vagaries of time, ⊥ stands as opposite to T, but the different expressions of T are in ultimate reference to the one ⊥ which all minds innately comprehend. Referring to temporal truths as 'T truth', she says,

> This is not to be axiomatic. An axiom is a hypothesis adopted as absolute to give authority to all instances covered by it. It is written back from the instances for which authority is required in anticipatory deduction. T truth is necessarily axiomatic: it must be improvised for each immediate set of circumstances. This is not to be axiomatic, since it is a statement not a hypothesis, an equal among equals,

[89] Wexler, *Pursuit of Truth*, p. 62.
[90] In 'Mathematics as an Intellectual Master-Method', Riding suggests that she was familiar with texts on logic in her youth (p. 597-600). Although none of the texts she mentions use the up-tack, she seems to have been well-read in logic and could have come across the symbol elsewhere.
[91] Riding, *Gently*, p. 2.

> not an absolute among supernumeraries. This is not to make always the same various statement. […] This is not for the benefit of what follows, for nothing follows.[92]

The phrase 'anticipatory deduction' in the second paragraph will abet our exegesis. At first, it seems an oxymoron. Customarily, it is *induction* which induces anticipation, as expectations form on the back of what has already been. Deduction, rather than something anticipated, is *discovered* from premises, or axioms. Euclidean geometry, for instance, proceeds on the assumption that certain axioms are absolutely true and deduces all geometric theorems from them. This is an instance where Riding's redefinition is at its most intense. To common understanding, 'axioms' are the conditions of mathematical truths that follow from them. In the poem, however, an axiom is said to be 'written back from the instances for which authority is required'. This description wrests 'axiom' from the grip of mathematical praxis and places it under a historical lens. The poem seems to suggest that when the ultimate justification of mathematical truth is questioned, what are tacit, procedural hypotheses about the nature of the physical world suddenly become posited as 'axioms' to lend the theorems deduced from them absolute authority. The conventional referent of 'axiom' is thus stood on its head: what was considered independent of experience is shown to be infected by the taint of convention. In stark contrast to historically contingent axioms, whatever is said in the poem is declared as 'statements', which are 'equal among equals'. Although the poetic statements are defined as absolute, they do not—by virtue of being 'equals'—claim to be the bases for ensuing statements as axioms purport to be. If 'statements' are what follows, and 'nothing follows', then poetic statements are 'nothing'. All types of 'nothing' are in essence 'equal', for differences can only be distinguished by qualities. To understand this, we might look again to "Death as Death", in which "nothing" is defined as "a similarity/ without resemblance"; this is because re-*semblance* is recognised by sense whilst 'nothing' is given to pure understanding. "Let" develops this idea by use of a more estimable word than 'similarity' to compare 'nothings', namely, 'equality'.

By annihilating sense, Riding finds a way to place the truth of poetic statements on a higher plane of abstraction than that of mathematics, whose 'axioms', we have seen, are stated to derive ultimately from experience. Falsely declared as absolute for the sake of authority, the individual axioms, to Riding, become mere 'dogmas'.

> And this is not to be dogmatic. Dogma is the proverbial difference of one axiom from another—a difference merely in the content of instances and not in the degree of absoluteness. T truth is necessarily dogmatic: it must first impose its content before it can have validity. This is not to be dogmatic, this does not differ from anything but itself, which is to differ only by degree in what it samely is. This,

[92] Ibid., p. 2.

> indeed, is to speak absolutely, since it is not to define the silences of God but the speech of man.[93]

A dogmatic truth 'must first impose its content before it can have validity'; in other words, axioms are synthetic propositions, and so cannot 'speak absolutely', as the poem claims to do. This much is clear from her early works. But unique amongst her works, *Though Gently* attempts to define, or undergird metaphysically, what it means to 'speak absolutely' about 'nothing'. We began by defining the absolute against Platonism: the 'statements' are not Platonic in so far as she is not defining 'the silences of God but the speech of man'; the poem unconceals the nature of language positively through its statements and negatively by stating what it is not—an axiom or dogma.

To capture her world-picture as a whole, however, we must not only see how 'statements' relate to 'axioms' but also how poetic words relate to "Numbers".

> Numbers attempt to arrive at finity through infinity.
> According to numbers ⊥ is T+.
> Numbers cannot describe totality but only the composition of totality.
> The enumeration of four essences does not lead to the discovery of an essential but of a fifth essence.
> Numbers are life, imitation, or analogy and they lead only to further numbers.
> Numbers are detail.
>
> *
>
> Of a detail it may be said that it is beautiful, but of an essential it may only be said that it is essential.
> A detail is beautiful in so far as it is free from any care beyond self-care.
> An essential has no self-care, but a general care.
> Therefore, though it may not be said to be beautiful, neither may it be said to be ugly, as it may be said of a detail that has care beyond self-care.
>
> *****
>
> A detail suspends meaning; an essential sustains it against suspension.
> There is ultimately only one essential; but as there are many suspensions of meaning, there are sufficient protests of meaning to provoke sufficient detail to provoke ultimately a sufficient essential.
> Detail is measured in number, the essential in degree.
> But such degree is expressed numerically, to allow compatibility between detail and essential.[94]

The first line of "Numbers" may seem a contradiction to lines 10-11 of "The Number", to wit, 'No sooner known the number,/ There is division to prove the whole'. However, these lines are referring to related but different aspects of mathematical deficiency. "The Number" parodies the attempt to describe a subsisting One, a word, by dividing it into countable parts. It is therefore the act of counting or measurement that is in question in "The Number". In "Numbers", we become concerned with the ontological untranslatability between number and the **lived world**, and

[93] Ibid., p. 2.
[94] Ibid., p. 3.

between number and **essence**. First, the lived world: because numbers are not entities in the world, they cannot be bound physically, and are thence termed 'infinite'. The futility which the poem alludes to is the attempt to describe finite entities in terms of the non-finite, or borrowing from "The Number", represent what is '*Alive*' with 'ghosts'. Next, on to essence: the second line of "Numbers" states that numbers, incapable even of coming to terms with finite objects in the world, attempt to define the essence beyond. Whilst dwelling in the realm of T (the pulses of Time from which counting sprang), numbers attempt to arrive at ⊥, the 'essential'. Thus, numbers add themselves, the operation symbolised by T+, in the false hope of eventually attaining ⊥.

Tim Armstrong attempts to read lines 2-3 as invoking the transfinite number theory of the German mathematician Georg Cantor.[95] Cantor is known chiefly for his heretical, and indeed, successful, attempts at defining the infinite. In his theory, there would emerge, counter-intuitively, infinities of differing sizes: the set of natural numbers, for instance, is countable (theoretically), whereas the set of real numbers is not, and therefore much larger, though both are infinite in size.[96] Armstrong implies that in the poem, T+ represents man's feeble attempt to count numbers, in the hope of reaching infinity, as Cantor, loosely speaking, had already done. Based on this premise, Armstrong argues that Riding is incorrect to suggest that the infinite essence ⊥ cannot be arrived at by performing operations on natural numbers, because Cantor has shown that this can in fact be done:

> If '[a] detail suspends meaning [and] an essential sustains it against suspension' (*TG* 3), then you have the suggestion that meaning is 'suspended' between the realms of number (that is 'detail' or mere facticity) and essence. But that is not quite right, since number, or rather sequences of numbers, can move, at the limit, beyond denumeration and towards finality.[97]

Were we to accept the premises that Riding was acquainted with Cantor, and that the poem references the latter's theory, Armstrong's criticism of the poem's conclusion is still not justified. Armstrong does not allow for the most direct reading of the poem, which is that Riding does not accept the mathematician's definition of infinity: the poem views the mathematician's 'attempt to arrive at finity through infinity' as a kind of cheap trick. This can be illustrated by reading the second line against another analogy: lines 2-3 in fact more closely approximate a much older problem in philosophy than Cantor's: of arriving at the necessary from the contingent: that absolute essence or 'totality', ⊥, cannot be attained by a collection of contingent, temporal

[95] Armstrong, 'Syntax', p. 8-11.
[96] See Armstrong, 'Syntax', p. 2-3; Chapter 1.2 of Brits, *Infinities*; and Ivor Grattan-Guinness, *The Search for Mathematical Roots, 1870-1940: Logics, set theories and the foundations of mathematics from Cantor through Russell to Gödel* (Princeton: Princeton University Press, 2000).
[97] Armstrong, 'Syntax', p. 10.

phenomena, T. The argument follows closely the form of the famous Ontological Argument, in which entities in our world (contingent beings) always require another contingent being, in an infinite series of partial explanations, to explain their existence—such as, say, a child is explained by her parents who are in turn explained by theirs, and so on. An 'existent being'—one that contains within itself the reason for its own existence—external to the world (defined as the aggregate of contingent entities) becomes necessary in this argument as an explanation for the phenomenal world, or reality.[98] Whilst the necessary Being in the Argument is God, Riding has already distinguished ⊥ from God. The word 'God', she deigns to say in *Twenty Poems Less*, is only for the small-minded, trapped in society's conventions: "For a poor understanding/ It ["The Gentle Truth"] may all be reduced/ To a simple word: God!" We shall instead apply the Argument to the 'essence' disclosed in the poetic word.

In her use of repetition in *Love as Love,* we studied how Riding endows words in her poems with reason, in themselves, for their existence without reference to their conventional meaning (which is determined by T (historical time)). If ⊥ is the poetic word, we may paraphrase the second line as saying $T_1+T_2+T_3+\ldots T_n \neq \perp$. Thus, even if lines 1-2 recall Cantor's efforts to define infinity, the poem must be read as balking at such attempts, as the essence to Riding is wholly different from what mathematicians take it to be. This is also the only reading that excuses the paradoxical assertion in line 6 that 'numbers are life'. The absurd phrase must not be confused as suggesting that numbers are '*Alive*', as in actively being—they are, after all, 'ghosts'. The word 'life' must instead be taken in the context of its listed synonyms: 'imitation' and 'analogy'. The stability of the noun-form suggests that numbers are sedimented, as is 'life' or the "myth", which is "the unreal, literary, psychologically organised self-world [;] collective-real: its existence depends on a belief in reality, though in reality as a myth"[99]—such a reading is abetted, we will recall, from the argument in "Let" that axioms, pretending to be absolutes, are in fact empirical or historical. It then becomes the task of the poetic word to remove us from T time—the numerical, serialised world of the myth. In 1974, Riding attempts to clarify some of these ideas:

> My theme [was] the poet as one who does not live, think, speak, within the frame of a concept of reality; and it is poetry as of non-conceptual substance; and it is the poem as just itself. That is, I am letting the poetic function meet my sense of an ultimate fullness, perfection, of speaking, an end that words imply […] So I say […] 'A poem is nothing'.[100]

[98] Those interested in a clear summary of the argument can see Bertrand Russell, *Why I Am Not a Christian* (London: George Allen & Unwin, 1957), p. 127.
[99] Riding, *Anarchism*, p. 100.
[100] Ibid. (Appendix I), p. 256.

The equation between 'fullness' and 'perfection' with 'nothing' in this passage is a hint for us to take 'essence', 'totality', and 'nothing' in *Though Gently* as all differently referring to the same—we shall return to this equivalence anon.

Although "Let" has declared that T and ⊥ are in kind opposite, they remain in balance. Line 3 states that 'numbers cannot describe totality but only the composition of totality'. We have shown how 'totality', 'nothingness' and 'essence' are effectively used as synonyms across her early works, as those ideas which do not belong to 'the interpretive world' of T. But now we shall—attempting what is strictly speaking impossible—offer a rude characterisation of the unspeakable entity to which these words point. In a later poem in *Though Gently*, "I Grant You", Riding states that "For Plato […] poetry was an arrogant experiment in perfection",[101] the implication being that Plato believed poets deluded in thinking their work perfect when in fact perfection was reserved to the mathematician, and by derivation, the philosopher. By referring to numbers as 'imitation' in "Numbers", Riding reverses Plato's metaphysics, in which poetry is imitation and number, Essence.[102] Plato excommunicated poets from his Republic for entrenching our imprisonment in the cave; and as regards number, in the *Phaedo*, Socrates says to Cebes,

> [W]ould you not be cautious of affirming that the addition of one to one, or the division of one, is the cause of two? And you would loudly asseverate that you know of no way in which anything comes into existence except by participation in its own proper essence, and consequently, as far as you know, the only cause of two is the participation in duality—this is the way to make two, and the participation in one is the way to make one.

In other words, Socrates shows arithmetic to be meaninglessness without an ideal conception of numbers. The poem "Numbers", rejecting this ideal nature, confines numbers to their own realm, a kind of mathematical purgatory; they are trapped to "lead only to further numbers". Poetry, on the other hand, in a later poem in the collection, is said to disclose "the possibility of planes of thought beyond common reach", as "the inspiration of the poet was divine".[103] The poem argues that 'numbers', which 'are detail', 'suspend meaning', whilst an 'essential', like the poetic word, 'sustains it [meaning] against suspension'. And the following is the line after which we have, finally, enough premises to deduce a picture of Riding's early metaphysics: 'Detail is measured in number, the essential in degree'.

Before we understand the use of the word 'degree' here, let us harken to its use in "Let": it was stated that poetic statements 'differ only by degree in what it samely is'. God thus mirrors

[101] Riding, *Gently*, p. 18.
[102] I refer to the famous Book X of *The Republic,* wherein Socrates deems poets and artists as belonging to the 'imitative tribe'.
[103] Riding, *Gently*, p. 18.

poetic statements, because He 'differs, but he does not differ sufficiently to agree with all that he differs from'. I have characterised God as *mirroring* poetic statements because, as we have seen, poetic statements have an actual presence in our world whilst God does not. We have also shown how poetic statements are one with ⊥, which means God also mirrors ⊥. And with that, let us collect all we have learnt about the essential, ⊥: it is (1) indivisible, (2) differs but is the same, (3) differs only in degrees, and (4) God mirrors it. From these postulates, the image of ⊥ that emerges is a sphere: a unitary Parmenidean sphere of existence which differs when approached from its various angles or degrees of rotation but is in essence the same all over. This floating idea of the eternal One, Riding would later concatenate into "the God-universe", which is "an attempt to reconcile sentimentally the opposition between space and time": existence and history.[104] The sphere calls up images of divinity from antiquity, from Plato, who likened God's design of the universe to a sphere in the *Timaeus*, to Byzantine art which depicts God as a circle, to Nicholas of Cusa, who defined God as an "infinite circle whose centre is everywhere and whose circumference is nowhere".[105] Used as a mnemonic device, we may begin to characterise the relation of language to ⊥. We know that poetic language has only a mirrored relationship to God—the entity that subsists outside the world. So the sphere must have been for the poet a metaphor not for God—who is a circle, as in the two-dimensional reflection of the sphere—but for the world (not, of course, the oblate spheroid of science but world seen as total reality). In a true poem, by Riding's definitions, language illuminates regions of this unitary sphere of being which 'differs only by degree in what it samely is'. But we have left out in our list of facts about ⊥, one descriptor, namely, that it is 'nothing', 'doom', 'no-sense'. Nothing can be said about the sphere as a whole because it does not have attributes: it is a 'similarity without resemblance'.[106] Nothing, we have shown, also equates to 'totality': this equivalence computes only if we see both 'nothing' and 'totality' as sharing their one articulable attribute, namely, being *not something*. The existence of 'nothing/totality' can only be displayed or unveiled in the course of poetry. It therefore becomes the task of the poetic word to shuttle between detail and essence, T and ⊥, conveying the institutionalised reader from her historical station to a Reality beyond. Thus, even if an answer may yet elude us, we may at least understand correctly the question at the heart of Laura Riding's pursuit of truth: "An image of

[104] Riding, *Epilogue*, p. 24.
[105] Plato, *Dialogues*, p. 1186; Dunbabin, *Mosaics*, p. 95; For Cusano's quote, see Anthony Levi, *Renaissance and Reformation: The intellectual genesis* (New Haven: Yale University Press, 2002), p. 151.
[106] As a consequence, everything said in the last two pages, including the image of the sphere, must be taken as mere analogy. It is only to prepare a reception of the poems in *Though Gently*.

meaning is eternally suspended?/ Devilishly contrived to stand eternally between detail and the essential?".[107]

4.1.4 Loss of Certainty

Of the titular poem of *Lying Word*, "Poet: A Lying Word", a prose poem which Riding composed soon after *Though Gently*, Jerome McGann says the following:

> Part of the strength of the poem lies in its prose formality, which serves as a clear visual trope for the 'true wall' of language. That true wall, this text's language, speaks of finalities: 'And the tale is no more of the going: no more a poet's tale of a going false-like to a seeing. The tale is of a seeing true-like to a knowing.' ("P", p. 235) [Quoted from the poem].[108]

The 'poet's tale' is not a 'going' because words no longer seemed to Riding as transporting the reader to a truth beyond; 'seeing' the words aright leads instead to 'knowing'. It seems the perfect balance between mind and language worked out in *Though Gently* was now only in the fraying edges of the poet's imagination. Despite the prose formality that McGann notes, there is a strong rhythmical impetus, a ghost of a regular metre lurking in the poem, which shows Riding's views about strict definition in *Though Gently* beginning to soften. Her belief in the rectitude of her vision has not left her but the faith in its realisation seems to have come unravelled. Take, for instance, the following lines of "Come, Words, Away",

> But I know a way to soothe
> The whirl of you when speech blasphemes
> Against the silent half of language.

Regular speech constantly offends the silent half, the word itself as known to mind, by shouting it in loose and promiscuous ways. The poet seems to have had enough:

> Come, words, away to where
> The meaning is not thickened
> With the voice's fretting substance.

One might expect the Renaissance turn of phrase in 'come, away' in a poem by Herrick, supplicating his mistress to elope, or even in Shakespeare, asking death to "come away, come away". Although the word is the poet's paramour here, the usual context remains of a tryst and its ruin in vulgar society. The Aristophanic union between mind and word *in ovum* is being gnawed away by speakers of those words, as if their mouths were marauding scavengers.

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[107] From "The Sphinx" (Riding, *Gently*, p. 4).
[108] Jerome McGann, 'Laura (Riding) Jackson and the Literal Truth', *Critical Inquiry*, 18 (Spring 1992): 454-473, p. 463.

Her Manicheanism as a poet becomes steadily more and more severe; she begins to shun circumstance almost altogether in the opening lines of *Epilogue*, where words rouse from the stigma of history:

> Now time has reached the flurrying curtain-fall
> That wakens thought from historied reverie
> And gives the word to uninfected discourse.[109]

Historical sense, marshalled in discourse, is now infected by sin. Such an idea is not particular to Riding; it is a cast of mind one sees as far back as Philip Sidney, who in his *Defence of Poesie,* says, "Sith our erected wit maketh us know what perfection is, and yet our infected will keepeth us from reaching unto it".[110] But Riding uniquely, however briefly, seems to have believed an Edenic redemption from the sin of language possible.

In *Though Gently,* Riding writes with certainty that the formula has at last been reached. A complete understanding of the triangulation of numbers, T time and ⊥ essence in *Though Gently* also allows the reader to unravel the meaning and perceive changes in the poet's doctrine, in the more well-known poem in *Poet: A Lying Word*,[111] namely, "Unless Infinity is only Time":

> Greater is to lesser
> As many is to one—
> Breaths of breath.
>
> An infinity of lack describes
> The indescribable moment of enough.
> And this is not comparison,
> Only a proved equality
> Of much and little.
>
> Nor even nothingness
> Impossible to sum,
> Unless infinity but a waning is
> Rather than to add up slowly
> The one and one and one
> That nothingness of one makes millionish—
> Unless infinity is only time
> And thinks the moment to outnumber
> Which indeed weightless keeps the scales
> In such eternal balance
> Of unnumbered one against
> The moment upon moment upon moment that bears down,
> In mathematical spite
> Or fond amazement, the other way.

[109] Riding, *Epilogue*, p. 1.
[110] Philip Sidney*, The Defence of Poesie* (London: Printed for William Ponsonby, 1595), B4.
[111] Laura Riding, *Poet: A Lying Word* (London: A. Barker, 1933).

"Unless Infinity is only Time" states once more the point which Riding has been keen to impress since *A Joking Word,* namely, that 'nothingness' is 'impossible to sum'. Armstrong arrives at a similar conclusion about the poem's purport—"mathematics [mistakenly] reaches towards impossible-to-comprehend infinitudes";[112] but he suggests that the poem implies this by evoking the theories of Cantor and J.W. Dunne.[113] In my reading, I have found that the poem's internal meaning-making procedure does not require these theories.

In line 3 of the final stanza, if infinity wanes or comes to an end, it would be a fictitious misnomer tantamount to 'axioms' in "Let": a phenomenon rendered absolute—absolutely large, in this context—for convenience, a place-holder for what we cannot imagine, and thus deserving of coming under Riding's unrelenting scalpel. If infinity is merely a vast number that fades into nothingness at the fringes of the imagination, then it would be more congruous to refer to it as 'millionish'—that is, the picture which mind forms, whether imagining infinity or a sequence of distinct, million anything, is identical. The change of register to slang in 'millionish' shows this debased, pseudo-infinity, the 1+1+1…, can never add up to the essence, the nothingness in 'the indescribable moment of enough'. Our taking 'indescribable moment' here to recall her concept of 'nothingness' in *Though Gently,* is supported by an earlier iteration of "Unless Infinity is only Time" called "Arithmetic" in *Twenty Poems Less*, where this line is rendered as "against an *absent* moment of enough" [emphasis mine].

In *Epilogue*, Riding explains why the instinct to count first gave rise to science: "the scientific universe is […] the repetition of a same circumstance […] [It is] composed of a succession of instantaneous events; and so long as there is at least one such event the succession is for itself infinite".[114] Riding rehearses a very familiar argument of the time that science reduces phenomena to identical quanta for measurement. For instance, a stone that weighs 1 gram is essentially the same as a mountain which weighs many 1 grams put together; but an endless repetition, through addition, of 1 grams does not eventually beget the infinite (this in our example would be the ideal concept of the mountain): put differently, $T+ \neq \perp$. The poem posits that despite the unattainability of physical infinity to scientific repetition, if infinity is instead understood as time, it is, conceptually at least, subject to counting—as a sequence of moments or 'breaths'. And it then becomes possible for 'the moment upon moment upon moment that bears down,/ In mathematical spite' to be in 'eternal balance' with 'nothingness', as 'many is to one'. Thus, her stance on mathematical infinity seems to have softened. If historical time T is considered as an infinite sequence of moments, the 'amazement' at the thought of this unremitting eternity is

[112] Armstrong, 'Syntax', p. 13-14.
[113] See Armstrong, 'Syntax', p. 8-9, for Riding's potential acquaintance with Dunne.
[114] Riding, *Epilogue*, p. 24-25.

deemed an analogue adequate to the Pentecostal 'moment of enough'. Adequate, at any rate, to the poet, whose burden it is to mediate between God and man, revealing, ever and again, the 'unnumbered one' to the cavalcade of history—if only to follow Blake's commandment to poets "To see a World in a Grain of Sand/ […] Hold Infinity in the palm of your hand/ And Eternity in an hour".[115]

Although Riding's view of the poetic word changed in later life, she continued to think of language in binaries: that it has a mental and physical component; and the former, the rational meaning of words, was what she most celebrated to the last. In her early years, she had seen mathematics, counting, and measurement as all endemic to a world circumscribed by space and time, wherein history occurred: physical reality was simply the moving image of eternity, where absolute truths and words communed.

We move in the next section to another American poet who, diametrically opposed to Riding, found meaning almost entirely in sound: the body for Olson articulated meaning for both the sayer and the hearer. But the theory of meaning we shall next find is also mystical, or at least metaphysical, in nature. Although Olson was more a public figure than the recluse Riding, we shall see in his writing, both in register and style, the same, if not greater, degree of strangeness, and a constant feeling that poetry is written as a kind of incantation to rouse the reader from an ancient stupor.

4.2 Projecting into the Real

As removed to Riding was the word from the foibles of man and history, so much was it marked by these to Olson. It is impossible to think of logos in Olson as being separate from the human body; and the human was a historically conditioned being entirely malleable to circumstance. There is to Olson a body that exists before and after the advent of mass culture.

> O my people, where shall you find it, how, where, where shall you listen
> When all is become billboards, when, all, even silence, is spray-gunned?[116]

The idiosyncratic typography of his poems, it is thus announced, will stand counter to a public sphere colonised by advertisement. In the biomechanics of reading aloud his poems, the body of old that was once in company with nature, would, he hoped, somehow become resurrected. Just

[115] McGann discusses the influence of Blake's Platonic ideas of language on Riding in McGann, 'Literal Truth', p. 468.
[116] Charles Olson, *The Maximus Poems*, ed. George F. Butterick (Berkeley: University of California Press, 1983), p. 6.

what this body was shall emerge from our discussion of its position in the continuum between environment and language.

Mark Byers argues that the sentiment here expressed, "that sound […] had been corrupted by mass culture" formed a retroactive justification for Olson's peculiar poetics, which, whilst highly influential, is not yet fully understood, and broadly speaking, forms the subject of this section.[117] The idea that the visual and auditory detritus of mass culture was disturbing the aptness of language, what was prophesied in the early works of Riding, is a major preoccupation of Olson's poetry.

> Colored pictures
> Of all things to eat : dirty
> Postcards
> And words, words, words
> All over everything
> No eyes or ears left
> To do their own doings (all
> Invaded, appropriated, outraged, all senses[118]

There is a sense in Olson's poems that the transfiguration of the commonplace under late capitalism was fast precipitating a synesthetic derangement of the inner life and atrophying sensual comprehension with words. To recover sensuous connection between environment, body and language—what will serve as a preliminary definition of Olson's 'field'—was perhaps his greatest preoccupation as poet and critic.

Olson is broadly sympathetic with Lawrence, Yeats, and other critics of modern statecraft: "to him [Dostoevsky]", he says, "only a hideous levelling of man can come when revolution establishes itself 'on the elements of science and reason'. What he sensed and what we know is that the modern revolutionary state denies the dignity and the value of individual human personality".[119] Olson also channels the later Auden's concerns about the treatment by state bureaucracies of 'faces' as 'numbers', in his attacks on American "sociology": mirroring Auden's 'Virgin', "history", says Olson, should at least be conceived as "events and laws, not this dreadful beast, some average and statistic".[120] Olson's concerns about the forms of measurement in modern culture place him squarely in the modernist resistance to mathematization whose character we

[117] Mark Byers, *Charles Olson and American Modernism: The practice of the self* (Oxford: Oxford University Press, 2018), p. 157.
[118] Olson, *Maximus*, p. 17.
[119] Olson, *Prose*, p. 129.
[120] 'A Bibliography on America for Ed Dorn' (Olson, *Prose*, p. 297). Olson admires Auden for dwelling on Melville's anti-rationalism in *The Enchafèd Flood* (in 'The Materials and Weights of Herman Melville' (Olson, *Prose*, p. 113). Olson's critique of sociology seems the facsimile of Auden's 'The Kingdom of Number', in his differentiations between "the individual" and "single and plural", dubbing the latter "King Numbers" (Olson, *Prose*, p. 297); see "The Virgin and the Dynamo" in W. H. Auden, *The Dyer's Hand and Other Essays* (New York: Random House, 1962), p. 61-71

have attempted to describe in this thesis. But unlike Empson and Roberts, Olson, with Riding, is a metaphysician more than critic. And unlike the other three, he is unperturbed by the discursive imperialisms of science and mathematics. As Peter Middleton puts it, Olson "thought of physics as opportunity, not as a source of envy",[121] for it inspired in him a venture beyond the modernist trope of social alienation to a radically unique ontology of being.

Olson lighted upon a change in the middle of the nineteenth century that he believed had shattered the old world, and out from its ruins had arisen a new world of possibility. Reality was revealing a character unlike anything admitted to the Western mind, or so he doggedly maintains, since the logos (used here as reason) of Socrates. Olson's was a career spent in search of a language adequate to the new man and new reality. Before the rigor mortis of this freshly churned earth in billboards "neoned in",[122] Olson hoped to will a new conception to take root, one that would urge the secret of existence. We shall in the confines of this section restrict ourselves to answering two questions about the works of Olson, which I take thus to be central: what to Olson is the human (and by extension the Real)?[123] And how can Logos (used here as measurement of word) be worked to speak about the former?

Critics have written aplenty on the influence of modern physics, especially the mind-bending events at the quantum level, on Olson's theories of poetry.[124] Others have traced a longer lineage of poetics born of physics. Armstrong says Olson's 'composition by field' was borrowed from William Carlos Williams's 'poem as a field of action'.[125] Don Byrd argues that the connection harkens even further to Ezra Pound's notion that "art is a sort of energy".[126] Although the literature and science field is teeming with references to Olson, very little seems established. Brendan Gillot says there are but two points of consensus on Olson's poetics, namely, "the openness of the 'field'" and the "corporeality of future verse".[127] The consensus-view does not seem to have progressed

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121 Peter Middleton, *Physics Envy: American poetry and science in the Cold War and after* (Chicago: University of Chicago Press, 2016), p. 10.
122 Olson, *Maximus*, p. 6.
123 'Real' has been capitalised in this thesis whenever it refers to a notion of reality other than its colloquial sense, posited by a thinker as truer (and often stranger) than that of common understanding.
124 See, for instance, Tom Clark, *Charles Olson: The allegory of a poet's life* (New York: W.W. Norton, 1991); Sherman Paul, 'Clinging to the Advance: Some Remarks on "Projective Verse"', *North Dakota Quarterly*, 47.2 (Spring 1979): 7-14; Part II of Middleton's *Physics Envy*; and Burt Kimmelman, '"Equal, That Is, To The Real Itself": The new physics, Charles Olson, and avant-garde poetics', *DQR Studies in Literature*, 47 (2011): 641-67.
125 Tim Armstrong, 'Poetry and Science' in *A Companion to Twentieth-century Poetry*, ed. Neil Roberts (Oxford: Blackwell Publishing, 2001), p. 84. The reference is to the 1948 lecture given at the University of Washington by William Carlos Williams, 'The Poem as a Field of Action', in *Selected Essays of William Carlos Williams* (New York: Random House, [1948] 1954).
126 Don Byrd, 'The Possibility of Measure in Olson's Maximus', *Boundary* 2, 2 1/2 (1973/74): 39-54, p. 50. The reference is to *Essays of Ezra Pound*, p. 205.
127 Brendan C. Gillott, 'Charles Olson's "Projective Verse" and the Inscription of the Breath', *Humanities* 7.4 (2018): 1-20, p. 2.

much further than paraphrase; there certainly hasn't been a full explanation of what terms like 'openness' and 'corporeality' exactly mean and how they hang together in his larger system. Nevertheless, I find very little to add on the subject of Olson and quantum physics, in part because the analogies between Olson's poetic field and the quantum field have already been made.[128] Peter Middleton and Burt Kimmelman are particularly thorough on the subject. Kimmelman, however, stretches credulity when he says "the extraordinary epistemological problems—and opportunities—posed by physics' relativity and quantum mechanics were a driving force in the evolution of his [Olson's] thought and aesthetics".[129] Whilst it is true that Olson, to some extent, attempted to imbricate physics into his philosophy, taking this too seriously, as a plethora of literature on Olson does, is riddled with issues. It is in general a problem for literature and science studies when there is ambiguity as to whether scientific ideas are the cause or medium through which other 'causes' might be articulated in literature. In the present case, coding Heisenberg's theorems into Olson's philosophy means the latter's fate is chained to the validity of the former. One might argue that Olson leaves his ideas vulnerable to such a fate when he makes loose assertions that sound of fact: for instance, although his argument in "Equal, That Is, To The Real Itself" hangs together without the support of quantum theory, he makes it a major premise that "in the infinitely small the older concepts of space ceased to be valid at all".[130] Even so, critical summaries like Robin Blaser's, that Olson's main project was "the translation of science into poetry",[131] do not tender sufficient autonomy to Olson's scheme, and ultimately do harm to his legacy. In a letter to Albert Glover, Olson warns,

> Don't *please* get misled into any such idea as Heisenberg's […]—This is a modern cant, scientificism anyway (meaning actually solely what gets the work done)—and like so much of that vocabulary, useful as it may be (once turned into mathematical symbols, & then yielding engineerable results—engines' work(s)) it abrupts& destroys nature as *we* are her "engines".[132]

The sympathetic reader will, I hope to show in this section, obey Olson's prod in this letter to take quantum theory as useful rather than essential to his ideas. But Middleton has argued convincingly, using much archival evidence, that Olson actually believed, inspired by Einstein's grand hope of unifying relativity and quantum mechanics, that he could somehow command language to behave as subatomic particles.[133] This brings us to the second, rather more prosaic problem with the line

[128] See Clark, *Allegory*, p. 161 and Paul, 'Clinging', p. 10.
[129] Kimmelman, 'Equal', p. 643.
[130] Olson, *Prose*, p. 121.
[131] Blaser, *Fire*, p. 204
[132] Charles Olson, *Selected Letters*, ed. Ralph. Maud (Berkeley: University of California Press, 2000), p. 355.
[133] Middleton, *Physics*, p. 100; It is the *behaviour* of quantum particles that interests Olson scholars; they are to be distinguished from Daniel Albright, who argues that it was the very discovery that atoms can be further divided

of inquiry: should quantum theory be an intended part of his metaphysics, if not essential, is it *interesting* beyond biography? For instance, must the reader of Yeats take astrology seriously to appreciate his 'philosophy'? There isn't a clear answer but let us approach with an example. Whilst describing one of his most important theories, that character in fiction should be dynamic more than objective, Olson reaches for the sanction of physics.

> It involves a first act of physics. You can observe POTENTIAL and VELOCITY separately, have to, to measure THE THING. […] They are usable enough if you include the Uncertainty Principle, Heisenberg's law that you learn the speed at the cost of exact knowledge of the energy and the energy at the loss of exact knowledge of the speed. Melville did his job.[134]

The zero-sum game between position and velocity in quantum mechanics is a function of the influence of measuring apparatuses on quantum entities and has no bearing whatsoever on the classical objects of fiction, human or otherwise—on its own, the beam splitter reveals no universal epistemological stricture. A physicist reading this might take Olson either for a charlatan or a cretin. Olson's notes on the double-slit experiment, namely, that "the process is *not* continuous [pattern] but takes place by steps, each step being the emission or absorption of an amt of energy called quantum",[135] show that, ironically, his mind was still enslaved to Classical dualism[136]—the entire commotion around the different species of bands produced from single and double slits is about the fact that the process cannot be understood step-by-step. So, on the whole, Michael André Bernstein, I believe, is correct when he says the connection between quantum mechanics and Olson's poetics is tenuous, at best.[137]

It is my purpose in this section to show that Olson's metaphysics is better understood by a more limited focus on his interest in mathematics. As with Riding, mathematics is central to the process by which Olson delivers his stamp of the Real onto words. This is not to suggest that he has more proficiently grasped mathematics than quantum theory, for he is equally prone to wild extrapolations from geometry. He admits to an audience, once, "I should like immediately to disburden myself of any idea on your part that I have any adequate knowledge of mathematics & geometry".[138] But such an admission does not perforate his system. His use of mathematics, unlike science, does not rest on the physical world being a certain way—he relies entirely on practical

into subatomic particles that supposedly influenced High Modernists like Pound (Daniel Albright, *Quantum Poetics: Yeats, Pound, Eliot and the Science of Modernism* (Cambridge: Cambridge University Press, 1997), p. 7-8).

134 'Call me Ishmael' (Olson, *Prose*, p. 63-64)

135 'Propriocention' (Olson, *Prose*, p. 191).

136 The word 'classical' in physics refers to the Newtonian world, in which light is either a particle or wave, but not both (this is to be distinguished from Newton's own theory which took light to be composed only of particles).

137 Michael André Bernstein, *The Tale of the Tribe: Ezra Pound and the Modern Verse Epic* (Princeton: Princeton University Press, 1980), p. 242.

138 Byers, *Modernism*, p. 68

shifts in the history of mathematics for which he finds functions in literature. His analogies to mathematical theories thus provide a kind of diagrammatic analogue that serves to sharpen the definition of his metaphysics.

Olson saw in modern mathematics a salvation from the spent dualisms of ancient Greece. The problem facing the Western mind, states Olson in "Human Universe", in a characteristically broad and sweeping manner, is that "[w]e have lived in a generalizing time, at least since 450 B.C".[139] Instead of re-hashing a rather tired twentieth century complaint about the Platonic legacy of abstraction, we shall let Olson list his troubles for us thus: the Greek inheritance of "logos, and the reason necessary to it" and "logic and classification".[140] Studying modern mathematics, for Olson, would disentangle most of the oppressive ancient divisions, between object and motion, form and content, the individual and the collective, art and science.

Olson's basic set of concepts is introduced with elastic potential in his first manifesto, "Projective Verse" (1950), and is supplemented and sharpened throughout the following decade. This incremental view of Olson's theory that allows us to speak of later texts as developing the same ideas in earlier ones is supported by the fact that his critics have not identified any discernible break in the career of Olson's thought unlike Riding's. But the relatedness of his ideas becomes obvious, as we shall see, from his obsessive development of the same concepts. Roughly in the period of fifteen years, from his first book in 1947 (*Call me Ishmael*) to his final manifesto in 1962 ("Proprioception"), Olson completes his puzzle of existence: bringing his notion of the Real, the correct function of language, and its relation to human biology, all, in a plausible manner, together—they are, respectively, the broad subjects of the following subsections. In this section, sustained readings of his poems will, unlike in other chapters, come only at the end of an elaboration of theory. My aim is primarily to articulate the novelty of Olson's weltanschauung—as I believe it not to have been understood—and to, in the third subsection, demonstrate how an understanding of the non-Euclidean relationship between world, language and body grants a novel insight into his projective verse.

4.2.1 Non-Euclidean Reality

> ya, selva oscura, but hell now
> is not exterior, is not to be got out of, is
> the coat of your own self, the beasts

[139] Olson, *Prose*, p. 155; Marjorie Perloff criticises Olson scholars for treating this statement as if it were "original and exciting", calling it instead "simplistic and banal" (Marjorie Perloff, 'Essay Review: "The Greening of Charles Olson" including "Charles Olson: Call Him Ishmael" by Paul Christensen (Book Review)', *Criticism: A Quarterly for Literature and the Arts*, 21. 3 (1979): 251-60, p. 258)—I am in broad agreement with Perloff: Olson is about a century late to such exalted cries.
[140] Olson, *Prose*, p. 155 & 156.

emblazoned on you[141]

So declares the poet, "In Cold Hell in Thicket", lost in that dark wood where Dante had wandered midway through life, unsure what his new situation portends. It appears he knows not even what he is, for the surrounding thicket seems close enough to be his bodily coat, the encircling beasts but visions emblazoned on his ramifying self. The sense of a self sans the lyrical interference of the ego, coterminous with ambient space is a concept that Olson develops rather carefully in his critical and poetic works. The poet asks,

> And who
> can turn this total thing, invert
> and let the ragged sleeves be seen
> by any bitch or common character?

Olson fancies himself the poet to bring the new revelation—wherefrom self shall become mere object—to his people. But to see what brought about the inversion of this 'total thing'—the world as understood under the logos of Socrates—and what that space is which our bodies will come to call self, we must turn to the dizzying mathematics of topology.

It is difficult to identify what was to Olson the seminal episode of modern geometry. As Kimmelman says, he seems to draw from "Weyl, Riemann, Carl Gauss, Nikolai Lobachevsky and János Bolyai".[142] He scribbled in one of his notebooks what appears to be a mnemonic for the history of non-Euclidean geometry:

> Euclidean—parabolic
> hyperbolic—Bolyai-Lobatchewsky
> spherical
> elliptic—Riemann—Cayley[143]

Amongst his heroes, Bernhard Riemann seems to have had special significance. Riemann comes before the other nineteenth century figures—ones more familiar to modernist studies such as Bergson and James—who challenged the Cartesian picture of space as the observable and measurable other. But unlike many modernists, Olson does not abandon space for time or become embroiled in the subject-object distinction; he instead doubles down on his interest in space, finding himself thrust furthest into his surroundings when reading Riemann, save for his experiences with *Moby Dick*, with whose writing, he notes, Riemann's theories happily coincide.

> It took thirty-one years (Melville's age when he wrote *Moby-Dick*) for the German mathematician Riemann to define the real as men have since exploited it: he distinguished two kinds of manifold, the discrete (which would be the old system,

[141] Olson, *Poems*, p. 158.
[142] Kimmelman, 'Equal', p. 661.
[143] Byers, *Modernism*, p. 67; Charles Olson, 'Verse & Geometry plus E. P.', I Box 49:37, CORC.

> and it includes discourse, language as it had been since Socrates) and, what he took to be more true, the continuous.[144]

Three concepts in Riemannian geometry are essential to Olson's vision of the field and will be the subjects of this subsection: the difference between the discrete and the continuous, topological manifolds, and the difference between non-Euclidean and Euclidean congruence. We shall return to the concept of the 'manifold' momentarily but let us first to the dichotomy between the 'discrete' and the 'continuous'. Olson sees the first major strike on the old world as leading to the fall of the discrete world-picture. 'Discrete' is to be understood in two senses: first, of space as discrete from events, as stable backdrop to the drama of human affairs, artificially separated from Being as, for instance, subject has been, so sharply from object, since Descartes. The other, related, sense of 'discrete' is purely mathematical: that in a discrete picture, Euclidean space becomes available to partition for the purposes of measurement. From the nineteenth century on, Olson contends that space is re-imagined in mathematics as 'continuous'. Here is Riemann's provisional definition of the discrete: for measurement, "discrete magnitudes" rely "upon the postulate that certain given things are to be regarded as equivalent; quantity is accomplished in the case of discrete magnitudes by counting".[145] Although Olson spends his life attacking the assumptions underlying the discrete, he admits in a poem, "The Praises" there is much to be said for its seductive dream of perfection.

> Observing
> That there are five solid figures, the Master […]
> Concluded that
> The Sphere of the Universe arose from
> The dodecahedron.[146]

The poet seems to say, as if this ultimate affront—the petrification of the entire Universe to a single shape—was not enough, in "his series", Fibonacci patterned even the lush jungle that brambles our world: the golden ratio appears everywhere to the searching eye, "its capital role in the distribution of/ leaves seeds branches on a stem […]/ the ratios 5/18, 8/13 […]".[147] As insurmountable as this drive to order seems, and as abetted as it is by patterns in the physical universe, "Here we must stop And ponder". We must ponder precisely what the beauty-drunk

[144] 'Equal to the Real' (Olson, *Prose*, p. 120).
[145] Bernhard Riemann, *On the Hypotheses which Lie as the Bases of Geometry,* ed. Juergen Jost (Switzerland: Springer International, 2016), p. 32.
[146] Charles Olson, *Collected Poems—Excluding the Maximus poems* (Berkeley: University of California Press, [1987] 1997), p. 97.
[147] Olson, *Poems*, p. 98; For further discussion of Olson's interest in the Golden ratio, see Robert Von Hallberg, *Charles Olson: The Scholar's Art* (Cambridge: Harvard University Press, 1978), p 25; Enikő Bollobás says Olson's sources for the Pythagorean myths are Plutarch's *Moralia* and Matila Ghyka's *The Geometry of Art and Life* (Enikő Bollobás, *Charles Olson* (New York: Twayne, 1992), p. 91.)

Greeks made us forget, namely, the mess stretching endlessly between these respites of stationary order.

Riemann says we know

> continuous magnitudes by measuring. Measure consists in the superposition of the magnitudes to be compared; it therefore requires a means of using one magnitude as the standard for another. In the absence of this, two magnitudes can only be compared when one is a part of the other […] magnitudes are regarded not as existing independently of position and not as expressible in terms of a unit, but as regions in a manifoldness.[148]

In other words, instead of using discrete quantities—such as 4 inches or 5 feet—to measure a region in space, continuous manifolds, being part of each other, measure by themselves—that is, they reject foreign standards of objective comparison. Discrete mathematics is regarded, in the texts on mathematical philosophy—especially Hermann Weyl's *Philosophy of Mathematics and Natural Science*—[149] that Olson read in the 1950s, as a kind of artifice. Weyl shows the early Greeks to have been rather circumspect about converting the continuous to the discrete; they "had been deterred from this step", he says, "because they took the discovery of the irrational seriously"[150]—so seriously, in fact, that its discoverer Hippasus was said to have been drowned by the Pythagoreans. The irrational sharply disambiguates the 'discrete' and the 'continuous'—an irrational is a number which cannot be rendered in discrete form. √2, for instance, cannot be written as a rational number or fraction—but convertibility to discrete quantities (such as fractions and rational numbers) is precisely what the geometer depends on for his trade. That is, in order that two continuous magnitudes, say the sides of the triangle below, be rendered discrete, a geometer must find the smallest common external unit to which the sides can factorise, and then denote their relationship as a ratio between magnitudes of this standard.

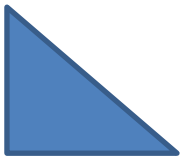


Figure 1

The blank triangle can be thought of as a continuous region in space. But let us assume that the sides can be parted into units that form a ratio of 3:4:5.

[148] Riemann, *Geometry*, p. 32.
[149] Ralph Maud, *Charles Olson's Reading: A Biography* (Carbondale: Southern Illinois University Press, 1996), p. 45.
[150] Hermann Weyl, *Philosophy of Mathematics and Natural Science*, transl. by Olaf Helmer (Princeton: Princeton University Press, 1949), p. 68.

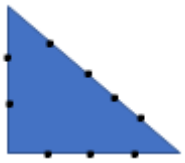


Figure 2

Upon such division, the sides are in discrete relation to one another: 3/4, 4/5, 5/3. But, had one of the sides been √2, for instance, the continuous region could not be rendered in discrete values. Nonetheless, the universal commensurability between continuous magnitudes and discrete ratios was held by the Pythagoreans as dogma.[151] Thus, Olson sees the very foundation of Greek mathematics as dependent on ignoring the inherent resistance to the discrete by continuous space. And across the ages, he sees the long shadow of Euclid consecrating the discrete conception of space in the European mind.

To Olson, it is clear that Euclid's "picture of the world" is first displaced by the discovery of non-hyperbolic and elliptical geometries and then banished permanently by Riemann.[152] Arkady Plotnitsky says "Geometry (geo-metry) has to do with measurement, while topology disregards measurement and scale, and deals only with the structure of space qua space and with the essential shapes of figures. Such figures are themselves usually seen as spaces, continuous spaces, as topology is primarily a science of continuity".[153] We will recall that Olson regarded topology, the study of continuous manifolds, as being 'more true'. Manifolds behave very differently from Euclidean space. The notion of a topology on a manifold is defined by open subsets of the manifold, which deny exclusivity to anything discrete, such as integers—this makes measurement by units impossible.[154] To understand the openness of a subset, let us for the moment forget the two- or three-dimensional spaces that concerned Olson, and consider a simple, one-dimensional number-line. Say a point travels from 2 to 4 on the number line: the topological axiom would demand that the integers 2.0 and 4.0 be unreachable in the open set because they are limits, not boundaries: the topological set would extend infinitely, from 2.01, 2.001, 2.000…0 and 3.99, 3.999, 3.999…9,[155] in either direction; in other words, wherever one were to land in the set, one can

[151] I borrow here the belief about the Pythagoreans that comes down from Aristotle: "since it seemed […] that numbers are the ultimate things in the whole physical universe, they [the Pythagoreans] assumed the elements of numbers to be the elements of everything, and the whole universe to be proportion or number" (the Greek ἁρμονία (harmonia) is translated to 'proportion' in Aristotle, *Metaphysics I: V. 1-3*, trans. Hugh Tredennick (Cambridge: Harvard University Press, [1933] 2003), p. 33).

[152] 'Equal to the Real' (Olson, Prose, p. 120).

[153] Arkady Plotnitsky, 'Manifolds: On the Concept of Space in Riemann and Deleuze' in *Virtual Mathematics: The logic of difference*, ed. Simon B. Duffy (Manchester: Clinamen Press, 2006):187-208, p. 191-92.

[154] Hermann Weyl, *The Concept of a Riemann Surface* (New York: Dover, [1913], 2009), p. 18.

[155] These numbers are to be used mnemonically and discarded from imagination after: for instance, there is a proof in mathematics that makes '3.999...' actually equal to '4', which would make of it the very boundary that the open set precludes.

always walk further in both directions.[156] Thus, two segments, 2-4 and, say, 4-6, would merge into one another rather than stopping and starting again at 4.0. Now if we extrapolate the number line to two- or three-dimensional sets, we can imagine two regions of space seamlessly blending into one another forming what has been termed a 'manifold'. By moving from classical geometry to topology, from the discrete to the continuous, Riemann had thus liberated the Western mind from, as Olson puts it, "the exact death quantity does offer, if it is numbers, and extension".[157]

The main mischief of the discrete to Olson is that it suffers consciousness to become attached to arbitrary place-holders—whole numbers, say—and forget the messy thicket between. Topology, however, demotes the whole number to the same station as their allying real numbers. Take Olson's poem, "The Kingfishers":[158]

> And what is the message? The message is
> A discrete or continuous sequence of measurable events distributed in time
> is the birth of air, is
> the birth of water, is
> a state between
> the origin and
> the end, between
> birth and the beginning of
> another fetid nest[159]

The poem calls attention to the Heraclitean flux defeating our abstractions.[160] What lies in between the arbitrary 'origin' and 'end' is what the poet is interested to exhume. His task is to invest the continuous manifold of reality with significance alien to a Western consciousness assembled under the sign of Logos. Thus, Olson's claims about nineteenth century geometry must be judged against their purported consequences to literature. Olson perceived the abolition of the discrete, the departure from comparing phenomena by virtue of quantity, as being essential for a non-discriminatory assay of reality as experienced and transcribed.

But before moving to what this reality entailed, we must explore the concept of congruence in mathematics, for this will prove the closest analogy to the one-to-one mapping between reality and language that Olson demands from his poets. He states,

> Congruence, which had been the measure of the space a solid fills in two of its positions, became a point-by-point mapping power of such flexibility that anything which stays the same, no matter where it goes and into whatever varying conditions

156 Paraphrased from Weyl, *Reimann*, p. 19-22.
157 'Equal to the Real' (Olson, *Prose*, p. 121).
158 George Butterick says Olson borrowed the following lines about the discrete and the continuous from Norbert Wiener's *Cybernetics* (George F. Butterick, *A Guide to The Maximus Poems of Charles Olson* (Berkeley: University of California Press, 1978), p. 632. Wiener is concerned more with the differences between 'discrete' and 'continuous' time series in electronic communication; the idea of communication in Olson will be developed from the mathematical senses of these terms in 5.2.3 on continuity between reader and poet.
159 Olson, *Poems*, p. 90.
160 Earlier in the poem, Olson quotes directly from Heraclitus's famous 12th Fragment (Olson, *Poems*, p. 89).

> (it can suffer deformation), it can be followed, and, if it is art, led, including, what is so important to prose, such physical quantities as velocity, force and field strength.[161]

The changing signification of congruence in the nineteenth century represents to Olson almost as dramatic a shift in thought as that between the discrete and the continuous. Whilst the latter challenged measurement, the former deranged the idea of shape that had taken root in the Western mind. In Euclidean geometry, if the portions of space filled by a solid in two of its positions, and by extension, their internal angles, are the same, they are said to be congruent. In other words, to the Euclidean, an object's identity remains unchanged as regards its position or motion; it needs only occupy equal extents of space. For instance, the two rotated triangles below are deemed congruent on a flat plane.

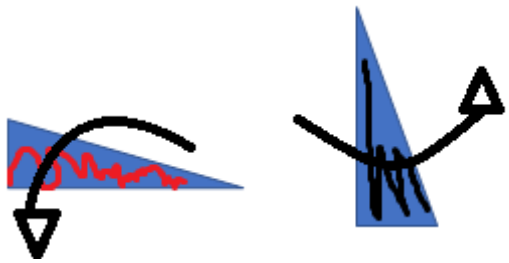


Figure 4

Congruence in Euclidean space assumes, therefore, that in a world of infinitely many characteristics, only space is relevant to establish equivalence: that the "congruent mappings express an intrinsic structure of space itself; a structure stamped by space on all spatial objects".[162] The nature of space postulated by this process is that "all points in space are objectively alike, and that so are all possible directions".[163] In other words, the personality of these triangles, their colours, patterns, directions, motions, whilst all markedly different, are irrelevant to their congruity. With Riemann comes the revolutionary idea that measurement in space is not significant to congruence. Riemann says, "either therefore the reality which underlies space must form a discrete manifold, or we must seek the ground of its metric relations outside it, in binding forces which act upon it".[164] He reverses one of our most deeply ingrained scale of values by introducing the manifold, whereby the metric field (of space) is made intelligible by its surrounding forces—made palpable when Riemannian geometry is applied in physics.

[161] 'Equal to the Real' (Olson, *Prose*, p. 123).
[162] Weyl, *Mathematics*, p. 79.
[163] Ibid., p. 71.
[164] Riemann, *Geometry*, p. 40.

Olson finds in topology a method to maintain the identity of 'anything which stays the same' in essence, even should its iterations look entirely different—topology thus becomes to Olson the theoretical germ of non-representational art; and non-representational art to Olson functioned within what he called a 'field'. In Olson's field, the human, words, and the physical world were all to be seen as participating vectors. Olson stretches mathematics implicitly to physics, to say that once occupation of metric-space is no longer the principal feature of identity, physics is set free to elect forces surrounding and penetrating—velocity and field strength, amongst others—as the ultimate determinants of reality. By analogy to literature, Olson converts "the large area of the whole poem, into the FIELD, if you like, where all the syllables and all the lines must be managed in their relations to each other".[165] This conception of the poetic field—at once Beat Generation and New Critical—is in Olson undergirded by the two paradigm shifts we have discussed: that, (a) relations are to one another, not the common units of the discrete and (b) identity is determined by surrounding forces.

As with topological continuity, with fields, it is the capital presence of the in-between that interests Olson. He concludes that an artistic "image, therefore, is vector".[166] An image in Olson's new philosophy of poetry and art must be truly congruent with reality; it must show what the representational image under Euclid's axioms did not, namely, velocity and force.[167] Weyl presents a vivid analogy to display the difference:

> Euclidean space may be compared to a crystal, built up of uniform unchangeable atoms in the regular and rigid unchangeable arrangement of a lattice; Riemannian space to a liquid, consisting of the same indiscernible unchangeable atoms, whose arrangement and orientation, however, are mobile and yielding to forces acting upon them.[168]

To imagine Riemannian space as liquid will allow us to compare the old idea of congruence with the new, which, we will recall, Olson had described as being able to 'suffer deformation'. Plotnitsky says,

> insofar as one deforms a given figure continuously (i.e. insofar as one does not separate points previously connected and, conversely, does not connect points previously separated) the resulting figure is considered the same. Thus, all spheres, of whatever size and however deformed, are topologically equivalent. They are, however, topologically distinct from tori.[169]

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165 'Projective Verse' (Olson, *Prose*, p. 243).
166 Ibid., p. 252.
167 It is, however, rather unfair to levy the entire blame on Euclid: Erwin Panofsky has shown that a mistranslation of Euclid's 8th postulate in Renaissance texts led to a stiff and unreal linearity becoming entrenched as our idea of perspective, as opposed to the curvy sections of our experiential visual field, as was intended by the Greeks (Erwin Panofsky, *Perspective as Symbolic Form*, trans. Christopher S. Wood (New York: Zone Books, [1927] 1991), p. 35).
168 Weyl, *Mathematics*, p. 88.
169 Plotnitsky, 'Riemann', p. 192.

In this way, bizarrely, to a topologist, a donut and a coffee mug appear the same. Olson's new projective verse was also to find congruence between word and world in the deformed yet truer method of topology.

In topology, congruence is termed homeomorphism. Homeomorphism occurs when every point in one object corresponds uniquely to a point in another; because these points are 'open', as we have seen, the distance from 2 to 4 on a number-line can potentially be stretched to have as many corresponding points to a distance of, say, 2 to 400. Basically, both have infinitely many points at their disposal. The diagram below shows how a small and large line can stand in bijection (each point having a corresponding point on the other line).

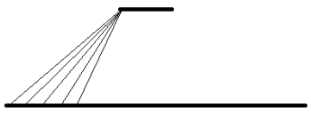


Figure 5

By extension, topological congruence may be gotten from shapes grotesquely varying in appearance or size. My mathematician friend struck upon a description of homeomorphism that would have delighted Olson: "when one object is transformed into a seemingly radically different object, for everyone standing on the surface it does not appear, looking around them, that anything has changed".[170] Topology thus finds congruence from a situated level—which Olson rather loosely (given mathematical congruence is indifferent to embodied experience) understands to mean from the level of experience—not from the lofty gaze of the detached geometer. Olson gleefully finds in topology a representational art that jettisons space and size in favour of a one-to-one relation of elastic meaning; in this way, Olson finds lessons for poets in the 'point-by-point mapping power' of Riemannian congruence.

Poets were to thus take their cue from Riemann with respect to congruence and continuity. They were to find images that dispensed with visible conformation as of Euclidean congruence. And the movement of reality from the external to the internal, escorted by the word, was to be continuous rather than discrete. Following these premises, any congruence between reality and the word could not be limited to the visual; in fact, it was no longer the function of words to capture reality but to project into the process of meaning-transfer. In "Projective Verse" (1950), Olson insisted that the new poetics must involve a new "stance toward reality".[171] In subsequent essays, Olson works out in mathematical terms what this stance would exactly entail. We have shown, through our reading of "Equal, That Is, to the Real Itself", that Riemann was the principal architect

[170] Adam Jones (Oxford University), interviewed by Anirudh Sridhar, 03/08/2019
[171] Olson, *Prose*, p. 246.

of the new reality. Olson also said in his manifesto that "a poem is energy transferred from where the poet got it (he will have some several causations), by way of the poem itself to, all the way over to, the reader".[172] Although we shall return to this repeatedly in subsequent sub-sections, we may state cursorily that to Olson, the all-important new stance to reality in the nineteenth century lay in Riemannian continuity and congruence, whose aspects projective verse was to embody in the twentieth, namely, a one-to-one mapping from the poet to the reader.

4.2.2 Non-Euclidean Prose

In the previous sub-section, we have discussed three ideas of nineteenth century geometry—continuity, manifolds, and congruence—that to Olson were blows fatal to the world-picture of Euclid, upon which all representational art—in language and image—had rested. We move now to the other strike of the nineteenth century, smote in words, not numbers. Central to Olson's thesis is the idea that the new mathematical 'stance towards reality' was felt first in the primordial journey of the Pequod. To Olson, Melville was the prophet of the geometric revelation.[173] Melville's imagination, which swam beside the Leviathan, untameable to the rigidities of the discrete, was equal to that unapproachable Real. In fact, before "Projective Verse", in *Call me Ishmael*, Olson first records the idea that Melville saw character in its awful form, as "OBJECT in MOTION".[174] And throughout that seminal decade of Olson's career, 1950-1960, *Moby Dick* was the spring and testament of his non-Euclidean metaphysics of language. It seemed the importance of the continuous and the kinetic was something "Melville blindly knew".[175] They issued from "his approach to physicality" and "his address to human character as necessary human force".[176] Melville combined in his characters *physis* with *thumos*, relaying their weight from inward force of Being to outward impression of presence. He achieves this, or so Olson maintains, by jettisoning plot, a structure proceeding by cause and effect—one episode being the rational trigger for the next—and hurtling his fiery Pequod, freighted with savages, into the tempestuous night. Olson sees "modern events" as "reduced" (due to the modern—Descartes onwards—belief in mechanical causation): "seen only as the eye of the needle and the camel left out".[177] Maximus later adds that "cause/ is not the equal of, the error of, act".[178] What the empirical construction of cause-and-effect excludes is the whole series of connected, continuous, acts and events between

[172] Ibid., p. 240.
[173] This statement is corroborated by Paul Christensen, *Charles Olson: Call him Ishmael*, fore. George F. Butterick (Austin: University of Texas Press, [1975] 1979), p. 58
[174] Olson, *Prose*, p. 63.
[175] 'The Materials and Weights of Herman Melville' (Olson, *Prose*, p. 116).
[176] 'Materials and Weights' (Olson, *Prose*, p. 116).
[177] Ibid., p. 118.
[178] Olson, *Maximus*, p. 97.

the stop-points salient to science. One manifestation of continuity, between event, character, and action, Olson first beholds in *Moby Dick*.

> Melville's knowingness of object and motion, those factors of a thing which declare what we call its physicality (and do not mean physiology). 'The Tail' is as lovely an evidence as any other of Melville's ability to go *inside* a thing, and from its motion and his to show and to know, not its essence along […] but its *dimension*, that part of a thing which ideality—by its ideal, its World Forms or its Perfections—tended to diminish.[179]

The word dimension here is not to be understood in the Euclidean sense of measurement, but how the magnitude of the scene, say the arching of the whale's tail, imposes on the beholder. I believe the following lines from the chapter, "The Tail", will prove illustrative:

> This peaking of the whale's flukes is perhaps the grandest sight to be seen in all animated nature. Out of the bottomless profundities the gigantic tail seems spasmodically snatching at the highest heaven. So in dreams have I seen majestic Satan thrusting forth his tormented colossal claw from the flame Baltic of Hell.[180]

At once the visible dimension, 'grandest', mysterious dimension, 'bottomless profundities', kinetic of soma, 'spasmodically snatching', and cadence from power to pathos, 'thrusting his tormented colossal', all surge as energy from the beholder, to words, to reader. Melville has found in words a congruent mapping of "that quality of any particular thing or event which comes in any one of our consciousness; how it comes in on us with a force peculiar to itself and to ourself in any one of those instants which do hit us".[181] To Olson, a lesser writer would have sought an ideal symbol for the tail in static perfection, a tree, say, or Platonic solid: not so, Melville. With Satan's thrusting claw, he breaches headlong the "given physicality and moves from its essence into its kinetic".[182] Olson sees an intense parallel between Riemannian geometry and "Melville's non-Euclidean penetrations of reality", as together they manumit the Western imagination from the shadow of the Forms.[183]

> It is my experience that only some such sense of form as the topological includes, able to discriminate and get in between the vague types of form morphology offers and the ideal structures of geometry proper, explains Melville's unique ability to reveal the very large (such a thing as his whale, or himself on whiteness, or Ahab's monomania) by the small.[184]

Unfortunately, the only critical exposition of Olson's geometric hermeneutics of *Moby Dick,* Michael Jonik's, takes Olson to mean that Melville literally exhibits the geometric developments

[179] 'Materials and Weights' (Olson, *Prose*, p. 117).
[180] Herman Melville, *Moby Dick; or, The Whale* (New York: Harper & Brothers, 1851), p. 420.
[181] 'Materials and Weights' (Olson, *Prose*, p. 117).
[182] Ibid., p. 117.
[183] Ibid., p. 117-18.
[184] 'Equal to the Real' (Ibid., p. 122-23).

of his time. "Melville explicitly invokes a non-Euclidean form as he carefully anatomizes the 'curious internal structure' of the whale's head: 'Regarding the Sperm Whale's head as a solid oblong, you may, on an inclined plane, sideways divide it into two quoins […]'".[185] This is another example, as we saw with quantum mechanics, of taking Olson's analogies literally, and how doing so defeats his entire vision.

Olson is on to something entirely different when he locates continuity and congruence in Melville's prose. It is not a question of what Melville says about the whale but *how* he says it. A simple dichotomy from "Human Universe" shall make this clear: language, says Olson, needs to be much more than "the act of thought *about* the instant", it needs to be "the act of the instant".[186] In other words, language must be able to produce the immediacy of experience in its very articulation, to fill the alienating vacancy of "discrimination (logos)" with a resounding "shout (tongue)".[187] None of this is discernible by finding literal non-Euclidean shapes in Melville's description of the whale's head. In fact, one might say, when Ishmael is running his readers through his many autopsies of the whale, the prose is least like a vector field. To say of the whale's head that it appears oblong is but scalar representation. Olson is most interested in Melville when he imbues the scene with direction and velocity, describing events by the 'binding forces which act upon it', as Riemann phrased it.

It is important that the continuity of events within the story subtends the continuity of experience between writer and reader. This requirement is made clear in his manifesto: the poem, says Olson, should map onto its field a language congruent—used here in the Riemannian sense—to the impressions of the poet and release, "at all points energy at least the equivalent of the energy which propelled him in the first place".[188] Put differently, the work of language is to transfer embodied experience onto the reader by imbuing it with a vortex of associated impressions, decanting her into the original scene, unlike descriptive prose, which merely attempts distant representational fidelity. This requires events to be projective in the sense of being projectile rather than spatially accurate, as of Renaissance perspective. To clarify this distinction, Olson says Melville's prose is "transparent and homogeneous".[189] Olson's critics have not commented on the mathematical sense of these terms, either because they are not aware of the technicalities or they take Olson to be wilfully abstruse in importing them. However, if we are to understand what so

[185] Michael Jonik, *Herman Melville and the Politics of the Inhuman* (Cambridge: Cambridge University Press, 2018), p. 53; To be fair to Jonik, his interest is primarily in Melville, not Olson.
[186] Ibid., p. 156.
[187] Ibid., p. 155.
[188] 'Projective Verse' (Ibid., p. 240).
[189] 'Equal to the Real' (Ibid., p. 123).

sharply distinguished representational art—realism seen as Euclidean—and Melville's non-Euclidean prose in Olson's mind, we cannot ignore the concepts.

Olson justifies the seemingly impudent importation of these terms by analogy to painting. He identifies naturalistic prose with perspectival painting and projective prose with Jackson Pollock;[190] Pollock, he suggests, infuses the canvas with a whirlwind of impressions that creates a visual-sensual complex of the original experience: an idea in the throes of its formation, given to the viewer to bring forth its realisation. A naturalistic painting, on the other hand, would show an object mapped onto the canvas in its projective trajectory, as shown below.

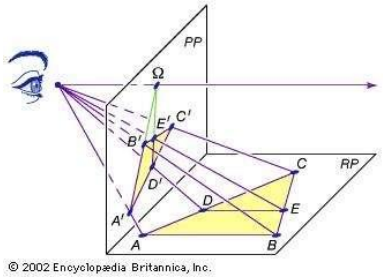


Figure 7

Olson contends that Melville captures "visible truth", or "the absolute condition of present things",[191] in their points as they correspond not on the canvas but in the body. The prose is 'transparent', in that kinesthesia is not halted by the opaque screen of representation. Take, for instance, how Ishmael, transfixed by the painting in Spouter-Inn, opts to illustrate for us: "a diligent study and a series of systematic visits to it, and careful inquiry of the neighbors […] much and earnest contemplation, and oft repeated ponderings."[192]—"the obvious narrative strategy would be to describe the painting; Melville never does";[193] instead, he conducts its energy by relating Ishmael's personal encounters with it.

Olson borrows the phrase 'transparent and homogeneous' directly from Weyl's text.[194] On a literary level, Olson uses the word 'homogeneous' to say that language must carry an energy

[190] Ibid., p. 124.
[191] From Melville's letter to Hawthorne on 16th April 1851 (Herman Melville, *The Letters of Herman Melville*, ed. Merrell R. Davis & William H. Gilman (New Haven: Yale University Press, 1960), p. 124), qtd. in 'Equal to the Real' (Olson, *Prose*, p. 123).
[192] Melville, *Moby Dick*, p. 11-12.
[193]David Bradley, 'Our Crowd, Their Crowd' in *Melville's Evermoving Dawn: Centennial Essays*, eds. John Bryant and Robert Milder (Kent: Kent State University Press, 1997), p. 130-31.
[194] Weyl, *Mathematics,* p. 69; identifying this might have helped his critics to understand its relevance in Olson's theory. Although critics have accepted Merrill's identification (Merrill, *Primer*, p. 58) of Weyl's text as the immediate source for the essay (Steven Carter, 'Fields of Spacetime and the "I" in Charles Olson's *The Maximus Poems*' in *American Literature and Science*, ed. Robert Scholnick (Lexington: The University Press of Kentucky,

homogenous to the events whereof they speak. Sometimes, this might require words to enlarge the reality to which they refer; but magnification of this kind is accounted for by the mathematical sense of 'homogeneous'. In the diagram above, the points A, B, C on a three-dimensional axis XYZ are homogenous, or proportional, to A^1, B^1, C^1. For instance, taking A's position as (8, 4, 12) on the Cartesian grid, and A^1's position as (4, 2, 6), we may say they are homogenous by the relation (2A).[195] Homogeneity is thus a term that stresses what we earlier saw with Olson's celebration of Riemann, namely, that size is irrelevant to topological congruence: reality can suffer the kind of deformation one habitually sees in expressionist painting and yet be faithful to our primeval experience of it.[196] Similarly, the violent colours and subject matter of the painting in Spouter-Inn, though arrested on the fictional canvas, are conveyed in prose by a homogenous, though magnified, reaction in Ishmael, of "a sort of indefinite, half-attained, unimaginable sublimity about it that fairly froze you to it".[197]

Olson also says that Melville endows "a more general space than other writers, than anyone except Homer I find. The delivery of Tashtego from the whale's head, say".[198] The reference here is to the moment Tashtego mounts the head of the whale and slices it open to draw oil, and slipping on the spermaceti, plunges into the freshly opened gash. Then, as the head is descending in water, Tashtego spinning in its cranium, Queequeg dives for the rescue:

> Now, how had this noble rescue been accomplished? Why, diving after the slowly descending head, Queequeg with his keen sword had made side lunges near its bottom, so as to scuttle a large hole there; then dropping his sword, had thrust his long arm far inwards and upwards, and so hauled out our poor Tash by the head. He averred, that upon first thrusting in for him, a leg was presented; but well knowing that that was not as it ought to be, and might occasion great trouble;—he had thrust back the leg, and by a dexterous heave and toss, had wrought a somerset upon the Indian; so that with the next trial, he came forth in the good old way—head foremost. As for the great head itself, that was doing as well as could be expected.[199]

What must instantly have struck Olson is the directional derangement of the phrase 'side lunges near its bottom'—a lunge being a forward thrust, flanked by 'side' and 'bottom'. On a Euclidean plane, we recall that 'all possible directions' are alike whereas the juxtaposition of three directions

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[1992] 2010), p. 195), because Olson doesn't place the phrase 'transparent and homogeneous' in quotation marks, they perhaps did not look for sources.

[195] Simplified from Weyl's discussion in Weyl, *Mathematics,* p. 67-9.

[196] Although the idea that non-representational art that can convey energy from experience to reader through various kinds of projections is a popular modernist idea that Olson must have habitually encountered in poets like Pound, he settles on the notion that Melville was the first to use language this way, especially with respect to non-Euclidean geometry (Christensen, *Ishmael*, p. 58).

[197] Melville, *Moby Dick*, p. 12; For another example of 'magnification', see p. 22 of this document.

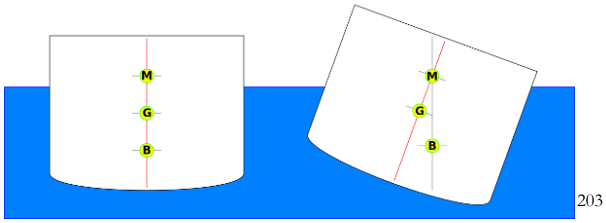
[198] 'Equal to the Real' (Olson, *Prose*, p. 123).

[199] Melville, *Moby Dick*, p. 382-83.

in the submerged vector field allows the event to reel in its energy in directed motion.[200] It is possible to read this scene as the first enactment of what in the Maximus poems Olson would pronounce as his

> Ukase: "the vertical
> Through the center of buoyancy of a
> floating body
> intersects
> the vertical through the new
> center made…[201]

Although Olson lifted this quotation from the definition of 'metacenter' in *Webster's Collegiate*,[202] the visual arrangement of words already paints a picture of the phenomenon being described. The second 'vertical', traced back to the first, yields a vertical line, thus remaining unchanged; whereas the new line—drawing a line between the two iterations of 'center' in the poem—is diagonal, intersecting the vertical in middle—line 4—where the word 'intersect' appears. The metacentre might thus look like so.



[203]

Figure 8

In fluid dynamics, the centre of buoyancy, B, is the geometric centre of that part of a body immersed in water. This is where the force acts directly upwards; so, at rest, the body's centres of gravity, G, and buoyancy, B, lie along the same vertical.[204] When a body tilts or is otherwise displaced underwater, its centre of buoyancy shifts according to the left-right distribution of its weight. The metacentre is the point at which, as is quoted in the poem, lines from the old and new centre intersect. Upon perturbation, the force applied by the water, B, changes, whilst the body's centre of gravity (which is indifferent to circumstance) remains unmoved.[205] M, the metacentre, is thus the vantage wherein the weight of the body, eo ipse, and the attendant forces are sensible equally.

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[200] Weyl, *Mathematics*, p. 71.
[201] Olson, *Maximus*, p. 42.
[202] Butterick, *Guide*, p. 64.
[203] Image distributed under CC BY-SA 2.5 license.
[204] Joseph R. Oldham, 'How a Ship's Stability is Determined', *Popular Mechanics Magazine*, 24.6 (December, 1915): 913-14, p. 913
[205] Oldham, 'Stability', p. 913.

In Tashtego's rescue, we shall recall the phrase, 'thrust his long arm far inwards and upwards'. Because Queequeg made the side lunges (slices) with his sword at the 'bottom' (we shall take this to be the exact bottom for the purposes of this discussion), reaching 'inwards' would require him also to reach 'upwards'. But note, inwards can only be upwards with respect to the sea if the head is *directly* upright or upside-down. This indicates that the head itself was not spinning, and the inward and upward lay along the same axis; in other words, G and B were aligned as in the figure on the left, and Queequeg forthwith seems to be raising his hand along the metacentre. But inside, Tashtego is rapidly rotating, so Melville unfolds his prose in such a way that our sensuous comprehension remains equally in touch with G and B even with respect to Tashtego. Between the weight in motion—'dexterous heave and toss'—and direction of spin—'wrought a somerset'—Melville seems also to have found the metacentre of the smaller body within. As Olson says, it is indeed remarkable how, written from the vector field of events (from the situation of activity), we are at once able to sense the weighty descent of the head, the nimble rotation of the Indian and the powerful strokes of the cannibal, all in perfect balance.

An overture to Olson's ideas on Melville's verbal kinetics can be found in *American Renaissance*. F. O. Matthiessen's classic was a formative influence on Olson's intellectual development, especially as regards Melville. Olson and Matthiessen exchanged letters, throughout their careers, wherein Melville is often discussed.[206] Matthiessen, in fact, brought Olson to Harvard for graduate work and subsequently afforded the latter a generous footnote in *American Renaissance* for his help in gathering source material on Melville.[207] Matthiessen argues that Melville, "in his effort to endow the whaling industry with a mythology befitting a fundamental activity of man in his struggle to subdue nature, […] came into possession of the primitive energies latent in words" and that reading Shakespeare had released "his work from limited reporting to the expression of profound natural forces"[208]—Olsonian, to the last. It is important we discuss some of the mentor's ideas because, whilst Olson offers many examples of narrative choices (like Tashtego's rescue) in Melville's writings that reveal a 'non-Euclidean' character, he furnishes no instances of how Melville's language led him—which he claims it did—directly to his radical ideas on the importance of sound and syllable in "Projective Verse". *American Renaissance* gives us clues to this end, which critics have yet to identify.

[206] Olson, *Letters,* p. 26.
[207] Maud, *Olson's Reading*, p. 32.
[208] F. O. Matthiessen, *American Renaissance: Art and expression in the age of Emerson and Whitman* (Oxford: Oxford University Press, 1968 [1941]), p. 423 & 428.

Matthiessen's formula for Melville's principal exploits with the word is "verbs of action".[209] Although Matthiessen's analysis does not depend on verbs per se, critics have not recognised in this phrase the germ of Olson's poetics. For instance, Ishmael says, innocuously, "with anxious grapnels I had sounded my pocket, and only brought up a few pieces of silver".[210] David Bradley says the unfamiliar nautical verb 'sounded' comes clear when placed on the same scale of quotidian experience as 'silver pieces' and 'pocket'.[211] The action of searching a pocket contains within it the sense of depth, as when sounding the sea beneath the ship to determine its fathoms; the frequent disappointment when scouring the oceans for profit is mirrored in Ishmael's recovery of only a few pieces of silver; and the concomitant clanging of silver is contained in the usual sense of 'sound'. It is thus possible to guess what Olson means when he equates topological transformation with "Melville's unique ability to reveal the very large […] by the small"[212]—the whole sea, in this instance, from Ishmael's pocket, using just one verb of action.

4.2.3 Non-Euclidean Body

> The chain of memory is resurrection […]
> The vector of space is resurrection […]
> The being of man is resurrection […]
> Direction—a directed magnitude—is resurrection […][213]

From basic propositional logic, we may infer the following from this nameless poem: 'The vector of space' = 'direction—a directed magnitude' = 'the being of man' = 'the chain of memory'. If the prior sub-sections have done their work, this equation, between the vector field and human being should seem somewhat familiar. We have in the first section shown how Riemann freed direction and motion from the metric space of Euclid, as foremost habits of identity, and in the second, how Melville conveyed the directed magnitude of character to reading experience in the field of prose. We shall now proceed to map these developments in Olson's poetry and prose, and in the process, witness the body's 'resurrection' in the word.

In the Maximus poems, there is a constant mood of urgency: for the body is not only to be resurrected from its millennial slumbers under Logos but, we will recall from section 4.2.0, saved from falling worse to the mass culture of late capitalism. The workings of his purportedly salvific verse in *Maximus* are undergirded by the development in his essays of the concept of 'energy-transfer'. Olson says there are two registers of the 'Real' in the body, namely the nose and

[209] Ibid., p. 430.
[210] Melville, *Moby Dick*, p. 8.
[211] Bradley, 'Crowd', p. 130.
[212] 'Equal to the Real' (Olson, *Prose*, p. 123).
[213] Olson, *Poems*, p. 372-74.

the ear: "the acquisitions of his ear *and* the pressures of his breath".[214] In an ideal poetic process, the union of ear and mind births the syllable and the breath demarcates the line. Congruence between the experience of the writer and the reader is achieved by energy-transfer, through the hearing and saying of the syllable: "the HEAD, by way of the EAR, to the SYLLABLE".[215] We have established that the mapping from source to recipient must in verse be continuous (in Riemann's sense of not stopping at arbitrary points—in this case word-body-world, etc), which in "Projective Verse", Olson thusly describes: "ONE PERCEPTION MUST IMMEDIATELY AND DIRECTLY LEAD TO A FURTHER PERCEPTION".[216] Olson later explains in his final manifesto, "Proprioception", how this constant bombardment of perceptions, one directly leading to another, should affect the body. He defines proprioception as "the data of depth sensibility/ the 'body' of us as object which spontaneously or of its own order produces experience of, 'depth'".[217] The preceding of proprioception, or the sensation of depth, to recognition of substance, or objects, confirms to Olson the idea that 'movement or action' is more primal to human experience than matter. In other words, a babe born will innately sense depth, but will acquire language, or the ability to attach concepts to discrete entities, much later in life. In the Maximus poems, he laments the indoctrination of language which makes us forget this primitive experience:

> one loves only form,
> And form only comes
> Into existence when
> The thing is born
> Born of yourself[218]

'Born of yourself' means that 'form', the well-defined object, is a creation of the self, what in time proceeds existence, something learnt.[219]

The ontology of being that Olson continues to develop until 1962 seems to exist in rudiment in "Projective Verse". He says, for instance, "sentence as first act of nature, as lightning, as passage of force from subject to object".[220] In other words, the sentence should reproduce proprioception, not conception. 'Projective' language must reveal the fundamental proprioceptive sense which mankind perceives by "SENSIBILITY WITHIN THE ORGANISM BY

[214] 'Projective Verse' (Olson, *Prose*, p. 241).
[215] Ibid., p. 242.
[216] Ibid., p. 240.
[217] 'Proprioception' (Ibid., p. 181).
[218] Olson, *Maximus*, p. 7.
[219] David Herd has pointed out that this sequence of lines on 'form' is copied from a letter Olson had written in 1950 to Frances Boldereff, on the difficulty of popularising his ideas in "Projective Verse" (David Herd, *Contemporary Olson* (Manchester: Manchester University Press, 2016), p. 154).
[220] 'Projective Verse' (Olson, *Prose*, p. 244).

MOVEMENT OF ITS OWN TISSUES".[221] This movement of tissue can perfectly be scored in a projective verse that will "get on with it, keep moving, keep in, speed, the nerves, their speed, the perceptions, theirs, the acts".[222] Thus, the buffeting of bodily nervure amongst the elements, what we call experience, can be registered in the body of language: its sound.

In "Human Universe" (1951), we will recall, Olson made the all-important distinction between a language that is an 'act of the instant' and 'act of thought about the instant': the former is Real language because indistinguishable from experience, whilst the latter is designed to keep the body at bay from mental cognition; 'thought' fashioned the concept, and the concept engendered the object (Olson may not be thinking so linearly). "Proprioception" confirms the metaphysic we have thus far been stitching, namely, that 'Real Experience' is of movement or action and conformations of matter—objects—are but epiphenomena.[223] Olson maintains that the abstracting legacy of Logos has left us with a language better equipped to describe matter, the epiphenomenon, than primeval experience. So long as language works to represent, there will never be continuity in the process of communication. Instead of a ceaseless stream from writer to reader, closed verse is a discrete record of 'thought about the instant': the process is one of derivative abstraction rather than integrated action. Thus, we may try to summarise the mechanics of the new projective language: an event in the world will foment a premonitory rumbling in the bodily nervure; this will register as sound in the cochlear labyrinth; being weighed to the motive thrust of the source, the syllable will minister the transubstantiation of experience to language. The whole process then unfolds in reverse as the reader reads: or to better illustrate, we can read the equation from the unnamed poem in reverse: as 'the chain of memory' = 'the being of man' = 'direction—a directed magnitude' = 'the vector of space'. Memory is where the process begins, for when reading, the syllable becomes associated with an idea or sensation from the storage of past experience. This is of course Olson's dream of how bodies must ideally mediate the poetic process. His vision seems almost to erect the reader and writer as prelapsarian beings both before the noise and flash of modern America and its omnipresent 'billboards', 'spray-guns' and 'coloured pictures' and outside the western tradition after Socrates—they are now to be resurrected through the

[221] 'Proprioception' (Ibid., p. 181).
[222] 'Projective Verse' (Ibid., p. 240).
[223] This has similarities to Whitehead's *Process and Reality,* which Olson read around 1955 (having already been acquainted with Whitehead's philosophy through *Adventures of Ideas*) (Hallberg, *Olson*, p. 83). The relationship of Olson's ideas to Whitehead's, though very close, has been exhaustively explored and will become an unmanageable tangent in this section. See Shachar Bram, *Charles Olson and Alfred North Whitehead: An essay on poetry*, trans. Batya Stein (Lewisburg: Bucknell University Press, 2004); Jeremy Campbell, 'Observer and Object, Reader and Text: Some Parallel Themes in Modern Science and Literature' in Joseph W. Slade and Judith Yaross Lee, eds., *Beyond the Two Cultures: Essays on science, technology, and literature* (Ames: Iowa State University Press, 1990), p. 23, and for an exposition on the connections between Keats, Heraclitus and Whitehead in Olson's ideas, see Merrill, *Primer*, p. 85.

primitive and hymn-like utterances of his poems.[224] Olson bespeaks his ambition in how he alters "the message" from "The Kingfishers" to, in one of the later Maximus poems, "a discrete and continuous conduction/ of the life".[225] Joshua Hoeynck summarises the significance of the edit best when he notes the change from 'or' to 'and' in the later poem: Olson, says Hoeynck, wanted to "explore how the discrete is contained within and immediately swept up by the continuity of reality".[226] The word 'conduction' in physics refers to a continuous passage of heat or electricity from one body to another: this highlights the lasting importance of metaphors from Riemann's revolution to Olson's theory of human biology.[227] We will now turn to how Olson commands his verse to initiate these biomechanical corrections of man in his poetry.

The Maximus poems are divided into 'Letters'. "Letter 9" is an ironic play on Whitman's song of himself,

> I measure my song,
> measure the sources of my song,
> measure me, measure
> my forces[228]

By channelling the seminal lines of America's original bard, Olson announces his high ambition. Madeleine Cooper says in Olson, the "self [is] defined proprioceptively as the nexus of physical exchange between subject and object".[229] In these lines, we have a concentrated thrust of how this peculiar self participates in poetry. The 'sources of his song' are his experiences of the Real. Experience is 'measured' to match its impressions on himself, i.e., his body: in other words, he measures the equivalence between the event and his bodily experience of it, such that they are congruent. This achieved, he will release precisely as much force with his words as is necessary to bring the experience, body, and language into continuum: the result of this exercise is his measured song. The splitting of his self into subject, 'I', and object, 'me', means 'measurement' here is a reference to finding—to put it crudely—congruence between his conscious self writing the 'song' and his existing self experiencing reality.[230] The two 'measures' flanking the object 'me' in the third line shows the emergence of the Whitmanian ego "I" finally as 'object'—harkening to his

[224] Olson finds these ideal beings amongst the contemporary Mayans, who sit comfortably connected to one another in dense busses, jostling together in rhythmic union ('Human Universe', Olson, *Prose*, p. 159).
[225] Olson, *Maximus*, p. 502.
[226]Joshua Hoeynck, *Staying Open: Charles Olson's sources and influences* (Delaware: Vernon Press, 2019), p. 174.
[227] Thomas Merrill bizarrely reads into this passage ideas from quantum mechanics; he argues, since "observation in physics distorts reality", "in verse the intrusion of literary 'devices' artificially stops the ongoing process of 'continuous reality'" (Merrill, *Primer*, p. 54). We have said something similar of Olson's views on the 'simile', but the statement that 'observation distorts reality' is almost meaningless in physics.
[228] Olson, *Maximus*, p. 48.
[229] Madeleine J. Cooper, 'Finding a Centre: The poetry of Charles Olson' (PhD Dissertation: University of Nottingham, 1977), p. 225.
[230] This is thus not a critique of the act of measuring itself, as Herd suggests (Herd, *Olson*, p. 244).

conclusion in "Projective Verse" that "man is himself an object".[231] This shift is brought about by a kind of two-way measurement: of body against language and body against environment. He introduces here the idea that poetry does not simply entail the ability to fashion words but that the poet must finely calibrate his own body, his device for the registry of movement, to reality.[232] This comes from living—in the Ruskinian sense of doing—or as Olson himself puts it in "Tyrian Business" ("Letter 8"), "felicity/ resulting from a life of activity".[233] We might even extend the point slightly to infer that Olson wants his poets and readers to get away from the metropolis and commune in nature with their fellows.

The Maximus poems unfold as a series of concentrated anecdotes of fishing and other activities, from the daily life of a Bay Stater from Gloucester. These terse sketches have the energy of a Kafka short or a Williams verse. In fact, Olson dedicates a poem on the difficulty of translating life to language, "Red Mallows", to WCW, presumably in honour of "The Red Wheelbarrow". The poet's language admits its "accidence": "what troubles discourse" is "that it is I/ who speaks".[234] The poem, in a reflexive mode, rejects beauty in favour communication as the cardinal aim of poetry:

> Form
> Descends
>
> And the inhabitation
> —the eyes, and the ears,
> Responsible agents, the places
> They have to nose into, nose
> About—it is they
>
> Who also
> come up.[235]

Consistent with this promise to WCW, the Maximus poems are written with the express purpose of communicating 'inhabitation', not 'form'. Olson's overwhelming certitude that motion and force form the essence of experience—what he learns from *Moby Dick*—is reflected in his constant repetition of verbs. Take, for instance, "Letter 1":

> O kill kill kill kill kill
> […]
> in! in! the bow-sprit, bird, the beak
> in, the bend is, in goes in, the form
> that which you make, what holds, which is

[231] 'Projective Verse' (Olson, *Prose*, p. 247).
[232] We discussed a similar idea in the I.A. Richards's *Science and Poetry*, about bringing bodily impulses into equilibrium with poetic language. See 2.1.
[233] Olson, *Maximus*, p. 42.
[234] Olson, *Poems*, p. 307.
[235] Ibid., p. 307.

> the law of object, strut after strut, what you are, what you must be, what
> the force can throw up, can, right now hereinafter erect,
> the mast, the mast, the tender
> mast![236]

The whole scene pulsates with Matthiessen's 'verbs of action'.[237] The use of the spatial preposition 'in', in a slightly archaic manner as a truncated phrasal verb, seems to animate even space: that is, the 'inside' is both an area and a directed action. The energy of the anecdote erases any fleeting representational image from mind, the 'law of object' makes object itself unavailable for picturing: what one *is* is instead 'thrown up by force', by the melee of becoming. Olson excessively repeats his verbs, and rations his nouns, throughout the Maximus poems, as a means to frustrate objectification—the loss of energy in action. For instance, in "Letter 10" is a line, "It was fishing was first".[238] By such a simple manoeuvre, a quotidian act like 'fishing' can be made to acquire an independent mystery, revealed as such in formulation; had the sentence simply read, 'Fishing was first'—fishing would have become a recognisable class of pastime, about which we know enough already. The interest of the sentence would then have been in the object, as in a plot of a story: fishing was…what? As it stands, however, 'it was fishing' before it was anything else.

This experimentation with grammar is undergirded by what amounts to a commandment that Olson draws from the Vedas, stated in the form of two equations:[239]

> There may be no more names than there are objects
> There can be no more verbs than there are actions.[240]

Aside from the Vedas, Rosemarie Waldrop has traced Olson's edict on nouns to Fenellosa, who in *The Chinese Written Character as a Medium for Poetry,* says "a true noun, an isolated thing, does not exist in nature. Things are only terminal points […] of actions".[241] This passage, which Olson underlined in his copy,[242] seems a linguistic parallel to Olson's understanding of Whitehead's

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236 Olson, *Maximus*, p. 8.
237 Without much explanation, Sherman Paul says there is in this passage an "estrangement from the familiar world to the misuse of language"—but the particulars we are about to discuss are key (Sherman Paul, *Olson's Push: Origin, Black Mountain, and recent American poetry* (Baton Rouge: Louisiana State University Press, 1978), p. 127).
238 Olson, *Maximus*, p. 48.
239 Butterick traces these lines to a 'Syllabary for a Dancer', in which Olson says, the "quotation you have offered me from the Vedas, was it—that there may be no more names than there are objects. That will cover nouns adequately, and we can do the whole job by adding a like statement to cover verbs: there can be no more verbs than there are actions in the human universe" (Butterick, *Guide*, p.60).
240 'Tryian Business' (Olson, *Maximus*, p. 40).
241 Ernest Fenollosa, *The Chinese Written Character as a Medium for Poetry*, ed. Ezra Pound (London: Stanley Nott, [1919] 1936), p. 6, qtd. in Rosmarie Waldrop, 'Charles Olson: Process and Relationship', *Twentieth Century Literature,* 23.4 (1977): 467-86, p. 469; Waldrop cites the title of Fenollosa's essay incorrectly, as *Notes on the Chinese Written Character.*
242 Waldrop, 'Olson', p. 469.

'process'.[243] It stands to reason that if all things that we—through the hallucinatory spell of language—take to be 'objects' are epiphenomena of underlying actions, of restless subterranean forces, then to dispel the illusion, the most pedestrian of sentences would need to be supplemented with many additional verbs. At times, Olson even avoids reaching an object in his poetic sentences: "a hollow muscular organ which, by contracting vigorously, keeps up the/ (to have a heart".[244] Or in the same letter, further on, "the seedling of morning" is described as "to move, the problems (after the night's presences) the first hours of/ he had noticed […]".[245] In both instances, the sentence stops short of a noun, circumventing its object by introducing a new clause. Instead of 'heart' or 'morning', the lines end abruptly, to be extracted into action, 'to *have* a heart' and 'he *had* noticed', respectively. This way, there can be made to exist as many names (or nouns) as Olson believes, exist objects, namely, none.

Even when the poet occasionally settles on to a noun, it is often phonetically charged to carry the sensation of movement. We have seen an example in "Letter 1" in his liberal use of 'mast', wherein the undulation of facial muscles in saying 'mast', from what phoneticians call the bilabial nasal ('ma') to the sibilant ('st') replicates the flapping of fabric. But there are more exemplary nouns that Olson repeats, such as 'whorl' and 'wharf', throughout the poems.[246] Both begin with velar fricatives ('wh') that by constricting the flow of air, release a turbulent force, which is then gradually arrested by the alveolar tap of the rhotic ('rl' or 'rf') end. Olson wants the energy in sounding 'whorl' and 'wharf' to modify their sense ever so slightly, to convey petals or ships as *being* arranged around a point rather than already so—their formation as coming into being. Consistently, Olson's poems performatively exhibit how the definition of nouns can partially be a function of their sound. For instance, the final section of "Tyrian Business" claims to be on "definition", whereof the poet first provides the meaning, "the crooked timbers/ scarfed together to form the lower part of the compound rib", and then attaches to it a noun, or what "we call 'em"', namely, "futtocks".[247] The term 'futtock' should do, in theory, to signify the middle frames of a ship, with the even flow between the vowels, 'u' and 'o', latching onto an imaginary row of straight planks. However, the principal feature of the definition provided is that the ship is ribbed with *crooked* timbers. These, the poet avers, are better expressed by the vertigo of descending chin

[243] Whitehead does not discount nouns: we shall recall from the first chapter of this thesis, that when Whitehead says what science calls nature is the 'terminus of sense-perception', he does not treat what lies beyond the terminus entirely as fiction.
[244] 'Tryian Business' (Olson, *Maximus*, p. 40).
[245] Olson, *Maximus*, p. 41.
[246] Ibid, p. 11, 26, 32, 40, 363, 467 (and likely more).
[247] Ibid., p. 44.

to ascending lip in the saying of "fylfot",[248] as an American would. The *sound* of fylfot is what "she look like",[249] because planks on a ship cannot realistically be arranged as swastikas.

In another poem, "Place; & Names", Olson disambiguates 'name' from 'noun'. Proper nouns of "cities or person" are inadequate "to the order of creation of anything except names—including possibly mathematics (?)". The crucial difference he seeks to draw from inherited nouns and the new names that the poet will christen things with, is that "names/ be as parts of the body, common, & capable/ therefore of having cells which can decant/ total experience".[250] In the act of naming creation, which right poets inherit from Adam,[251] it is important that the nouns encode the impress of named object on 'parts of the body': and they must do so through their syllabic dance on the tympanum. The name must thus be the "Story" of experience, which "is if not superior/ at least equal to ultimate mathematical language"[252]—by which we can be certain, he means topology.

Even though 'names' carry the potential for mapping experience that 'nouns' may not, they are still to be used in moderation as compared with verbs. There is an interesting and adventurous extension of the one-to-one equation Olson demands between names and objects. This is in his purposeful confusion of the singular and plural. First, take the following lines from "Letter 3": "When he came/ there were three hundred sail could fill the harbour,/if they were all in, as for the Races".[253] Although there are three hundred of them, the noun is singular, 'sail', which suggests that in a 'Race', the scale and size of the scene is better communicated viewing the sails as one sprawling cloud of movement, as a flamboyance of flamingos colonising a lake, say, similar to the unitary sensation contained in his use of 'wharf', which brought to mind a congregation of ships as congregat*ing*. But in the very next section of "Letter 3", there is another sequence: "I speak to any of you, not to you all, to no group […]/ Only a man or a girl who hear a word".[254] Here we are expressly forbidden from conceiving a collection of individuals as one entity—'no group'! One individual, 'a man or a girl', is referred to in the plural. Here the language functions not to communicate magnitude, or the sublime, but to erode the sedimented belief that an individual is a concrete entity: to posit instead Olson's metaphysics of being as a whirlwind of invisible

[248] Ibid., p. 44.
[249] Ibid., p. 44.
[250] Olson, *Prose*, p. 200.
[251] Catherine Stimpson makes a similar point about Olson's command that there should be 'no more names than there are objects', when she says, "since each man creates speech anew, each event will be its own name" (Catherine Stimpson, 'Charles Olson: Preliminary images' in *Early Postmodernism: Foundational Essays*, ed. Paul A. Bové (Durham: Duke University Press, 1995), p. 143) although we must read Olson as specifically referring to poets, not 'each man'.
[252] Olson, *Prose*, p. 201.
[253] Olson, *Maximus*, p. 14.
[254] Ibid, p. 15.

happenings, never coalescing to the discrete identity of an individual I—the 'I' being of no more significance to Olson than the integer to Riemann—, but always continuously melding into the concourse of events, the vectors of space. "Letter 3" ends with an appeal to the alienated subjects of Gloucester: "Isolated person in Gloucester, Massachusetts, I, Maximus, address you/ you islands/ of men and girls".[255] The lines seem almost an incantation, to resurrect the individuated and separated subjects, to once more be invited into the field of events, to rise unto Donne's sermon, that "no man is an island,/ Entire of itself/ Every man is a piece of the continent,/ A part of the main".[256]

The ontology of being that emerges from Olson's selective deployment of plurality is stated explicitly in "Letter 27", when Maximus says,

> No Greek will be able
> To discriminate my body
> An American
> is a complex of occasions,
> themselves a geometry
> of spatial nature.[257]

The lasting influence of Euclid located, or circumscribed, the individual to a discrete portion of space, from which Olson liberates the American, casting 'them' into Riemann's 'spatial nature'. The topological manifold is rather well defined by the phrase he lifts from Whitehead, that "the human body is indubitably a complex of occasions which are part of spatial nature".[258] That the human itself is a geometry of spatial nature is as much a statement of what Olson regards as fact as an invitation to what Husserl called *rückfragen*, the anamnetic recovery of the sense of being as a 'complex of occasions' on the part of the reader.

Olson's poems are experiments in how far verse can be made to work in accordance with the metaphysics underlying the new geometry. If, according to the nineteenth century mathematical idea, as articulated by Weyl, the shape of reality—and individuals in it—is buffeted by events like liquid lurching in a moving vehicle, the poet, acutely experiencing this feverish existence, is uniquely able to express its dynamics to others:

> The branches made against the sky are not of use, are
> already done, like snow-flakes, do not, cannot service
> him who has to raise (Who puts this on, this damning of his flesh?)

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[255] Ibid., p. 16.
[256] John Donne, *The Works of John Donne, vol III*, ed. Henry Alford (London: John W. Parker, 1839), p. 574-5; David Herd alternatively suggests that Olson here echoes "Melville's equation of 'isolatoes' with 'Islanders'" (Herd, *Olson*, p. 182), but Melville forms a third equation with the phrase "continent of men" (Melville, *Moby Dick*, p. 133), which shows that even Melville's ultimate source was in fact Donne.
[257] Olson, *Maximus*, p. 184-85.
[258] A.N. Whitehead, *Adventures of Ideas* (Cambridge: Cambridge University Press, 1948), p. 91; Shachar Bram, *Olson and Whitehead*, p. 54.

> he can, but how far, how sufficiently far can he raise the thickets of
> this wilderness?
>
> How can he change, his question is
> these black and silvered knivings, these
> awkwardnesses?
> How can he make these blood-points into panels, into sides
> for a king's for his own
> for a wagon, for a sleigh, for the beak of, the running sides of
> a vessel fit for
> moving?
>
> How can he make out, he asks,
> of this low eye-view,
> size?[259]

One gets the impression that the reality we find ourselves in once the comforting illusion of Euclidean space dissolves is a confused one, for motion is all that remains "In Cold Hell, in Thicket". How far can the 'thickets of this wilderness' be raised to consciousness?—only poets' experiments in language—how the experiments fare in a world with 'words, words, words/ All over everything'—can tell. It remains to be seen if these 'blood-points'—a neat phrase to suggest points in space that are alive, unlike the cold points of the Cartesian plane—can be represented on panels; that is, whether a tractable expression can be found for what the body in actuality is: 'a vessel fit for moving'. Once we cease examining space from above, as the Euclidean geometer is, and see from the level of experience, propriocieve, if you will, from 'this low-eye view', will we lose our sense of 'size'?

> In hell it is not easy
> to know the traceries, the markings
> (the canals, the pits, the mountings by which space
> declares herself, arched, as she is, the sister,
> awkward stars drawn for teats to pleasure him, the brother
> who lies in stasis under her.[260]

The visible insignia of a place, the stable and tangible markings, such as 'traceries', 'canals', and 'pits' by which space declares itself is erased by sensual apperception from below, the 'low-eye view'. Hallberg says, "Romantic poets could identify with the landscape by an extension of feeling; something colder than sympathy is here advocated".[261] But the poem uses landscape as a sign of something more general, namely, objects on Euclidean space, visible from the 'high-eye-view' of Casper David Friedrich. The 'low-eye view', on the other hand, is what we described in topology

[259] From 'In Cold Hell, in Thicket' in Olson, *Poems*, p. 156.
[260] Ibid., p. 156.
[261] Hallberg, *Olson,* p. 146

as being the vantage from which shapes of varying sizes and forms—the donut and coffee mug, say—appear the same. In the poem, we are prompted to take 'sensual apprehension' as the obverse of 'knowing the markings' by the feral suggestion in the word 'teats': whilst the 'canals' and 'pits' are physical objects readily available for mental picturing, lying 'in stasis under' 'awkward stars drawn for teats' is as opaque to imagination as it is immediate to bodily proprioception, to the equilibrioception of biomechanics.

Amidst the seemingly random sallies of striking sentences, critics have missed the simple idea that thus runs through and animates Olson's writings: that reality, language, and body should be in a mystical yet exact communion. Analogy to non-Euclidean geometry has proven to us crucial in gathering this idea together. The poet was bidden no longer to seek just visual congruence but an impact in reader's body congruent to the original experience. In the new art, the human organism is treated as an open system, like 'coat of your own self', breathing in the 'Real' and dissolving into 'open verse'. When we see the poet, the word, and reader as lying on a continuum, the points should be taken merely as arbitrary placeholders, as much so as the limits of a topological set. The 'man' and 'girl' referred to in plural indicates that an individual is more like an open set than any integer. Just as the intersection between two topological subsets, say {2,3} and {3,4} bleed into one another, from '2.999…' to '3.000…1', the 'Real' merges with the poet, through sound and breath, then dissolves into the syllable and line, rising again, just so, to the reading organism.

After all, "Limits/ are what any of us/ are inside of".[262]

4.3 Conclusion

Spinoza once declared "truth" to be its own sign.[263] To the poets in this chapter, instead, the word became its own sign. It is rare to find such extensive similarity and intensive difference in two philosophies. The reason for this, I believe, is that the animus of the poets' energies is so concentrated, upon the basic unit of the word. This can of course also be said of both Empson and Roberts. After all, Empson's *Complex Words* (1951) is perhaps the most extraordinary meditation on the meaning-making process of words in the period—written indeed in the same decade that saw the *Philosophical Investigations* (1953) and *How to do things with Words* (1955). Roberts, similarly, is also interested in how words record and facilitate the historical merger and fission of mental faculties. What differentiates Riding and Olson from the rest is their interest in words as

[262] Olson, *Maximus*, p. 21.
[263] The actual statement was, "truth is the standard of […] itself" (Spinoza, *Ethics*, p. 43s), but this implies that it imposes its own criterion for itself and is thus its own sign.

words, above and beyond anything to which they refer. The study of semantic fields or ambiguity was for them secondary to the being of word qua word.

The two protagonists of this chapter are thus distinguished from the others in their having a philosophy of language: that is, in their exiting the realm of language-use to the metaphysical question of what language is. And their analysis was concerned specifically with the relationship between the two principal senses of logos, 'word' and 'truth'. And in both answers is a chastisement: that it is fundamentally a mistake—that has become historically entrenched—to view words as proceeding world. It was, in other words, not the nature of language to *represent* reality. To Riding, language precedes reality, or history, as experienced, whereas to Olson, language is a part of experienced reality: the word participates with the saying organism, in reality's acts of being.

Although both elevated language to or above what is traditionally understood as its source, their philosophies disagreed violently. Olson's conception of the human being as a conduit in the process by which reality issues would seem barbaric to Riding, who held a disembodied conception of perfect identity between meaning and essence. In her manifesto "A Prophecy or a Plea", she expressed her distaste for the old "definition [in which] man is but a stream of passage between the source that is life and the outlet that is poetry".[264] To sweep aside the vulgar mouths that in speaking, offend the intellection of words, was a lasting wish of the young Riding. We thus have in Riding and Olson the most extreme partisans of mind and body.

Despite irreconcilable differences—or perhaps because they were prone to irreconcilable differences—, they are both convinced in having finally breached millennial delusions. They offer views of language that seem to cut through the sedimentation resulting from poor past uses of language, based on errant assumptions of its nature. And ultimately, they found that their view of reality—that philosophy and poetry had hitherto obscured—, whether as infinite essence or evental being, was probed first by mathematicians, and found last, in poetry.

[264] Riding, *Chaplet*, p. 51-2.

Conclusion

> The worship of the senses has often, and with much justice, been decried, men feeling a natural instinct of terror about passions and sensations that seem stronger than themselves, and that they are conscious of sharing with the less highly organized forms of existence. But it appeared to Dorian Gray that the true nature of the senses had never been understood, and that they had remained savage and animal merely because the world had sought to starve them into submission or to kill them by pain, instead of aiming at making them elements of a new spirituality, of which a fine instinct for beauty was to be the dominant characteristic. […]
>
> Yes: there was to be, as Lord Henry had prophesied, a new Hedonism that was to recreate life and to save it from that harsh uncomely puritanism that is having, in our own day, its curious revival. It was to have its service of the intellect, certainly, yet it was never to accept any theory or system that would involve the sacrifice of any mode of passionate experience. Its aim, indeed, was to be experience itself, and not the fruits of experience, sweet or bitter as they might be. Of the asceticism that deadens the senses, as of the vulgar profligacy that dulls them, it was to know nothing. But it was to teach man to concentrate himself upon the moments of a life that is itself but a moment—*The Picture of Dorian Gray*, Oscar Wilde[1]

These lines do not seem extraordinary from the most studious pupil that Pater ever had. But written in 1890, at the very cusp of modernism, they, like Euclid's *Elements* in 300 B.C., as much summarise achievements of the epoch they close as announce the character of the one to come. In order to see in these lines a preamble to modernism, the view we take of the latter must acquire new emphases. We have argued in this thesis that more than leftist politics, fragmentation, and alienation, which are all undoubtedly governing characteristics of second-generation modernism, the enterprise is best seen as an attempt to give accurate expression to phenomenal and experiential reality. In fact, what we have repeatedly observed in the chapters on Roberts, Riding, and Olson, is a profound urge to discover union between reality, language and mind—it was their doctrinal point that dissolved into the air.

To the poets of modernism we have studied in this thesis, the senses had remained savage and animal from being starved not by prelates but partisans of science and mathematics. A world of the past when subtle differences in aesthetic responses to language could convey meaning so chance and precarious was being lost to a new world of firm facts and binary answers. In revolt, I have argued, second-generation modernists brought mathematical concepts into the lines of verse to shape an understanding compliant to the designs of poetry. It is a commonly held notion in the literature-and-science field that scientific metaphors provided a language through which modernists could respond to an alien world; the nascent literature-and-mathematics field seems to

[1] Oscar Wilde, *The Picture of Dorian Gray* (New York: Dover, [1890] 1993), p. 95.

have unquestioningly inherited this assumption. Whilst the deployment of mathematics in this period certainly gave poetry a register that allowed participation in an otherwise science-dominated intellectual sphere, I have attempted to show that the gesture was one fundamentally against mathematization.

The ambition of science to accrue representational authority had been made remarkably successful in the nineteenth and early twentieth centuries by bringing the lure of mathematical perfection to domains not traditionally deemed scientific. Science had engaged in a "process of 'abstraction' […] as a large fraction of the scientist's work is in reducing experience to calculation".[2] Or as Martin Johnson elsewhere phrased it, science is the "pattern invoked in attempting to account for experience in measureable quantities".[3] The *Principia Mathematica* (1910), for instance, began by declaring that an object of the treatise is "to show that, with the aid of symbolism, deductive reasoning can be extended to regions of thought not usually supposed amenable to mathematical treatment".[4] In evolutionary biology, on the other hand, all expressions of life were ultimately measured in units of fitness or genetic advantage. In Marxism, all human history was viewed through a class conflict motored by measurable material forces.[5] The process was by the early twentieth century beginning to have impacts on literature. Poetry was hung, in Wilhelm Scherer's *Poetik* (1888), on a timeline of biological evolution whilst in Christopher Caudwell's *Illusion and Reality* (1937), of historical materialism.[6] Still more to the point, E.A. Sonnenschein recorded poetic rhythm in a kymograph, whilst Herbert Read suggested that literary criticism could be fashioned into an experimental science.[7] All were clamouring to have their work labelled 'scientific' because, by the twentieth century, as Ernest Geller notes, "when one determines whether or not something is 'scientific', one is *ipso facto* deciding whether or not it has a certain legitimate claim on our attention, and perhaps even on our credence".[8] The second-generation modernists were, in fact, the first poets to take seriously the task of retarding this unidirectional process of discursive imperialism that had so proficiently been commandeered by science.

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[2] Martin Johnson, *Science and the Meanings of Truth,* (London: Faber and Faber, 1946), p. 79
[3] Johnson, *Art*, p. 30.
[4] Whitehead and Russell, *Principia*, p. 2.
[5] A.J. Ayer explains that "Karl Marx is included [as a positivist] neither for his logic nor his metaphysics but for his scientific approach to history" (A.J. Ayer, ed., *Logical Positivism* (London: The Free Press, 1959), p. 4.
[6] Wilhelm Scherer, *Poetik* (Berlin: Weidmann, 1888); Christopher Caudwell, *Illusion and Reality: A study of the sources of poetry* (London: Lawrence & Wishart, 1946).
[7] E. A. Sonnenschein, *What Is Rhythm?*, append. Stephen Jones and Eileen Macleod (Oxford: Blackwell, 1925), p. 33; Herbert Read, André Breton, Hugh Sykes Davies, Paul Éluard, and Georges Hugnet, *Surrealism* (London: Faber and Faber, 1936), p. 70-71—although Read's understanding of experimental science is rather untraditional.
[8] Ernest Gellner, 'The Scientific Status of the Social Sciences', *International Social Science Journal*, 36.4 (1984): 567-86, p. 570.

Seen from this poetic 'agenda', the thesis has chronicled a magnificent failure—for the kinds of linguistic intelligence the poets were trying to reintroduce never quite took off. During the same period, many felt that language, having suffered through too many discursive contexts—commerce, industry, bureaucracy, and empirical science—was no longer the fittest medium through which to awaken aesthetic intelligence. In our decades of focus—1920s to 1950s—film had begun already to achieve many things hoped for in poetry. *Vampyr* (1931-32),[9] for instance, abandons entirely the attempt to create meaning from plot, from saying a thing is or is not. It develops meaning wholly through fluctuations in emotional and sensual response to the moving image, which are used to build a private audio-visual language—semantic niches are carved, say, with so much jubilation tempered by some disgust, then with equal measure, horror and ecstasy. Because of the relative infancy of the medium, one is able to inhabit and learn its sensual-emotional language ignorant of other contexts (of course, that is no longer the case). One can only imagine, from a twenty-first century vantage, that some such mechanism would have existed in the vulgates newly springing from the Renaissance, for which modernist poets yearned to the last.

Thus, to face an exigent challenge, second-generation modernists looked to the past for answers. Two mutually reinforcing characteristics emerge from their foray into mathematics. It had—after art, science and philosophy had wrangled on these matters for almost a century—become clear to the poets what aspects of phenomena cannot be described in mathematical terms. Their use of mathematics was often combined with an assertion of the former's lack and a demonstration in poetry of virtues hitherto sequestered to mathematics, such as accuracy and precision. The struggle for representational and discursive authority in the present thus also involved an effort to restore balance—whether it had existed in the Renaissance or the pages of *Moby Dick*—to the literary language; between, say, wit and emotion, order and chaos, reason and spirit.

To recover these powers of language, Roberts, for instance, built an almost private glossary by hacking and refining the semantic fields surrounding words. In his poetry, stone and rock will come with cathedral and mountain, disciplined sculpting and free wandering, form and movement, artifice and emotion, and so on. By increasing these permutations in a controlled manner, he became an audacious new creature that never really existed before modernism: a scientist of emotion.

Olson, on the other hand, tried to take the pollutions of mind—its past habits of abstraction and present state of muddle—out of the experience of language. He did so by forcing

[9] Carl T. Dreyer, *Vampyr: The Dream of Allan Gray*, prod. by Carl T. Dreyer and Julian West (Berlin: Vereinigte Star-Film GmbH, 1931-32).

meaning into a hermetic forcefield between world, body and word, drawing upon mind only for its registers of physical memory. The botanist might immure words such as 'whorl' into a rigid phyllotaxy, but in his poems, by issuing meaning from the exhalation of 'whuo' and the curbing of 'rl', Olson shows nature defiant of abstraction. Phyllotaxy *is* but petals *become*, they emerge "gladdened leaves", as Ruskin once said,[10] just as all nature itself is to Olson an order of becoming.

Empson might seem too much the anatomist of ambiguity to succeed in this regard, but he enlivens the physical space of the poem more, even, than Olson. By forcing words to react vigorously against one another across the lines of a poem, he makes the object itself a sensuous presence to the reader. To form the figure of "Letter V" rightly, we must circumnavigate its lines, allowing our eyes to rest on 'locus' and 'marble', for instance, whereto we return upon reaching 'attitude', making and remaking like potters the fleeting monstrance of his imagination. Empson's poems draw attention to the fact that the physicality of an artwork requires a certain engagement of body in creating meaning that the abstract symbols of science and mathematics do not allow.

Riding constitutes an exception to this rule. It does not seem as if she is at all interested in the surrounding signification and rich philology of words. A casual observer might regard her doings to the poetic word as guided by the same ambition that seventeenth century mathematicians held, when attempting to convert their language into pure denotation. Nevertheless, there seems reasonable logic in locating words anterior to history when the past few centuries seem only to have marred them.

Beyond filling in gaps of thought and feeling left gaping by numbers, when vying with mathematics for representational authority—the other great ambition of poets in this thesis—Riding helms the offensive. She directly juxtaposes mathematical infinities with verbal eternities: numbers, as serial empty ciphers, incapable—she says—of holding any truth about phenomena with poetic words, as round as the world itself, galloping, under the poet's reins, between time and eternity.

Empson's ontological challenge, as complicated is it is with non-Euclidean and projective geometries, is ultimately rather straightforward. Being, his poems say, is suspended between knowledge and oblivion, in a tantalizing middle wherefrom, alone, delight is possible. Insofar as mathematical knowledge does not observe the proscription of these ends—of which they were rudely reminded by Gödel—, its picture of world and being is constantly enfeebled by that of poetry.

These are some amongst the many reasons why this wide range of poets has merited concerted study: in the context of resisting the discursive empire of mathematics, they were at the

[10] John Ruskin, 'Fors Clavigera' in *Works: Volume 27*, p.84.

frontlines, all manning diverse artillery. Their poetic agenda formed in fact the methodological paradigm which was developed for this thesis and later dubbed agonistic. In other words, their competitive spirit has influenced the way in which their works were treated. For instance, to Russell and Poincaré—whose views on scientific realism are nowadays grouped as 'structural realism'—that mathematics seemed to work almost unreasonably well when describing the physical world meant we can securely infer from this at least one aspect of reality: that it possessed a logical structure. But apart from the world's skeleton, science, according to them, had no business digging further to more fundamental questions of substance and being—this left great swathes of reality open to description by art. One might readily see in the critiques of Riding and Roberts precisely such a stance. When Riding asks teasingly, 'How many elements assemble/ To pronounce Alive', she is drawing attention to the gross limits of that skeletal structure. And Roberts's repeated refrain to the image of the matrix emphasises the emptiness of the squares it encloses, which are then filled in, as it were, by his alchemy with words. Ramsey and Carnap, on the other hand, criticised modern physical theories for being purely mathematical, theories of theories rather than of experimented matter. This idea is repeatedly alluded to in Empson's works, wherein he shows through his mathematical fictions and tensors science becoming a private language of pointer-readings. But had we, instead of treating "Doctrinal Point" as our primary object, regarded the image—of tensors as stitched pointer-readings—as merely an idea borrowed from Eddington or Ramsey—given Empson was deeply as an individual influenced by both—we would not have followed through on the spectacular vision of a spectral scientific universe being cleaved off from reality. We might instead, with Haffenden and the Gardners, have been drawn away from the poem to popular science or philosophy texts to stitch our own web of sources. By keeping in mind the competitive nature of the enterprise, our close-readings have been able to re-contextualise and reinterpret mathematical imagery to discover their ironic and subversive meanings in poetry.

But in my illustration of the agon, I have focused on science borrowing from the discourse of art only in the first chapter, which charted the ways in which many aesthetic criteria such as uselessness, elegance, art for art's sake, and the sublime, were in the span of a century repurposed to exalt mathematics and mathematical physics. Because this is a thesis primarily of poetry, the remaining chapters have looked only at the other side. But our cursory sketch of the zeitgeist in chapter 1 in fact reinforced the agonistic paradigm, which indicates, there is undoubtedly more that went into displacing the authority that art once enjoyed in the poetry of Byron and the opera of Wagner.

The philosophy of science has repeatedly looked at the process by which mathematical languages subverted their competition.[11] In literary studies, however, the attitude adopted towards science has largely been one of deference and supplication.[12] Inter-disciplinary sub-fields in the discipline have done little to address the growing scepticism about the value of literary studies—vis-à-vis the sciences—in public life. Merely chronicling the influence and subsequent use of scientific and mathematical concepts in literature does little to articulate the forms of knowledge unique to the literary mode (which can in turn be revealed in criticism). What this thesis has hoped to establish is that inter-disciplinarity cannot be understood apolitically; that is, without the issue of power and authority informing the study of discursive intersections. The agonistic model, and the close-reading that it necessitates, can fruitfully be applied when studying other twentieth-century poets who reached for scientific and mathematical metaphors, such as Kathleen Raine, Louis Zukofsky, and George Oppen. Indeed, there remains much else to be learnt in our times from the clash between poetry and mathematics in the twentieth century, whose central characteristics, victories and failures, I have attempted in this thesis to demonstrate.

[11] See the pioneering works in this field, Nelson Goodman, *Ways of Worldmaking* (Indianapolis: Hackett Pub., 1978); and Bastian van Fraassen, *The Scientific Image* (Oxford: Clarendon Press, 1980).

[12] With the exception of some works such as John Limon's *The Place of Fiction in the Time of Science* (Cambridge: Cambridge University Press, 1990) and Bryan Walpert's *Resistance to Science in Contemporary American Poetry* (New York: Routledge, 2011).

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