Meeting places: the entanglements of poetry and science in the modern American imagination

James H. Searle
University at Albany, State University of New York, jamessearle84@gmail.com

The University at Albany community has made this article openly available. Please share how this access benefits you.

Follow this and additional works at: https://scholarsarchive.library.albany.edu/legacy-etd

Part of the American Literature Commons

Recommended Citation
https://scholarsarchive.library.albany.edu/legacy-etd/2799

This Dissertation is brought to you for free and open access by the The Graduate School at Scholars Archive. It has been accepted for inclusion in Legacy Theses & Dissertations (2009 - 2024) by an authorized administrator of Scholars Archive.
Please see Terms of Use. For more information, please contact scholarsarchive@albany.edu.
Meeting Places:
The Entanglements of Poetry and Science in the Modern American Imagination

By

James H. Searle

A Dissertation
Submitted to the University at Albany, State University of New York
In Partial Fulfillment of
The Requirements for the Degree of Doctor of Philosophy

College of Arts & Sciences
Department of English
2021
Abstract

“Meeting Places: The Entanglements of Poetry and Science in the Modern American Imagination” explores how Ralph Waldo Emerson, W.E.B. Du Bois, William Carlos Williams, and Muriel Rukeyser responded to the rise of modern science and industrial technology by reflecting on the similarities and differences between the poetic and scientific imaginations. Across four chapters, I show how the growth of the natural and social sciences from the mid-nineteenth to mid-twentieth century spurred these writers to rethink the social and cultural functions of literature in a democratic society. Unlike many of their peers, these figures refused to treat science either as a monolithic threat to the poetic imagination or as a wholly other culture, preferring to explore what Rukeyser termed the “meeting place” between experimental modes of literary composition, scientific research, and the unique challenges of a culture aspiring towards democracy. Despite considerable differences of style, each of these writers focused on the role of the imagination in aesthetic production and reception, scientific reflection, and democratic deliberation. Far from extending the idealistic metaphysics of the Romantics, modernists like Du Bois, Williams, and Rukeyser framed the arts as a primary site from which a secular, and sometimes materialist, account of the imagination might be articulated that would support a more inclusive, pluralistic, and democratic conception of knowledge.

Rather than analyze literary presentations of science, I call attention to the way literature became a primary practice for reflecting on the vexed normative and social questions raised, but often neglected, by the increasingly scientific modernization of American life in this period. Much of the interest these writers had in the natural and social sciences concerned the way that developments in evolutionary science, physics, and mathematics enacted profound and
counterintuitive shifts in conceptions of history, human agency, causality, and the relations between mind and matter. Informed by the synthetic philosophy of the classical American pragmatists and the literary experimentalism of Emerson, Du Bois, Williams, and Rukeyser countered a deterministic scientism evidenced by the rise of scientific management, eugenics, technological warfare, and positivist modes of social and political theorizing by drawing on scientific discourses and methods that evidenced the workings of chance and spontaneity in the physical and social world. Collectively, these writers articulated visions for an embodied, environmental, and social conception of human agency and imagination that saw both poetry and science as fallible and collaborative methods for thinking that could foster norms and virtues commensurate with America’s aspirations for both liberty and equality.
Acknowledgements

One vital lesson this project has taught me is that the work of thinking is an essentially social and collective affair. This dissertation owes much to the kindness and generosity of my chair Eric Keenaghan whose insight, honesty, and rigor have been exemplary. Paul Stasi regularly spent time over good coffee helping me to iron out the kinks and recognize the limits. Jennifer Greiman was an incisive and generous reader who helped me to see what was staring me in the face unrecognized. I am extremely privileged to have had such a talented and flexible committee, and without their feedback and support this project would have never been finished.

My deepest debts are to my parents Annie and Leroy Searle whose advice, kindness, and wisdom made everything possible. From them I learned the responsibilities and joys of real conversations and serious arguments. Moc Escabedo and Scott Brown of the Seattle Public Schools brought jazz into my life and blessed me with music at school. At the Evergreen State College, Marianne Bailey and Arun Chandra gave me an early and lasting glimpse of what engaged teaching and scholarship looked like. At the University of Washington, Hazard Adams, Henry Staten, and Herb Blau taught me to respect the integrity of the words on the page. In Pittsburgh, Jeffrey Williams, Peggy Knapp, Richard Purcell, Teddy Sidenfeld, Nicholas Rescher, and Jonathan Arac were vital interlocutors whose sincerity, seriousness, and critical generosity remains unmatched. At Albany, Bret Benjamin, Don Byrd, Ronald Bosco, Kir and Vesna Kuiken, Glyne Griffith, Charlie Shepardson, Mort Schoolman, Wendy Roberts, and Karen Williams made institutional life more humane. As this project was nearing its close, the world lost Richard Macksey; this project is dedicated to Dick and the spirit of generous imagination and human curiosity he worked so hard to sustain amidst the books and pipe smoke.
Sam Hushagen, Tom Dechand, Kate Cove, Joseph Henderson, Mark Long, Joseph Urbas, Paul Jaussen, Steven Pampinella, Lourdes ‘Tia’ Aguas, Andries Hiskes, Raquel Vehlo, and Devin Short helped sustain a vital meeting place that continues to surprise and teach me.

Finally, I must acknowledge my partner and co-conspirator Jackie Hayes. Without her support, love, and encouragement I’d be lost.
# Table of Contents

Abstract ................................. ii  
Acknowledgements ....................... iv  
Table of Contents ....................... vi  
List of Figures ............................ vii  

Introduction ............................. 1  

Chapter 1:  
“Delicate Omens Traced in Air”: Freedom and Fate in Emerson’s Poetic Science 14  

Chapter 2:  

Chapter 3:  
“To Refine, To Clarify, To Intensify”: William Carlos Williams’s Imaginative Empiricism 116  

Chapter 4:  
Serendipitous and Foreboding: The Meeting Place of Imagination, History, and Form in Muriel Rukeyser’s *Willard Gibbs* 161  

Works Cited ............................. 216
List of Figures

Figure 1. Sandro Botticelli “La Primavera” 138

Figure 2. Maxwell's Thermodynamic Surface 195
Introduction

In 1949 the poet Muriel Rukeyser published a short article on the American scientist Josiah Willard Gibbs (1839-1903) in the pages of *Physics Today*. That a poet without a typical academic appointment would appear in the official journal of the American Institute of Physics to explain the significance of an influential and notoriously technical nineteenth-century physicist likely strikes us today as implausible, if not impossible. Equally surprising is Rukeyser’s suggestion that above “any other figure in American thought, any poet, or political, or religious figure” Gibbs “stands for imagination at its essential points” (Rukeyser 6). As she had explained seven years earlier in her biography *Willard Gibbs* (1942), Gibbs’s life was “the emblem of the naked imagination—which is called abstract and impractical, but whose discoveries can be used by anyone who is interested, in whatever ‘field,’” including a poet like Rukeyser herself (Gibbs 6). Implicit in this assertion was her understanding that any belief “in the unity or man” or “the unity of knowledge” followed from a faith in “the unity of imagination” (8). A decade before C.P. Snow’s infamous and influential delineation of the two cultures, Rukeyser rejected the idea that poetry and science could be treated as proxies for a fundamental epistemological rift. She argued instead that “the method of science approaches the method of poetry” and that the poet and the scientist both “give themselves closely to the creation and description of systems” that, despite their seeming impracticality and abstractness, come to shape the world of human experience (Rukeyser 8).

Recent work by historians like Andrew Jewett has made it possible to recognize that Rukeyser was participating in a crucial midcentury discursive shift concerning the meaning and place of science in America that implied scientific knowledge was a “product of the individual imagination” produced by a kind of idiosyncratic “creativity” most often associated “with
literature and the arts” (Jewett 314). Underlying this unlikely embrace of the creative force of the ever-elusive idea of imagination by scientific advocates was an emerging need to justify an increasingly complex and expensive institutional organization of scientific research in the postwar period. Theoretical advances in physical science in the 1930s and 1940s had reached a degree of technical specificity that led scientists to doubt “the public’s cognitive capacity” to adequately comprehend or value their work (Jewett 314). In response to this challenge, figures like James Conant and J. Robert Oppenheimer seized on the Romantic figure of the autonomous artistic genius as an appropriate analogue to the modern scientist. This enabled a cultural narrative that positioned the great poet and the inventive scientist as the “twin pillars of Western Civilization, each simultaneously expressing and advancing the cause of imaginative freedom” (Jewett 314). If “identifying the imagination as the shared root of science and the humanities” aided in the emergence of Big Science by securing funding and institutional autonomy, it also served an ideological function as a foil against the threat of “socialism” (Jewett 320). Shaped by “the politics of anti-communism” and the Cold War, this new narrative of “Western Civilization” and the “two-cultures framework” it soon came to embody laid waste to an earlier interwar discourse that aligned science with democracy and against the “excesses of [a] market society” (Jewett 333, 370).

1 In Andrew Jewett Science, Democracy, and the American University: From the Civil War to the Cold War (Cambridge: Cambridge University Press, 2014). In addition to Jewett’s work, see Joel Isaac, Working Knowledge: Making the Human Sciences from Parsons to Kuhn (Cambridge: Harvard University Press, 2012). For an influential post-war account which emphasizes the creativity and tacit knowledge of the scientist while also affirming the similarities between modern science and democracy, see Michael Polanyi’s 1962 essay “The Republic of Science: Its Political and Economic Theory” Minerva 1.1 (1962) 54-73.

2 Edward Said traced the post-Cold War fate of the imagination and its status as a key term in humanistic study in “The Changing Bases of Humanistic Study and Criticism,” Humanism and Democratic Criticism (New York: Columbia University Press, 2004, 31-56). Noting that in the wake of Foucault and Kuhn any appeal to imagination often seems “to provoke so many doubts and suspicions as to render” the word “all but unusable,” Said correctly pointed out that imagination is essential to “humanistic scholarship, reading, and interpretation” (42). It is worth noting here that the relative absence of post-positivist “science studies” in the pages that follow is due to the fact that, in the words of John H. Zammito, science studies “thrusts not only” positivism but “empirical inquiry more generally into profound perplexities about standards of appraisal” making it difficult to “reestablish rationality
What distinguished Rukeyser’s delineation of the continuities between the scientific and poetic imagination in *Physics Today* from more familiar ones by other commentators in this period was her unwillingness to abandon an earlier collectivist and pluralistic vision that aligned both modern science and modernist art with political and cultural democracy. Throughout her writings on poetics, politics, and science, Rukeyser points to the growing distance between experts and a broader populace living in a techno-scientific society shaped by the traumas of war, social exclusion, and capitalist industrialization. In an ominous passage from her essay in *Physics Today*, she explained:

> it is a meeting place that is needed, and the fault is neither on the side of the public, nor on the side of the person who makes an original statement. This is not to say that there is no fault. The fault is in the ignoring of possible meeting places, between people and what the academic and business worlds call ‘fields’—between the kinds of imagination. It seems to me that a function of poetry is to make such a meeting place. But I would not even seem to put poetry on a pedestal; this is also a function of science, or of the best of any creative work.

(Rukeyser 9)

Emphasizing the fundamentally porous boundaries between fields, institutions, and everyday life to correct any construal of science or art as a wholly autonomous practice beyond ordinary comprehension, Rukeyser voices a concern for a growing tide of mutual ignorance that immanently out of human learning, discovery and invention” (Zammito 14). See Zammito, *A Nice Derangement of Epistemes: Post-Positivism in the Study of Science from Quine to Latour*. (Chicago: University of Chicago Press, 2004). Because I believe—along with Said, Du Bois, Williams, and Rukeyser—that poetry, criticism, and literature are legitimate and necessary forms of empirical inquiry and that imagination is rationality’s source, not its other, I have avoided the metaphysical thickets surrounding scientific realism and epistemology. Rather than graze the Latourian fields I have elected to present a tradition of literary reflection that has been greatly obscured in the wake of the meteoric rise of “theory” in the humanities and social sciences and a largely unthought embrace of STEM today.
threatened to fragment human knowledge and divide the social world in which it circulates, and
she points to poetry as cultural practice capable of constructing a meeting place that might make
the continuities between different types of imagination intelligible.

In the dissertation that follows, I show that Rukeyser’s call for a meeting place between
poetry and science should be read as an adaption and extension of an often-neglected aspirational
American cultural project initiated in the mid-nineteenth century by Ralph Waldo Emerson and
developed across the first four decades of the twentieth century by pragmatist philosophers and
literary modernists.\footnote{The literature exploring Emerson’s influence on both American pragmatism and literary modernism is vast. See Richard Poirier’s \textit{Poetry and Pragmatism} (Chicago: University of Chicago Press, 1992) for an early and influential account of these affiliations.} Such a project was fostered by the fact that in the United States “advocates
of a scientific culture felt obliged to actively reconcile the claims of scientific research with the
requirement of democratic legitimacy” (Jewett 2). Between the close of the Civil War and the
start of the Cold War, it was thus natural for many modern Americans to see science and
democracy as deeply connected concerns. Building on recent scholarship that has shown that in
this period science was a less monolithic and more porous concept that inspired many of the
aesthetic innovations and theoretical anxieties associated with modernism, I explore American
literature’s complex critical engagements with technoscientific modernization and democracy
across four chapters.\footnote{For an account of the role of print magazines in shaping American’s image of science, see Marcel C. LaFollette’s \textit{Making Science our Own: Public Images of Science} (Chicago: University of Chicago Press, 1990). Mark Morrison’s \textit{Modernism, Science, and Technology} (New York: Bloomsbury, 2017) provides a wide-ranging account of the close links between modern technoscience and modernist art.} These chapters trace the entanglements of poetry, science, and politics
through the work of Ralph Waldo Emerson, W.E.B. Du Bois, William Carlos Williams, and
Muriel Rukeyser to show how their encounters with science fueled a rich rethinking of the
meanings of imagination and the social and epistemic functions of the arts in modern America.
Familiar accounts of rationalization and disenchantment, the violent hubris of instrumental reason, and the implications of technology for ontology have played a pronounced role in critical narratives about modernism and modernity. Often these theoretical tropes have had the unfortunate effect of positioning art, philosophy, and imagination as essentially opposed to the mathematics, technology, and science. While it is true that modernism generated many critiques of scientific positivism, modernism’s characteristically intense focus on subjectivity, representation, history, and the dilemmas of modern social life are left oversimplified when they are not contextualized in relation to the momentous conceptual and cultural revolutions wrought by modern science and industrial technology. As we will see in what follows, the emergence of the energy concept in physics, evolutionary accounts of biological life, the growing role of probability in the physical and social sciences, and the rise of modern medicine and psychology led to a proliferation of new accounts of history, human agency, and sociality that made possible the modernist’s rethinking of the relationships between mind, body, and world.

---

5 For a careful treatment of the implications of the work of Max Weber, Adorno and Horkeimer, and Martin Heidegger on contemporary accounts of modernity, see Jürgen Habermas’s *The Philosophical Discourses of Modernity* (Cambridge: MIT Press, 1987).

6 The publication of Thomas Kuhn’s *The Structure of Scientific Revolutions* in 1962 has often been treated as marking a profound shift in the history of the very concept of science and nurturing an intellectual era that could sustain the flights of abstraction associated with the linguistic turn. In Kuhn’s wake it became easier to grasp that the cultural and epistemic work concepts like science, objectivity, and method did between the early 1800s up to the Second World War. The second half of the twentieth century saw an unprecedented uptick in fundamental reflections upon the very foundations of Western Metaphysics and all of the practices falling from it. Critical Theory itself arose directly from earlier battles over science, knowledge, and method that raged in the cultural period we tend to think of as modernist. Structuralism, psychoanalysis, and Marxism are simply unimaginable without their scientific aspirations.

7 One finds a pronounced scientism and a related anxiety about science, permeating a host of discourses concerning politics, history, subjectivity, and the arts at the turn of the century. Fueled by world-transforming technologies and a new media ecology, talk of science pervaded much of the cultural field. Eugenics and social Darwinism shaped social reform and international politics, the emergence of photography, film and radio made possible new modes of communal affiliation and expanded humanity’s representational capacities, mechanical transportation altered perceptions of time, speed and space, and increasingly rationalized institutions and related forms of scientific management permanently altered both the public sphere and the organization of labor.
At the very moment when many prominent continental theorists were deeply engaged in distinguishing between what German philosopher Wilhelm Windelband’s had termed the human science’s “idiographic” methods from the “nomothetic” one found in the natural sciences, American figures inspired by the work of the pragmatists eschewed these totalizing distinctions; instead, they briefly nurtured a more permissive and democratic understanding of the methods and scope of modern science (Windelband 175). Perhaps no single figure in the first half of the twentieth century played as pronounced a role in affiliating the creative, collaborative, and experimental ethos of science with democracy’s demands for communicative exchange and revisionary self-fashioning than the pragmatist philosopher John Dewey. Rather than treating science as a “body or subject matter,” Dewey argued science was a creative “attitude and method” characterized by its aspiration to avoid “prejudice, dogma, [and] unexamined tradition,” a method that could not be “confined to those who are called scientists” (Dewey, The Later Works 271, 274). In his 1925 book Experience and Nature, Dewey went as far to suggest that “science is an art” and that “the separation of science from art […] is a mask for a lack of conjunction between power and the goods of life” (Experience and Nature 358, 383-384). As Dewey’s title indicates, his work developed in conversation with Emerson as much as with the earlier work of William James and Charles Sanders Peirce, thereby marking him as a central interlocutor for American writers and critics as well as his fellow philosophers and progressive social reformers.

---

10 Dewey has been criticized for taking an overly idealistic view of science and remaining too silent on questions of social and political exclusion. See Robert B. Westbrook’s John Dewey and American Democracy (Ithaca: Cornell University Press, 2015).
11 For an account of Dewey’s significance to American modernists, see Lisi Schoenbach’s Pragmatic Modernism (New York: Oxford University Press, 2012).
Because writers like Du Bois, Williams, and Rukeyser each engaged with the work of Emerson and the pragmatists in their encounters with science, they have often been categorized as Emersonian modernists or literary pragmatists. The chapters that follow trouble these associations by revealing how these writers were attuned to grave theoretical and normative issues associated with techno-scientific modernization and epistemic specialization that often fall out of view in the ecstatic flights of Emersonian idealism and the ahistorical optimism voiced in the writings of James and Dewey. Even though the modernists shared with Emerson a vivid sense of the powers of literary composition as a legitimate form of critical inquiry, as well as an interest in the relations between scientific and poetic methods, his Romantic quest to unify poetry and science by appealing to a transcendent view of the imagination and his embrace of a teleological and deterministic view of history still made him a problematic precursor. More specifically, Emerson’s yearning to unify natural and moral laws, his theological account of evolution, and his fealty to a rather conventional view of aesthetic inspiration quickly became untenable in a cultural moment that witnessed the rise of eugenics, world war, and a host of determinisms that reshaped the cultural, political, and epistemic terrain of modern America.

Nevertheless, mid-century scientific advocates who modelled the scientist after the poet briefly found themselves ventriloquizing arguments Emerson had developed a century earlier and did so at a moment when the doctrine of self-reliance was beginning to have new valences in an emerging battle against the welfare state. Closer to Dewey’s collectivist view of science and

---

12 Paul Grimstad coined the phrase literary pragmatism in *Experience and Experimental Writing: Literary Pragmatism from Emerson to the Jameses* (New York: Oxford University Press, 2015), and Jonathan Levin has developed a rich account of Emersonian modernism in *The Poetics of Transition: Emerson Pragmatism, and American Literary Modernism* (Durham: Duke University Press, 1999).

democracy, Du Bois, Williams, and Rukeyser recognized that a meeting place between poetry and science could not be realized on the basis of a radically individualistic and supernatural understanding of the human imagination that would treat art or science as autonomous from society and history. Avoiding a conservative and nostalgic anti-scientism—and working at a slight remove from an institutional network comprising universities, private laboratories, and state agencies—these writers brought the resources of poetic modes of thinking to bear on a broader cultural discourse concerning the implications of science for democracy and social life. Sensitive to the dangers of collapsing the natural and the cultural and keenly aware of the limits of scientific knowledge for addressing pressing normative questions concerning freedom and justice, the semantics of cultural identification and expression, and the articulation and social mediation of values, Du Bois, Williams, and Rukeyser positioned the arts as a rich field of experimental inquiry and social collaboration. Each of these writers recognized that aesthetic experience was uniquely positioned to cultivate pluralistic and democratic epistemic virtues for human subjects possessing imaginative capacities irreducible to any known laws and thus exceeding the predictive powers of science.

Looking back to the meeting places between art and science imagined and constructed in the works of these American modernists is particularly relevant as contemporary humanists are increasingly motivated by interdisciplinary imperatives and turning their attention to the changes wrought by climate change, digital technology, and global pandemics on our professional and personal lives. In their shared refusal of an ultimately Emersonian project of consilience in favor of a pluralistic meeting place, Du Bois, Williams, and Rukeyser provide us with a much-needed account of the relevance and ethical necessity of humanistic forms of inquiry that refuse to
conflate the imaginative with the imaginary or oppose science and art.\textsuperscript{14} As Johnathan Kramnick has argued, “strong version[s] of interdiscipinarity” risk “reducing the methods, arguments, and norms of one discipline to the supposedly more grounded picture of another,” and thus they endanger a recognition of the “irreducibly plural” status of the world and our knowledge of it (Kramnick 17, 19, 21). Only by acknowledging that the distinct practices of thinking we might find in a poem or a laboratory and “the separate procedures of the individual disciplines” result in “unique modes of seeing and presenting the world,” can we accept that “the world opens up to us not at once […] but in a manner peculiar to the inquiries and methods we pursue” (Kramnick ix). As the dissertation that follows works to show, epistemic and disciplinary pluralism does not entail a rejection of the universalistic aspirations of democracy or Enlightenment educational projects, but it \textit{does} demand a renewed commitment to exploring the meeting places where we glimpse what Rukeyser called “the unity of imagination” amidst the diverse methods and modes of human inquiry that situate us in a shared world.

In my first chapter, I explore Emerson’s thinking about history, race, human agency, evolution, and the moral and social implications of technoscientific modernization. Showing how he appropriated Romantic science and philosophy to develop an idealistic evolutionary cosmology rooted in a metaphysical correspondence between mind and nature and spirit and matter, I trace the contradictions resulting from his career-long attempt to marry poetry with science. By situating familiar texts like \textit{Nature} and the late essay “Fate” within the context of his aspiration to compose a “Natural History of the Intellect,” I trace how his quest to evidence the determining presence of a divine spirit shaping the historical development of the material world resulted in a cosmic determinism that treated material violence, suffering, and inequality as

\textsuperscript{14} The biologist E.O. Wilson described his own attempt to unify the arts and sciences as a project of consilience in his 1998 book \textit{Consilience: The Unity of Knowledge} (New York: Knopf, 1998).
ultimately serving a moral end. Central to Emerson’s project was the need to establish the dependence of empirical scientific work on the intuitive, imaginative, and ecstatic modes of impersonal inspiration traditionally associated with poetry. In arguing that “poetry is science, and the poet a truer logician,” he avoided the materialistic implications of emerging evolutionary accounts of the natural world and imbue his own doctrine of self-reliance with a vast and universal metaphysical foundation (“Poetry and Imagination” CW 8: 20). Of particular concern in this chapter is the way Emerson’s poetic renderings of scientific discoveries deformed his thinking about the political and ethical dilemmas presented by the waning of natural theology in New England, the outbreak of mass movements in 1848, and the passage of the Fugitive Slave Law in 1850. Concluding with a consideration of some of the darker consequences resulting from his monistic desires to unify the natural and the cultural in his essay “Fate,” I show how his thinking about race, imagination, determinism, and the relations between poetry and science anticipate the problems the other figures in the project grappled with in the early decades of the twentieth century.

In my second chapter, I show how the rise of sociology and the spread of social Darwinism at the turn of the century led W.E.B. Du Bois to challenge the kinds of scientific determinism at work in Emerson’s poetic science. When read against Emerson’s embrace of law and racial essentialism, Du Bois can be recognized as exploring the presence of chance in human agency and history to challenge racist thinking. By looking to his idiosyncratic readings of the emergence of statistical probability and natural selection, I chart the ways Du Bois blended the literary and scientific in his early biography of John Brown and the essays, poems, and stories gathered in his 1920 book Darkwater: Voices from Within the Veil. Although Emerson’s “Fate” articulates a version of “double consciousness” in order to affirm human freedom in a world
determined and shaped by divine law and material necessity, the essay also advocates an evolutionary view of human history and agency favors biological and racial determinism over and against chance. In turning to Du Bois’s early work, we see that, like Emerson, he was interested in the relationship between science and culture but in contrast to his predecessor, he insisted that the presence and power of chance was not something that could be ignored nor denied. Du Bois’s biography of John Brown reads the rise of evolutionary theory alongside the American crisis related to slavery and the fugitive slave law, thus establishing a clear relationship with Emerson. While sympathy is a key term for both figures, Du Bois presents us with a view of human action that is animated by sociality and chance in stark opposition to Emerson’s impersonal self-reliance. Focusing in particular on Du Bois’s idiosyncratic and subversive engagements with social Darwinism, I conclude by drawing attention to the ways his entanglements with science and his struggles against white supremacy led him to articulate a transgenerational account of human agency that makes space for both chance and law. Du Bois’s biocultural understanding of agency underwrote his attempts to articulate an alternative account of knowledge that would sponsor a vision of education and research devoted to producing more sympathetic and pluralistic subjects capable of realizing a truly democratic society.

My third chapter focuses on William Carlos Williams’s reconceptualization of the spontaneity and function of the imagination as it fosters both aesthetic and scientific breakthroughs. I focus on two early experimental and hybrid texts—Kora in Hell: Improvisations and Spring and All—to explore how Williams’s experiments with diurnal improvisational composition led him to recognize how the imagination and the modes of attentiveness its supports revalue our everyday experiences by making space for new discoveries and insights. Much like John Dewey, Williams argues that aesthetic and imaginative experience
are vital to both the creation of new forms of knowledge as well as to the realization of a truly
democratic culture. Balancing my attention between Williams’s critiques of a fetishized and
positivist conception of science and the ways his texts position their readers to grasp the
animating role of imagination in making intelligible the possibilities and dangers of a rapidly
modernizing world, I conclude by pointing to the imaginative empiricism his poetics model, one
that might orient a more pluralistic and egalitarian vision of the organization of modern,
disciplinary modes of knowledge production. If Emerson’s poetic science turns on an impersonal
account of imaginative and poetic inspiration that figures the poetic as a conduit to an invisible
and divine source, Williams offers an alternative account of poetic production that substitutes
methodical improvisation for transcendent inspiration. And if both figures are invested in a
naturalized view of mind and treasure everyday experience as a source for normative inquiry,
they part ways in their philosophical attitudes and their understanding of the meanings of science
and method. Poetry is for Williams not a source of eternal truth but instead a practice for tarrying
with uncertainty and contradiction essential to a fallible and democratic understanding of
knowledge production.

My fourth and final chapter focuses on Muriel Rukeyser’s biography of the American
scientist Willard Gibbs and its account of the “meeting place” of the scientific and poetic
imagination. Rukeyser’s biography describes Gibbs’s contributions to thermodynamics and
statistical mechanics while exploring their connections to the social, literary and political history
of the United States. Building on the work of critics who have studied her idiosyncratic
experiments with life-writing, I show how her research in scientific archives contributed to
alternative understanding of historical materialism that made space for the contingent and
seemingly inexplicable force of the imagination to forge and discover connections between
different modes of experience and feeling. *Willard Gibbs* offers penetrating insights into the role of analogy in both poetry and science while pointing to the grave dangers of drawing rigid analogies between the language of science and the world of art and politics. In this fashion, the biography articulates a revisionary, non-Emersonian account of the imagination’s analogical capacities. By situating her account of the meeting-place of poetry and science, as well as her emphasis on the methodological similarities between scientific and artistic inquiry in relation to contemporaneous debates about the ‘unity of science’ and the role of industrial production in the Second World War, I argue that Rukeyser’s attempts to explain the nature and role of the imagination in the shaping of history were closely tied to her projection of a secular, pluralistic, and democratic conception of modernity.
Chapter One

“Delicate Omens Traced in Air”: Freedom and Fate in Emerson’s Poetic Science

“Nature is the true idealist.”
-Emerson, “Poetry and Imagination”

No American writer has argued for the deep continuities between poetry and science with the persistence and intensity of Ralph Waldo Emerson. As a key spokesman for the power and cultural promise of modern science, he urged his readers to embrace an emerging scientific image of the natural world as a source for moral guidance in an age of unsettling social, economic, and technological transformations. Laura Dassow Walls has argued that “science permeated” Emerson’s “thought at every level” because he viewed it as “the highest form of mental action,” the crowning achievement of the long and fated development of human intelligence (Walls 4). Situated on the cusp of the disciplinary institutionalization of modern science that would culminate in the concept of the two cultures, he adopted natural history as his guiding and organizing metaphor yoking poetry and science together in an effort to reveal the teleological structure of a divinely ordered universe. As we will see in what follows, Emerson devoted significant energy to “elevating science to a creative art” by marrying and merging “science and poetry” into a “new, prophetic power” that might allow humanity to reconcile the contradictions of modernization (Walls 50). Against an emerging positivist conception of science, he argued literature, science, and religion might form a “common cultural enterprise” mutually devoted to checking “the baneful influence of materialism” (Walls 3, 6). While Emerson’s “poetic science” would cease to be tenable as science in the decades after his death, its central conceptual concerns significantly shaped the way later American thinkers grappled with the contradictions and opportunities of industrial modernity (Walls 126).
By tapping the expressive and imaginative possibilities for rethinking human agency and historical change made possible by advances in modern science, Emerson explored the entanglements between the poetic and scientific imagination to bolster his doctrine of self-reliance and his idiosyncratic account of the role of impersonality in human thinking. As Cornell West has argued, though Emerson originated a voluntaristic and utopian “style of cultural criticism,” which defied “disciplinary classification” and frequently led many to mistake him for a mere mystic, he took seriously the “embodiment of ideals in the real […] and the inseparable link between thought and action”; thus, West concludes, Emerson was deeply concerned with “the pressing concerns unleashed by the American, French and Industrial revolutions” (West 618-619). Like Marx, Emerson’s thinking about modernity focused on the “dynamic character of selves and [social] structures, the malleability of tradition and the transformative potential in human history” (West 619). In place of Marx’s interest in class struggle, though, Emerson stressed that nature itself was designed to foster creative modes of agency rooted in “self-reliance” that determined the course of history (West 619). As we will see in what follows, his baldly teleological view of modernization and his ecstatic embrace of flux, transition, and metamorphosis owed much to his appropriations from natural science. Yet, empirical science alone could not bear the weight of Emerson’s metaphysical speculations and he stressed that the findings of the scientist had to be married with the inspired and intuitive insights of the poet. In Emerson’s thinking poetry named a mode of thinking that passed beyond the “brute body” of nature to reveal and “express” the “life and reason which causes [nature] to exist” (“Poetry and Imagination,” Collected Works [CW] 8: 8).

In bridging the empirical domain of natural objects, the historical development of human societies, and the affective and intentional spaces of subjectivity, Emerson’s poetic science
attempted to disclose the laws, analogies, and correspondences underlying and uniting them. When seen through the eyes of the poet, the material transformations fostered by modern science and technology were imbued with profound moral and metaphysical significance. This is why he argued that man’s ability to create “telegraphs through the deeps of space and time” simultaneously hinted at “the organic effort of Nature to mount and meliorate, and the corresponding impulse to the Better in the human being” (CW 6: 88). Underlying this assertion of the simultaneous evolution of culture and nature was Emerson’s faith in the radical correspondence between “organic matter and mind” which implies that “nature works after the same method as the human Imagination” (Later Lectures [LL] 88, 86). While he acknowledged that “an inevitable dualism bisects nature, so that every thing is a half, and suggests another thing to make it whole” (Essays and Letters [EL] 287), Emerson also, as Joseph Urbas has shown, spent the majority of his life developing a “causal monist metaphysics” which secured the ultimate unity between the natural and spiritual realms (Urbas 101-102). Thus while “the bulk of mankind believe in two gods”—one governing in “in social circles, in letters, in art, in love, in religion,” and another “in dealing with steam and climate, in trade, in politics” and feel “it would be a practical blunder to transfer the method and way of working of one sphere, into the other,” Emerson insisted that “relation and connection are not somewhere and sometimes, but everywhere and always” (CW 6: 17). Put differently, the “divine order” stretched not simply to “the next farm” but to “the next planet” (CW 6: 17).

Emerson’s desire to transfer and marry the methods and laws of the natural and divine fueled his career-long attempt to articulate a “New Metaphysics” in the form of a “Natural
History of the Intellect.” ¹ As Ronald Bosco has explained, this natural history led Emerson to “cast a wide net into the collective waters of human biography, history, literature, the lessons of everyday life, the mechanical arts, and all the sciences” in order to evidence the determining force of spiritual and natural laws in the temporal development of the mind (“Historical Introduction” CW 8: lxxiv). In doing so he exceeded the merely classificatory and descriptive aims of a natural historian like Georges Curvier by inquiring into the hidden and invisible reasons and causes behind natural forms and their correspondence with thought itself. Drawing on the work of transcendental biologists like Étienne Geoffroy Saint-Hilaire and Johann Wolfgang von Goethe, Emerson pursued a dynamic, rather than a static, morphology that might disclose the primordial ideas or archetypes organizing natural forms. ² If idealist and Romantic embryology made it possible to find unity in diversity by seeing the whole of an animal’s phylogeny played out through its fertilization, gestation and birth, Emerson concluded that each species represented a stage or step in a long and unified evolutionary process culminating in man. By shifting from natural history’s focus on natural bodies to the human mind, and by embracing new and more dynamic forms of temporality introduced by biology, he figured the growth of human knowledge as reflecting the ascent and melioration of a universal, transpersonal intellect across different historical periods and cultures. Given that it was impossible to dissect and anatomize the intellect to discover the divine reasons embodied in its biological structure, he looked to the intuitive, impersonal, and ecstatic modes of thought associated with the poetic

¹ Despite recent attempts to “de-transcendentalize” Emerson’s thinking and to place him in a materialist lineage, his belief that both nature and the intellect were ultimately designed by an impersonal, divine spirit mark him definitively as an idealist.

imagination to locate the laws and transformations of the intellect delineated in language and aesthetic form.

While he discovered a way to leverage the work of natural historians and biologists to bolster the epistemic, moral, and prophetic authority of the poet, he simultaneously embraced a radical cosmic determinism that culminated in what West has termed the “Emersonian theodicy” (622). If the book of nature was a bloody tale that nonetheless resulted in a narrative of incessant progressive development, the history of human civilization betrayed a teleological advance toward goodness and power despite wars, injustice, and tragedy. In consistently drawing analogies between mind and nature in this way, Emerson saw science and technology as evidence of the miraculous, transformative power of the human intellect and the poetic imagination. At the same time he argued that, like nature and the mind, science and technology were also determined by divine laws which left little room for chance and contingency. As Wai Chee Dimock has shown, many nineteenth-century American writers like Emerson responded to, and struggled with, the “antihumanist findings of large-scale sciences” such as astronomy and geology which had revealed the “dumbfounding largeness of the universe but also the dumbfounding smallness of human beings” (54). If this rapid shifting of temporal and spatial scales threatened to make human agency and “knowledge infinitely problematic,” Emerson met this asymmetry with characteristic optimism and interest (Dimock 55).

On the one hand, the expansion of analytic focus in fields like geology and statistics made it possible for Emerson to see local and immediate events against a larger canvass or system that made them both less exceptional and more tolerable. On the other hand, the fact that humans could make such immense and remarkable leaps of scientific abstraction secured their status as exceptional and transformative agents not bound by given limitations. This is why in
“Fate” Emerson affirms the way statistics made “the most casual and extraordinary events—if the basis of population is broad enough—[a] matter of fixed calculation,” while also affirming that “the revelation of Thought takes man out of servitude into freedom” (CW 6: 14). Although he accepted and embraced the natural and social limitations disclosed by science, he also insisted that the human “intellect annuls Fate” and consistently pointed to poetic inspiration as evidencing a peculiar kind of freedom or “liberty” (CW 6: 12, 2). More specifically, his view of the poet-scientist as the paradigm of the thinker or scholar was based on an account of the way aesthetic intuitions could, in time, unlock the laws of fate, transforming them into new sources of power and agency. Yet in the end, such a view remained an institutive matter of faith because “our geometry cannot span these extreme points, and reconcile them […] We are sure, that, though we do not know how, necessity does comport with liberty, the individual with the world, my polarity with the spirit of the times” (CW 6: 2).

One of the most important reasons for critically examining Emerson’s poetic science is to see the way broadly naturalistic attempts to evade modernity’s bifurcation of nature can harbor metaphysical commitments whose ethical and normative consequences are disastrous. If the evolution of human reasoning and creativity bear an essential relation to a lawful and natural world, physical laws then threaten to undermine the very notion of autonomous agency. By displacing a natural determinism with a supernatural one, and then arguing that human freedom was necessitated and given by divine causes and idea, Emerson argued that the very intellectual acts which allowed human agents to turn fate into power were grounded by elemental, instinctive modes of impersonal intuition that worked by revelation rather than knowledge. In joining his account of the poet’s pious reception of the impersonal spirit with the “ideal Natural-Philosophy” of Goethe, Friedrich Joseph Wilhelm Schelling, and Lorenz Oken, Emerson argued “that the
wars of history were inevitable; that victory always fell where it was due” and that “no party conquered that ought not to conquer” because behind the messy carnage of history it was “ideas” that were “the real combatants in the field” (Selected Lectures [SL] 133). Such a position implies a radically private and exclusive conception of the meeting-place between the poetic and scientific that paradoxically leaves poetry outside of the bounds of rational knowledge. More troublingly, it suggests that freedom can only be attained by an abandonment of personal and communal interests in favor of a reliance on the innate capacities gifted to a self by a divine legislator. In the chapter that follows, I untangle the complexities and contradictions of Emerson’s marriage of poetry and science by paying specific attention to his attempts to disclose the moral and metaphysical lessons behind scientific accounts of natural evolution, race, the constitution of matter, and statistics and probability.

In my first section, I show how Emerson’s proposed marriage of poetry and science supported his career long project of articulating a natural history of the intellect that would clarify man’s place in nature. Looking to the path-breaking and idiosyncratic account of evolution articulated in Nature (1836), I show how he appropriated natural history as a conceptual scheme or metaphor to develop a series of analogies between mind, nature, history, and spirit. Emerson insisted that without acknowledging the animating role of poetic and aesthetic modes of thinking, modern science could only arrest human progress by stripping spirit from the world. Informed by the work of his Romantic contemporaries and his earlier commitments to natural theology, Emerson’s poetic science emphasized how impersonal and ecstatic forms of experience supported a metaphysical reconceptualization of the natural world that transformed it into a vast symbolic repository which disclosed the divine laws and causes of the universe. If the structure of the natural world reflected the teleological ascent of spirit
through “the spires of form” up to the human intellect, the ontogeny of any particular man could be seen as “a miniature paraphrase of the hundred volumes of the Universal history” (*Essays and Lectures* [*EL*] 422). History thus could be treated as the biography of a transpersonal intellect growing and developing across time and space.

In my second section, I look to the ways Emerson’s 1847-1848 European lecture tour contributed to the unfolding of his natural history of the intellect and gave rise to the very idea of an essay on the subject of fate. As Daniel Koch has argued, “The experience of 1848 figured prominently in his private and public reflections on America in its most agonizing national crisis. Emerson’s contribution to antislavery thought and abolitionist activity in the United States cannot be understood without reference to his experience of Great Britain and the European revolutions of 1848” (2-3). By showing how Emerson leveraged his proposed marriage of poetry and science to make sense of the contradictions of industrial modernization and to defend his doctrine of self-reliance against the reformist programs of the Utopian Socialists, I emphasize the political and social consequences of his account of the historical function of inspired and imaginative individuals. In arguing that industrial technologies were the product of poetic and imaginative modes of impersonal reception and arguing for the ethical and moral implications of modern science, Emerson suggested that his explicitly organicist natural history of the intellect might provide a kind of religious or moral function for modernity by leading modern subjects to embrace the teleological and beneficent laws guiding the development of both natural and civil history and therefore turn away from a rising materialism. Poetic science thus made it possible for humans to find moral meaning in fate, limitation, and existential suffering by showing how all individuals and societies contributed to the broader melioration or evolution of a universal human intellect.
In my third and final section, I show the importance of modernization, poetic science, and the natural history of the intellect as necessary supplements to Stanley Cavell and Eduardo Cadava’s readings of “Fate.” Building off of Cavell’s insight that “Fate,” while not explicitly discussing American slavery, implicitly draws on Emerson’s anti-slavery texts, and Cadava’s suggestion that the very language of the essay betrays its relation to debates concerning race and the expansion of capitalist agriculture and imperialism, I argue that by attending to metaphysics and science we can come to greater clarity not only about the argument “Fate” makes but also about its relation to the broader impact of modernization on America culture. In doing so, I depart from Cavell and Cadava’s more optimistic interpretations of the essay to suggest that the vision of the world it endorses is frighteningly close to an apologetic for some of the most vicious aspects of capitalist modernization. By shining a light on some of the darker consequences of Emerson’s poetic appropriations of modern science and the dangers that arise from his Romantic account of the transcendent power of the imagination, this chapter concludes by emphasizing why Emerson’s paradoxical embrace of both freedom and determinism would be challenged by the modernists who followed in his wake.

The Spires of Form

In 1833 Emerson delivered his lecture “The Uses of Natural History” to an audience gathered in Boston. The year before he had resigned his position as a Unitarian pastor and set sail for Europe on Christmas day 1832. While abroad, Emerson grew increasingly interested in modern science and natural history as a means for addressing what Barbara Packer has described as his weakening faith in the “philosophical synthesis that had supported Unitarianism” (48). In the face of the challenges posed by the Higher Criticism, Humean skepticism, and changing views of the meanings of history and knowledge, Emerson began to develop a singular fusion of
natural theology, modern science, and Romantic philosophy. In the opening moments of his Boston lecture, he described his transformative experience at the Cabinet of Natural History at the Jardin des Plantes in Paris. He explained that as he gazed upon the assembled natural forms he was struck by a “singular conviction,” namely that the forms perceived bore an “occult relation” to “something in man the observer” (SL 5). The force of such a conviction is evident in Emerson’s famed decision to become “a Naturalist” as well as in his assertion that “it seems to have been designed […] that men should be students of Natural History” (SL 5, 1). Emerson’s own shift to science and his interest in composing a natural history of the intellect was thus compelled by a deeply felt sense that in turning from the church to the natural world he was not abandoning god but realizing divine intentions.

Elizabeth Dant has shown that when addressing the Natural History Society of Boston, Emerson received crucial assistance from the Boston Society for the Diffusion of Useful Knowledge and was participating in a growing nineteenth-century American “lyceum movement” that aimed to “make all branches of knowledge, and especially the natural sciences, accessible to the layman” (22). Uniting the diversity of subjects discussed in the lyceums was an underlying emphasis on practical or useful knowledge sustained by a principled avoidance of controversial “political and religious topics” that might trouble the goal of popularizing science in an increasingly industrial society (Dant 23). While “The Uses of Natural History” does not stray from convention in emphasizing the positive role of science in advancing “health; useful knowledge; delight; and the improvement of mind and character,” it does break with these familiar utilitarian tropes by suggesting that the “greatest office of natural science” is to “explain man to himself,” in this way revealing “his true place in the system of being” (SL 15). The profoundly metaphysical insight Emerson encountered in the methodical and taxonomic ordering
of natural forms in the cabinets and museums of Europe was a perception of a progressive “order and series” throughout nature that suggested that the human intellect was a “link” or “keystone” that “marries the visible to the Invisible” (SL 16).

“The Uses of Natural History” makes clear that while Emerson had left his religious post, he was still an active participant in what William Rossi has characterized as “the broad cultural discourse of natural theology” which sought to explain “man’s place in nature” (45, 48). Rather than flee from modern science and the momentous changes of historical and temporal scale it introduced, Emerson argued that the work of naturalists had a crucial moral and practical import in understanding the human mind. What needed to be clarified was that when one looked upon the natural world as refracted through the lens of science one did not gaze upon some alien realm, but instead on a kind of “metaphor or image of the human Mind” whose coherence and beauty suggested a moral and historical lesson (SL 16). If the natural history cabinet made it possible to recognize humanity as “the necessary gnomon to nature, the completing figure through which the generative law of creation extends itself,” then it also implied that the transformative agency of the human intellect followed from a reverent and studious submission to the beauty and lawful complexity of god’s creation (Walls 126). As Emerson would often explain, “the naturalist commands nature by obeying her” and, in so doing, realizes man’s privileged status in the hierarchy of nature (SL 13). This seemingly paradoxical tie between naturalists’ submission and their power shaped Emerson’s understanding of the historical and moral significance of technological and industrial modernization. If materially the emergence of modern science and industry seemed to confirm his view of humanity as a transformative “force of nature” capable of “reshaping the world,” his abiding concern for the links between “the moral
and physical spheres of creation” pushed him to articulate a new idea of creation that would establish the worldly and ethical force of spirit in and through the intellect (Walls 108, Rossi 50).

The intentions guiding Emerson’s revisionary appropriations from natural history are particularly clear in *Nature* (1836). In calling for his readers to develop their own “original relation to the universe” he stressed the centrality of the correspondences between matter and spirit first glimpsed in Paris (*EL* 7). *Nature* thus challenged a popular and reductive conflation of science with a skeptical and atomistic empiricism as well as a Berkeleyan idealism that denied the very existence of matter. In contrast to these familiar positions, Emerson suggests that “the mind is a part of the nature of things” and that, when “considered in relation to nature,” man’s intellect should be recognized as “spirit” incarnated (*EL* 41, 21). The recognition that “the universe is composed of [both] Nature and Soul,” resituates humanity as “a link” between these “two craving parts” that is hurled “into being as the bridge […] or mediator betwixt two else unmarriageable facts” (*EL* 8, 123). To “deny the existence of matter,” as the idealists do, is to fail to meet “the demands of the spirit,” just as “empirical science is apt to cloud the sight” if it fails to acknowledge “that wonderful congruity which subsists between” mind, nature, and spirit (*EL* 41, 43).

Through a simultaneous naturalization of mind and spiritualization of nature, Emerson articulated an evolutionary view of both mind and nature that did not purge divine purposes or moral laws from the universe. *Nature* could freely suggest that “striving to be man, the worm/ Mounts through all the spires of form” without risking the charge of atheism because even if

---

3 Given that *Nature* appropriates a task long considered to be the proper concern of religion, it is unsurprising that the book was a source of considerable controversy. David Greenham has suggested that Emerson’s unorthodox treatments of both religion and science owed to the fact that, while for Emerson and his colleagues “science could not explain why there was a material world to observe or why there was an observer [nor] answer the questions that religion, traditionally, had answered,” science itself had, nevertheless, considerably weakened the authority of religion itself (32). See Greenham, *The New Mythus: Emerson’s Transatlantic Romanticism* (London: Palgrave Macmillan, 2012).
“man is a fruit which it cost all the foregoing ages to form and ripen,” the “termination of the world in man” stood as the “last victory” of a divine and just “intelligence” (EL 1, 122). More radically, he insisted that “the use of natural history is to give us aid in supernatural history” (EL 20). By yoking these two histories together, Emerson suggested we might recognize that the progressively ascending spires of organic form and the layered geological strata of the earth offer a new “language for the beings and changes of the inward creation” (EL 20). In short, the history of nature provided clues for a history of the intellect. Only by linking the inward and outward, the natural and supernatural, could humanity realize a “kingdom of man over nature” that was rooted in both natural and moral laws (EL 21, 43, 49). In order for man to take dominion over nature, he must realize that the reason “why the world lacks unity, and lies broken and in heaps, is, because man is disunited with himself” (EL 49, 47). Only by understanding ourselves as “the head and heart of nature” and honoring “the pure idea[s]” our perceptions of nature evoke could an “influx of spirit” enact “a correspondent revolution” in the world of “things” (EL 21, 48).

This metaphysical and world historical aspiration to unification or marriage led Emerson to adopt what Peter Obuchowski has termed the figure of “the Poet-Scientist” as the “ideal” thinker who “is able to wed the facts of science to the spiritual dimension of experience without violating the validity of those facts” (Obuchowski 2). The poet-scientist is the ideal-type of man thinking; and this ideal stands in contrast to the retrospective, disunified, and alienated modern subject who has lost their native power of marrying “inward and outward” experiences and thus cannot properly “see nature” (EL 10). In the ecstatic perception of the unity of spirit and matter Nature celebrates and describes, “reason and faith” are yoked together, and our alienating “egotism” is ruptured by a feeling of being a “part or particle of God” (EL 40). Poetic science thus takes the place of religion becoming an expressly modern form of “intellectual worship”
attuned to the “kindred impression[s]” produced by “natural objects” in a “poetical” state of affection revealing a divine “integrity” amongst the “manifold [of] natural objects” we meet in experience (EL 40, 9). What differentiates poetic science from a more conventional scientific empiricism is the specific mode of impersonal intellection which animates it. As Emerson argues, the poet-scientist is ravished by “a higher thought or better emotion” that emerges in their perception of the “harmony” between subject and object, revealing a determining “universal soul within or behind his individual life” (EL 11).

In claiming the capacity of poet-scientist’s intellect to search “out the absolute order of things as they stand in the mind of God,” Emerson had to sketch “a theory of nature” in which all empirical particularities and organic forms were simply “faint copies of an invisible archetype” standing outside of time and space (EL 43). This resolutely idealist view of nature had profound consequences for his thinking about the proper functions of both science and poetry in fostering the spiritual and material renovation of the world projected in Nature. Without a poet to cast a “ray upon the metaphysics of conchology” that would “show the relation of the forms of flowers, shells, animals, architecture, to the mind,” the scientist could only present a view of the world in which there is a yawning gap between reasons and causes, the normative and the natural (EL 43). Science thus needed to acknowledge that the “untaught sallies of the spirit” typically associated with poetic and religious inspiration funded its capacity to discover the unifying laws of the natural world (EL 18). So too, the poet needed to realize that while his works were “the result or expression of nature, in miniature,” they were not “the last or highest expression of the final cause of nature” but instead simply were blueprints for “a new creation” to be realized by the scientist (EL 18-19). Only when the morally and metaphysically illumined image of nature “interpreted and defined” in the work of the poet was transformed into a “new weapon” to be
wielded in the hands of the scientist could the final cause of nature be realized historically (EL 19, 25). In marrying the receptive and productive powers of the intellect, the poet-scientist would show how our intuitive, impersonal, and inward experiences could extend and transform “the domain of knowledge,” clarifying the analogical relations between thoughts and things, contemplation and action (EL 25).

Emerson always gave primacy to the ideal over the material and consistently argued that “the poet alone knows astronomy, chemistry, vegetation, and animation, for he does not stop at these facts, but employs them as signs” of spirit (EL 456). However, he did not wholly neglect materiality itself. In order to better understand the animating function poetry played in Emerson’s natural history of the intellect it is vital to consider the “Language” chapter of Nature. This chapter explains that language is the most ordinary and obvious evidence for a metaphysical correspondence between the spiritual and the material because: “1. words are signs of natural facts 2. particular natural facts are symbols of particular spiritual facts [and] 3. nature is the symbol of spirit” (EL 20). By stressing the expressive function of language in a naturalistic context, Emerson argues that words symbolically join the natural and the spiritual dimensions of lived experience showing us that “it is not words only that are emblematic” (EL 20) but that “the soul which animates Nature” is published in “the figure, movement, and gesture of animated bodies” (CW 6: 89). The traffic between consciousness and the natural environment Emerson finds in the etymology of words like right and wrong—as well as in the “radical correspondence between visible things and human thoughts” he posits as the symbolic foundation of human

---

4 Johannes Voelz, in his critical assessment of Myra Jehlen’s reading of Nature, shows just how easy—and dangerous—it is to lose sight of Emerson’s own commitments to both spirit and materiality. As Voelz notes, while Emerson “called for the realization of the ideal, such realization could be no more than glimpsed; it remained a motivating impossibility, which in turn necessitated the continuing renewal of the call for realization” (181). See Voelz, Transcendental Resistance: The New Americanists and Emerson’s Challenge (Hanover: Dartmouth College Press, 2010).
discourse—lead him to argue that “good writing and brilliant discourse” are “perpetual allegories” of the lawful exchange between natural forms and ideal archetypes (EL 22-23). It is not simply that a symbolic view of language and nature reveal the significance and “hidden life” of material forms but, more ambitiously, that the poet’s act of composition is in fact the “proper creation” because it evidences the “working of the Original Cause through the instruments [God] has already made” (EL 25).

This account of the symbolic and semantic unity of mind, nature, and spirit highlights Emerson’s debts to Romantic philosophy and science. More specifically, it reveals how an archetypal and “organic conception of nature” popularized by thinkers like Goethe, Schelling, and Coleridge provided him with an alternative to the mechanical conception of nature stemming from “Descartes and Newton” which had placed God fully outside of the natural and temporal world (Richards 11). As Robert Richards has argued, in opposition to the atemporal “clockwork mechanism” underwriting William Paley’s natural theology, German Naturphilosophie showed history “inscribed in nature’s very bones” (11). From this perspective, nature was not simply a “mere product of the Creator’s designs” but a fully historical “producer of itself” akin to a self-organizing and “growing individual” (Richards 11). Thus Emerson, like Schelling, concluded that because the “objective world” was “the original, as yet unconscious poetry of spirit,” the “philosophy of art” was the “keystone” or “universal organon” for both science and philosophy (Schelling 12).

The primacy afforded to aesthetic experience and speculative metaphysics by the Romantics was integral both for Emerson’s poetic science and the natural history of the intellect it might compose. If anatomy, geology, and taxonomy discovered the orders of the natural world with the aid of material objects, a “natural history of the intellect” faced the difficult problem of
how to “mark the steps and boundaries” of the mind’s “transparent essence” (EL 417). In his archetypal recasting of the natural world as the unconscious poetry of the spirit, Emerson wielded analogy as a conceptual tool that might bridge and marry all divides. In seeing the historical development of linguistic utterances and transcendental conceptual expressions as indexing the growth of a trans-individual intellect from instinctual responsiveness to robust self-consciousness, Emerson drew analogies with contemporaneous work in the emerging field of biology. Biologists like Lorenz Oken and Richard Owen had argued that “individual organisms recapitulated the history of their species as they went through their ontogenic development” and “played out the variations” of nature’s “ideal laws” (Richards 11, 526). Emerson extended their thinking in his account of the way language and experience disclose the metaphysical unity of spirit, matter, and mind. This organicism afforded was the idea that “each individual man” is “one more incarnation” of a “universal mind,” thereby making the “genius of humanity” the “real subject whose biography is written in our annals” (EL 237. 630).

Romantic philosophy and science radically recast the very idea of history and led Emerson to equate history with biography. This shift was central for a natural history of the intellect because, as Ronald Bosco explains, Emersonian biography “represents the life of an individual mind sharing in the universal mind beyond ‘Space & time’” (83). History becomes “the record of ideal exchanges between the individual and the universal mind” within a thoroughly temporal and natural context (Bosco 83). Biography thus shifts scale, no longer narrating the life of “the individual personality” but instead a trans-historical, impersonal, and “universal” intellect which certain inspired individuals “represented” in the temporal world (EC 87). The poet comes to stand in for this universal “mind common to all” because of his ability to “perceive the independence of the thought on the symbol, the stability of the thought, the
acciency and fugacity of the symbol” (EL 237). Put differently, poetic thinking is distinguished by an impersonal ideational process which exceeds and reorganizes the norms and limits of a given symbolic representational system. Because Emerson insists that “the thought is always prior to the fact” and that all the particular facts “of history preexist in the mind as laws,” the poet’s perpetual allegorizing opens a kind of revolving door between the contingency of nature and the lawful necessity of an ideal and divine realm (EL 456). One major consequence of this account is that it figures the scientist’s discovery of natural laws in the material world as a consequence of a prior poetic intuition. The poet is thus the exemplar of the intellect, the “complete man” whose “pious reception” of preexisting laws and causes provides the natural history of the intellect a “long logic” that transcends the limitations of empirical science and formal logic (EL 419).

The essay “Intellect” affirms “the superiority of the spontaneous or intuitive principle over the arithmetical or logical” by arguing that “we do not determine what we will think. We only open our senses […] and suffer the intellect to see” (EL 419). This is not to say that we do not need logic, but instead that logic itself is “the procession or proportionate unfolding of the intuition” (EL 419). In “The Poet,” Emerson continues to develop his account of this involuntary and impersonal thinking by suggesting poetry as the strongest proof of the fact that the mind takes “its direction from its celestial life” (EL 459). Poetic inspiration thus shows the poet that the “higher end” of nature is realized “in the production of new individuals” who embody the “ascension” of “the soul into higher forms” (EL 459, 458).^5 If poetic perception reveals nature to

---

^5 As Branka Arsić has shown, the intellect is the proper key for understanding Emerson’s conception of the subject and his relation to German Romantic thought because it shows the enormous role “involuntary perception” and impersonality play in Emerson’s “ontology of thinking” (65, 76). See Arsić, “Brain Walks: Emerson on Thinking” in *The Other Emerson* eds. Branka Arsić and Cary Wolfe (Minneapolis: University of Minnesota Press, 2010). What is less clear in Arsić’s account is the way in which the Essays turn to impersonality to establish what Lawrence Buell has termed the “idea of a metaphysical correspondence between nature and spirit […] where] Man and the
be “a poem in our eyes,” natural history in borrowing the ‘long logic’ of the intellect, stands as the reader of this poem, capable of turning instinct to knowledge, receptivity into power (EL 465).

Obviously, the challenges facing the formal presentation of the natural history of the intellect remained immense, even after the ground clearing of the Essays, because unlike the various species in nature that persisted in their empirical being after death, the intellect was radically singular, and its history could only be truly apprehended in the flashes of inspiration. After completing both volumes of Essays, Emerson would note two forms of historical narration in a journal entry: “One is the scientific or skeptical and derives [its] origin from the gradual composition, subsidence, and refining, —from the negro, from the ape, progressive from the animalcule savages of the waterdrop […] up to the wise man of the nineteenth century. The other is the believer’s, the poet’s, the faithful history […] the history of the Fall, of a descent from a superior and pure race, attested in actual history by the grand remains of elder ages” (qtd. in Nicoloff 234). The task he had set for himself in attempting to articulate a natural history of the intellect was to marry the two. This poetic science would show that man’s descent and his ascent were dialectically conjoined, thus allowing him to meet modernization’s challenge to human autonomy by reorienting our understanding of our relation to the realm of necessity, thereby making room for hope and optimism. This project of reconciliation faced increasing difficulties as Emerson worked to find omens of the intellect’s progressive ascent in the historical and political developments of his era.

Modernization and Melioration

physical universe […] are parallel creations of the same divine spirit” (Buell 149). See Buell, Literary Transcendentalism: Style and Vision in the American Renaissance (Ithaca: Cornell University Press, 1973).
When Emerson departed for Europe in 1847 “he was at an impasse,” caught between what Daniel Koch has described as his faith in a “progressive-historicist model” of human development that implied “it was America’s destiny to continue expanding,” and a competing commitment to the binding force of the “moral sentiment” that recognized “the spirit of expansion” was producing conflicts and situations that were “ethically reprehensible” (47, 43). In particular, the outbreak of the Mexican War, the failure of the Brook Farm Association, and growing conflicts about American Slavery made the late 1840s a challenging time for Emerson to trust in either social reform or spiritual teleology. Far from evolving hand in hand, man’s growing power to command and transform nature seemed to be outpacing, if not undermining, humanity’s moral and spiritual progress. His travels across England and Europe from 1847 to 1848 only heightened his awareness of a seemingly global rupture between the moral and material dimensions of modern life. Unsurprisingly, his lectures from this period reflect a growing concern with the way industrial and commercial society was simultaneously expanding man’s intellectual power while limiting his moral development. Emerson was facing two interrelated problems at this juncture: first, the temporal discontinuity between humanity’s material and spiritual progress which called man’s inevitable ascent into question; and second, the growth of social and mass movements that were placing significant pressure on his doctrine of self-reliance. To meet these difficulties, he appealed to notions of historical scale and organic development borrowed from sciences like geology and biology that rendered any apparent deviation or crisis as setting the stage for an adaptive or evolutionary leap thereby situating techno-scientific modernization within the framework of his natural history of the intellect.

If “natural and civil history are the life of the biography of the Soul of the world,” and if “all facts and all creatures are the proceeding of the Spirit into reality,” then Emerson needed to
explain the positive historical and metaphysical implications of the carnality and violence attending industrialization (SL 131). To this end he began to map the relations between the natural and the cultural in order to show their mutually progressive and dialectical interactions. As Phyllis Cole has established, in this period we witness Emerson developing a social theory that argues for the beneficial function of the material and natural limitations on human agency. Confronted by the threats posed to individual freedom by the mechanization of social relations and collectivist social movements, he increasingly looked to science for principles that might explain how “material circumstances constantly transcend their own limitations” with the aid of spiritual and ideal forces at work in both mind and nature (Cole 91). Continuing to develop his poetic science in a moment of profound social unrest, he now focused on the ways the inspired individuals who served as the aperture through which divine purposes entered the world were restrained, misappropriated, and limited by the material and social factors he would soon gather under the heading of fate. With the aid of his organicist and idealist account of science, Emerson came to suggest that violent collisions between matter and spirit or nature and civilization actually fueled the ascension of the modern intellect by fostering a “Marriage of mind to nature” that would inevitably give birth to novel human powers (SL 121).

For Emerson, the “Modern Age” was to be distinguished from earlier periods in the natural history of the intellect by the growing predominance of “the intellect in the balance of powers” evident in “commerce,” “technology,” and “natural science” (SL 116-119). If industrialism revealed the “fruits” born of the “application” or marriage of mind and nature, the “intellectual character” of modernity had at the same time placed “a slight interval” between all persons, thereby making it “difficult to accept Tradition,” leading man to “find all his resources, his hopes, rewards, society, and deity, within himself” (SL 116-117). Put simply, the social
effects of the historical emergence of the intellect embodied in modernization were deeply paradoxical. Alongside a growing respect for the autonomy and dignity of the individual, evident “in all the revolutions and national movements” as well as in the texts of “philosophers” and poets, the spread of commerce and industrial production relied on a fundamentally collective distribution of human labor and intelligence (SL 117). Just as human agents began to overcome the seemingly inviolable limitations of nature with the aid of the intellect, they rapidly found themselves ensnared in emergent socio-technical infrastructures with dangerous limitations of their own. Thus, in his European lectures Emerson situates himself and his audiences in a “transition period” in the long and complex history of the intellect that presented a deep moral crisis (SL 117). Unanchored from tradition and possessing new Promethean capacities, humanity was tasked with discovering the “relation between power and probity” (SL 124).

Signs of a historic cultural and spiritual “schism” were particularly clear in the way the “revolutions and national movements” of 1848 showed the weakening of “the old faiths which have educated” for the “public and private mind of Europe and America” (SL 118, 150). Given that he witnessed the institution of Greenwich Mean Time in Liverpool on December 1st, 1847, it is unsurprising that he was concerned to explain the historical significance and moral implications of the “revolutions” being brought about by “the steamboat, the locomotive, and telegraph” (SL 124-125). As he visited with such British scientific luminaries as Charles Lyell, Robert Chambers, and Charles Babbage, he glimpsed how England’s factory system was generating economic inequality, social conflict, and human suffering. Of particular concern was the “natural, but somewhat alarming” extension of mechanical technologies into the field of “social relations” (SL 124). The close relationship between science and social unrest were laid bare when Emerson returned to the Jardins des Plantes and witnessed Blanqui clash with the
French National Guard on the streets of Paris. If science was a product of an unmistakably individualistic act of impersonal reception, the political turmoil in Europe suggested that “masses of human beings rather than individuals seemed the channels through which historical forces flowed” (Packer 158). Rather than abandon his faith in the “private reason and conscience of man,” however, Emerson argued that “the oracle” guiding history “never answers to corporations […] or masses; but only to the privacy of each mind” (SL 127-128).

In his 1848 lecture “The Relation of Intellect to Natural Science,” Emerson explained the historical role of self-reliant individuals and divine ideas by arguing that the “tools, inventions, books, laws, [and] parties” of a given age emerged “out of the invisible world through a few brains” (Later Lectures of Ralph Waldo Emerson [LL] 145). From the vantage of his natural history of the intellect, “the powers” driving capitalism—“Whiggery, or Chartisim, or Church”—were ideas partaking in a vast and evolving “metaphysical” drama (LL 145). The implication was that the political and social problems of modernity would only come to pass with the emergence of newer and “stronger idea[s]” in the long history of the human intellect (LL 145). The history of science exemplified the way “every idea from the moment of its emergence, beings to gather material forces” and eventually “makes itself known in the spheres of politics and commerce” (LL 169). Similarly, the growth of industrial production and the proliferation of new technologies from earlier scientific discoveries showed that it was natural that “the brain and hands [were] hardly contemporaries” (LL 169). Just as the rational truths of science descended from the inspired, impersonal intuitions of the poet, seemingly novel technologies were to be recognized as the belated materialization of once innovative and vital scientific ideas. Because the “divine energy” animating these world shaping ideas “never rests or repeats itself; but casts off its old
garb, and reappears [...] in a new form,” Emerson situated the poet-scientist as a kind of ecstatic barometer who alone could register and tap the winds of history (SL 117).

We can see how central poetic science was for Emerson’s attempts to defend both his doctrine of self-reliance and his teleological view of modernization by looking to his criticism of the Utopian Socialists. In his lecture series “Mind and Manners in the Nineteenth Century” he sketches a quasi-Hegelian narrative of modernity that aligns the material transformations of the world with the evolution of the intellect and in the process directly addresses figures like Saint-Simon, Fourier, and Oken. The lecture “The Spirit of the Times” situates the nineteenth century as following from two earlier epochs in the natural history of the intellect: an initial “Greek Age” wherein man “deified” nature and the senses, and following it, a “Christian Age” that turned away from nature and looked inward to soul making “religion and sentiment, the centre of all the institutions of society” (SL 119-121). In keeping with Nature’s aspirations to unity, the lecture suggests that the modern era will achieve a kind of dialectical synthesis of these two earlier epochs by marrying the senses and the soul, the human mind and the natural world. Yet because such a marriage could only unfold from a pious and immediate reception of nature, an increasingly urban and technologically mediated social world threatened to obstruct the necessary contact between intellect and nature. As Emerson explained, the “iron hand” of industrial technology had so “subsidized and reconstructed society” that man was “cushioned, pampered, policed, coached, cabbed, steamed, and telegraphed through the world” and thus “never suffered to touch the ground” (SL 122).

---

6 These lectures not only laid the textual and conceptual foundations for the posthumously published The Natural History of the Intellect (1893) but also evidence the deep and lasting affiliations between his theorization of fate and his response to the paradoxes of modernity and modernization.
We should not mistake Emerson, here, for an anti-modernist who hated or feared technology. Instead, he argued for the importance of recognizing that “all these wonderful aids by means of which we live, were once simple poetic acts. Every tool was a stroke of genius” (SL 122). He thus figures modern technologies as “effigies and statues of men” that can greatly increase an individual’s powers and capacities (SL 122). But “all tools are reagents” and “mechanism mechanizes,” without cultivating the mental and moral strength to “command the tools, they command you” (SL 122). This is why the attempts of Utopian socialists to model collectivist social reform on industrial and mechanical principles revealed that “they [were] not the creators they believe[d] themselves” but merely “describers of that which is [already] being done” (SL 126). Their attempts to “mechanize society” followed from an older materialistic, Newtonian image of science that was “unable to seize the law which determines the legitimate action” of social engineering (SL 127). If modernization was ultimately another stage in the long natural history of the intellect, it needed to be viewed as an *organic* rather than a mechanical process. The point the socialists missed then, was that “the world vegetates, like a bulb or an acorn; and everything in the world shares this vegetative quality. To machinery, also, the same pushing and progress is natural and inevitable” (SL 127).

While the socialist’s reformist aspirations were well intentioned, their view of human agency and history was constitutively flawed because they made no room for the impersonal spirit uniting mind, nature, and morality. Thus, they risked “converting man into a tool” (SL 127). Against the materialism of the socialists, Emerson explained “one limit this power of arts

---

7 As Daniel Koch has noted, “Emerson assesses the total, all-encompassing programme of reform and societal restructuring advancing by the Fourierists, finding value, even beauty, in their goal of creating a world in which poverty, ignorance, misery, and crime would be eliminated. Ultimately, however, Emerson finds that the ‘mistake’ of the Fourierists is their insistence that ‘this particular order and series is to be imposed by force of preaching and votes on all men and carried into rigid execution.’ His rejection of Fourierist Socialism is based not on a disagreement with the ultimate vision […] but with the means” (35). See Koch, Ralph Waldo Emerson in Europe: Class, Race, and Revolution in the Making of an American Thinker (London: I.B. Tauris, 2012).
and instruments has […] is] its antagonist force […] the private reason and conscience of man […] the moral sentiment; as it is manifested in the inspiration of each human mind” (SL 127). Acknowledging the force of the moral sentiment and the essentially private ecstasy of impersonal inspiration allows humanity to avoid “converting man into tool, as Socialism does in the phalanx” (SL 127). In place of the socialists’ misplaced faith in industrialism, then, Emerson suggests that proper guidance can only come when modern subjects learn to accept the “moral of modern science” that emerges from the marriage of the intellect’s moral sentiment with the material and natural world (SL 149). Progressing past an era of transition and conflict required a transfer of “that trust which is felt in Nature’s admired arrangements, to the sphere of freedom and rational life” (SL 149). On this account, the rupture between the material and the moral is to be recognized as a consequence of the fact that while in our “conquest of nature” we had transformed it “into a perfect instrument,” we had nevertheless failed to recognize the moral lesson of science; namely that the “perfect command of nature” required “perfect obedience to nature” (SL 133).

As we have already seen, both moral sentiment and self-reliance were for Emerson thoroughly natural facts. Consequently, the schisms and carnage of the modern era proved that man’s “departure from nature” was “punished by a natural loss and deformity” (SL 133). Any transference between nature and the sphere of freedom and rational life thus required a substitution of “realism for sentimentalism” and a courageous embrace of “the simple and terrible laws” which “pervade and govern” the universe (SL 150). By championing a “faith which is science,” and by accepting what, in the essay “Fate,” he calls “Beautiful Necessity,” Emerson imagined the coming of a “new Church founded on moral science” impelled by the unsettling ruptures of industrialism that would honor “the algebra and mathematic of ethical law”
as well as “the nameless Thought, the nameless Power, the superpersonal Heart” shaping the course of history (SL 150-151). Yet this seemingly dark and cynical realism was not without compensation because, as he explained in the midst of the tumults of 1848, the lesson “taught by science to this Century is that the history of nature from first to last is melioration, incessant advance from less to more, from rude to finer and finest organization” (SL 133). Faith in this incessant advance of the natural world cannot annul suffering and limitation but it will locate moral meaning in our suffering. As “Fate” would later explain, “when a man is the victim of his fate,” when he “ground to powder by the vice of his race,” he must “rally on his relation to the Universe, which his ruin benefits,” and he must “take sides with the Deity who secures universal benefit by his pain” (CW 6: 26).

As Robert D. Richardson has shown, Emerson first discovered Jean-Baptiste Van Mon’s theory of amelioration through Andrew Jackson Downing’s The Fruits and Fruit Trees of America and he quickly seized it as a “vast metaphor” for the dialectical and organic interaction between nature and the intellect (Richardson 433-434). As an evolutionary principle, melioration made space for the ebbs and flows, the discontinuous leaps, of the unfolding and growth of the intellect. Van Mons had argued that “under favorable circumstances, and at a certain age,” a tree was in a vital and wild state of “of variation” or “melioration” (LL 157). But this state of melioration was fleeting; and as “the plant grows” and “fruit arrives, with every step, at a new and finer production,” the tree itself becomes “feebler” over time (LL 127). If in its early stages of flowering a pear tree is a source of novelty and differentiation, it slowly regresses into a kind of engine of homogeneity as it acclimates to its environment accepting local limitations and ceasing to expend its vital energies on variation. Van Mons showed that without human cultural intervention pear trees fell out of melioration and ceased to vary their fruit. Developing new
types of pears thus required selectively breeding wild plants in a state of melioration. By violently uprooting and splicing wild trees into new hybrids, Van Mons had offered a fitting image for the way seemingly fated natural limitations could be coopted and transformed into new human powers.  

Drawing an analogy between the amelioration of pear trees and “civility, and its arts and tools,” Emerson argued that there is “not less in the human mind, in certain favorable times and relations, a creative saliency […] a sort of importation and domestication of the Divine Effort in man; a habit of originating, a habit of initiating action, instead of following custom” (LL 127, 157).

By highlighting the “many analogies between vegetation and intellection,” Emerson linked “the instinct of progress” in the mind to “the growth of the plant” (LL 168). Thus the “successive leaps” and continuous “detachment which thought effects” in the inspired intellect resembled the principle of variation and wildness Van Mons had found in plants (LL 168). At work here is the familiar picture of the poet-scientist, who “when he listens to the impulses of the heart in him, and see[s] progressive refinement in nature, out of him” is driven impersonally to the recognition that that “every new race and moral quality impresses its own purpose on the atoms of nature” (SL 134). Yet because “this curious resemblance to the vegetable pervades human nature, and repeats, in the mental function, the germination, growth, state of melioration, crossings, blights, parasites, and, in short, all the accidents of the plant,” such moral qualities were unevenly distributed in both time and space (LL 156). This was why “in human thought” melioration was “so often arrested for years” and why the “history of mankind” needed to be grasped as a “history of solstice, or arrested growth” (LL 139). As we can see, what amelioration

---

8 As Philip Nicoloff puts it, according to Van Mons, “the young tree, having bourne its best fruit, at once began to retrograde. The degeneration never became so complete, however, as to achieve the original vitality of the wild fruit” (Nicoloff 130). See Nicoloff, Emerson on Race and History: An Examination of English Traits (New York: Columbia University Press, 1961).
provides Emerson is a principle for securing progressive evolution, while also accounting for non-linear retrogression and limitation. Without the importation and domestication of divine ideas through the impersonal and inspired reception of self-reliant individuals, societies and cultures enter into decline.

Only by enacting a continual marriage of the private mind with the suggestive forms of nature, cultivating an intimacy with nature’s wild and divine energies, could the over-socialization Emerson witnessed in England be corrected.\(^9\) But how can Emerson say that self-reliance is equivalent to a marriage of mind and nature? Clarity concerning the “subtle and pervasive paradox” that Jonathan Levin has located at the heart of Emersonian individualism requires seeing how the organic dialectic Emerson locates in the spirit of history finds itself mirrored in the workings of an individual’s intellect.\(^10\) If, as Emerson says, “there exists in every man a privilege of obtaining an infallible verdict on all questions concerning the conduct of life,” then the infallibility of that verdict does not belong to the individual but instead is dialectically related to the meliorating energies of the impersonal spirit animating the laws of nature and the processes of thought (SL 128). Far from contradicting one another, the impersonal and the personal form a bipolar unity which makes self-reliance a kind of marriage of the human and divine. As Sharon Cameron long ago noted, for Emerson “the impersonal speaks despite us, though through us […] impersonality is not […] abstractly dissociated from the idea of self. It is viscerally represented as what must be ‘own[ed]’ by the very self with which it is understood not to be identical” (24).

\(^9\) As “Fate” would later describe it, “The population of the world is a conditional population not the best, but the best that could live now; and the scale of tribes, and the steadiness with which victory adheres to one tribe, and defeat to another, is as uniform as the superposition of strata” (CW 6: 8).

\(^10\) Levin describes the paradox of Emersonian individualism as “the individual self has obligations only to itself […] but those obligations at the same time reflect the individual’s relatedness to the world as a whole” (Levin 22). See Levin, Poetics of Transition: Emerson, Pragmatism, and American Literary Modernism (Durham: Duke University Press, 1999).
Echoing his earlier account of impersonal intellection, Emerson suggests that “a certain blind wisdom […] commonly called Instinct” molds and shapes all other “mental power[s]” from birth (LL 137). Yet while “the instinct begins at the low point at the surface of the earth, and works for the necessities of human beings,” it “ascends, step by step, to suggestions, which are, when expressed, the intellectual and moral laws” (LL 138). This organic melioration from matter to spirit comes to its final stage in “the act of Imagination” which is characterized by a “sharing of the ethereal currents” (LL 163). Imagination then “is an obedience of the private spirit to the currents of the world,” an act of abandonment and reorientation in which the “polarity of the individual or the private mind adjust[s] to the poles of the world” (LL 163). This leap from instinct to imaginative inspiration, from melioration to magnetism, marks for Emerson “the continuation of the divine Effort that built the man” and it teaches that all that is “connected with our personality [ultimately] fails” because “nature never spares the individual” (LL 149). The individual is instead a kind of vehicle or messenger who “comes into nature impressed with his own polarity or bias, in obeying which, his power, opportunity, and happiness, reside” (SL 137, 146). As he had already shown, modern “society is unanimous against” acknowledging the multiplicity of powers and desires expressed by individuals because their polarity is often repelled by the instrumental logics and traditions governing society and the state (SL 146). The whole battery of mental powers gathered in each individual exceed the bounds of rationality and thus undermine and advance social norms; “the inexorable Laws, the Ideas, the private Fate, the Instinct, the Intellect, Memory, Imagination, Fancy, Number, Inspiration, Nature, Duty […] at

---

11 As Laura Walls has suggested, in tracing Emerson’s interest in polarity to German Idealism and Romanic biology, the principle of polarity is a “paradoxical achievement” because “it demands that the principle of individualism subsist in […] the pinnacle of interdependence.” It therefore attempts to resolve modernity’s dualism by subsuming “all differences […] into [the] originary sameness” of god’s dual creation of both nature and man, finally asserting that “we submit as organs of the transcendent whole [so that] we command as agents of transcendence” (Walls 134, 140, 123). See Walls, Emerson's Life in Science: The Culture of Truth (Ithaca : Cornell University Press, 2003).
certain privileged moments, they emerge unaccountably into light. I know not why, but out
thoughts have a life of their own, independent of our will” (SL 143).

Because the law that governs “the whole” of the universe is mirrored in the “genius” of
“each individual,” the poet’s “perception that the tendency of the whole is to the benefit of the
individual,” is the only “universal of faith” capable of “justifying the moral sentiment” and
establishing “its eternal independence” from any human or social norm (SL 149). Thus, just as
“the poet works to an end above his will” through “supervoluntary ends effected by
supervoluntary means,” the polarity of a self-reliant individual mirrors the melioration of the
natural world through “means not mechanical, but spontaneously appearing for the new need”
(SL 141). By the close of his lectures in Europe, Emerson felt that he had shown that only when
the moral of modern science is married with the spontaneous and nomological inspiration of the
poet can modern man pass through the schisms and contradictions of modernity by finding the
proper balance of “power and probity” in a morally justified marriage of mind and nature.

Modernity’s Irresistible Dictation

The reconciliation between historical melioration and individual polarity Emerson
projected in his European lectures met new challenges upon his return to America. As the 1840s
came to a close, questions relating to slavery and national destiny appeared once again to be
moving against the teleological end he earlier projected. With the Missouri Compromise of 1850
and the passage of the Fugitive Slave Law looming like omens in the air, he worked to more
adequately theorize fate’s relation to freedom in late texts like English Traits (1856) and The
Conduct of Life (1860). In 1850 he would frame the problems which would continue to hold his
attention till the end of his life in a journal passage titled “The two statements of Bipolarity:”
“My geometry cannot span the extreme points which I see. I affirm melioration—which nature
teaches [….] I affirm also the self-equality of nature; or, that only that is true which always true [….] But I cannot reconcile these two statements. I affirm the sacredness of the individual, the infinite reliance that may be put on his determination. I see also the benefits of cities, and the plausibility of phalansteries. But I cannot reconcile these oppositions” (*Selected Journals: 1841-1877 [SJ] 499). Between the eternality of natural laws and the morphology of amelioration, Emerson was struggling to explain why some organisms and cultures progressed and others did not, and he was doing so in the context of pressing questions relating to race and American slavery. As Ian Finseth argues, “throughout the 1840s and 1850s” Emerson was concerned with “the mysteries of both racial identity and providential design” and, as we have already seen, he saw natural science as providing vital clues for understanding them (733). Recognizing that “naturalizing race to any degree posed the danger of undermining or compromising his antislavery activism,” Emerson sought to “accommodate theories that posited the natural origin of racial division and conflict with his conviction that slavery violated natural law and the divine will, and with his belief in the ultimate goodness of eschatological history” (Finseth 733-734).

Perhaps no single event challenged Emerson’s optimism concerning American spiritual renewal more than the passage of the Fugitive Slave Law. As he would explain in 1851, the legislation forced “all into politics and made it a paramount duty to seek what it is often a duty to shun” (*SL 169). If earlier the moral sentiment had required abandoning social reform in favor of inspiration, it now demanded wading into the murky waters of politics. Because, as West has argued, Emerson’s “ideal of the human person” is “inseparable from his understanding of race,” the passage of the law in 1850 came as an affront to the universalism of humanity by divorcing man from man in the name of material gain (West 636). To be clear, Emerson’s views on race were far from enlightened, but for him the idea that human government could judge or evaluate
the qualities and powers of human persons directly encroached on the legislative function nature served. Race then was a central feature in Emerson’s linking of the particular and the universal—the individual and the nation—and it was “both a natural and historical category” through which to reflect on both national progress and the organic unfolding of the universal mind into the empirical world (Finseth 733).

The centrality and complexity of race for Emerson is particularly clear in his “Address on the Emancipation of the Negros in the British West Indies” (1844). In this lecture Emerson explained “there are many faculties in man, each of which takes its turn of activity, and that faculty, which is paramount in any period, and exerts itself through the strongest nation, determines the civility of that age” (Emerson’s Anti-Slavery Writings [AS] 19). In 1844, the nation who was determining the civility of the age was England. By freeing its slaves a decade earlier England had shown “the genius of the Saxon race” as pointing to a constitutional love of liberty in sync with “a blessed necessity” working throughout history which was “always driving them to the right” (AS 33). The moral achievement of the English was a result of their receptivity to the “grand style of nature” which “will only save what is worth saving; and it saves not by compassion, but by power […] when at last in a race, a new principle appears, an idea;—that conserves it; ideas only save races” (AS 30-31). Though the stress on the ideal and impersonal reduces the agency of the British reformers, it also lends an almost supernatural power on the part of the former slave: “if the black man carries in his bosom an indispensable element of a new and coming civilization, for the sake of that element, no wrong, nor strength, nor circumstance, can hurt him” (AS 31). We should note here that the inevitable liberty of the “black man” turns on his possession of some divine intellectual quantity or idea. In the economy of nature, races are themselves merely a result of the complex process by which God brings, one at
a time, new ideas and faculties to the human family for the perfection of the human organism.\(^\text{12}\) When Emerson comes to consider “the black race” then, his opposition to slavery, and his faith in the inevitability of abolition, are rooted in the larger project of the natural history of the intellect. As it turns out, the intellect has no time for petty prejudices: “The intellect,—that is miraculous! Who has it, has the talisman: his skin and bones, though they were of the color of night, are transparent, and the everlasting stars shine through, with attractive beams” (\textit{AS} 31).

Yet, as the events of 1848 had shown Emerson, the English had fallen from their position of moral leadership. With the passage of the Fugitive Slave Law, America also was failing to ascend to its destined moral hegemony. As he would later argue in 1849, England had achieved their final office: “England has but obeyed the law, which, in the order of the world, assigns one office to one people […] if she will have a perfect hand, she makes head and feet pay for it. So now that she is making railroad and telegraph ages, she starves the \textit{spirituel}, to stuff the \textit{materiel} and \textit{industriel}” (\textit{SL} 167). As Philip Nicoloff has put it, for Emerson “the national mind thought with the Eternal Mind […] but as the nation began to mimic its own first revelations, and codify them in institutions, the mental powers would begin to recede […] thus All of America’s rawness and youthful innocence […] could be interpreted in her favor. America was young, Europe was old, and historical necessity would take care of the rest” (Nicoloff 236). America, since it was formed from an English germ, was logically next in line on the path of ascent; it was the nation meant to merge material, industrial and spiritual power. What the conflict over slavery proved, however, was that America was in crisis: “it is believed that ordinarily the mind grows with the body, that the moment of thought comes with the power of action, and, that, in nations, it is in

\(^{12}\) For two particularly revealing and subtle treatments of Emerson’s racial thought, see Walls’ \textit{Emerson’s Life in Science: The Culture of Truth} (Ithaca: Cornell University Press, 2018) and David LaRocca’s \textit{Emerson’s English Traits and the Natural History of Metaphor} (New York: Bloomsbury, 2013).
the time of great external power, that their best minds have appeared. But, in America, a great imaginative soul, a broad cosmopolitan mind, has not accompanied the immense industrial energy” (LL 4). Emerson’s growing calls for moral and political action, far from contradicting his earlier favoring of metaphysics over politics, followed from it. Because he saw all races as developing within a single human species, each funding the universal ascent of the intellect, when governments intervened in this organic and natural process it was essential to fight fire with fire.

Cavell has convincingly linked Emerson’s later reflections on freedom and fate in the essay “Fate” to the constitutional debates which raged around American slavery. In “Emerson’s Constitutional Amending: Reading ‘Fate,’” Cavell argues that the essay is “a philosophic enactment of freedom, a parable of the struggle against slavery, not as a general metaphor for claiming human freedom, but as the absolute image of the necessary siding against fate toward freedom that is the condition of philosophical thinking” (Cavell 197). For Cavell, Emerson’s abolitionism is the very condition of possibility for his philosophy: “if slavery is the negation of thought, then thinking cannot affirm itself without affirming the end of slavery” (Cavell 205).

Yet as we have already noted the very freedom of the intellect embodied in the inspired flights of the poet is constrained and determined by divine and universal laws. Because, as Cavell acknowledges, “Fate” nowhere explicitly mentions abolition, the Fugitive Slave Law, or American slavery, his argument that “every metaphysical claim” the essay makes about freedom “is to be read also in a social register, as applying also to the institution of slavery” requires locating within Emerson’s own prose moments where the voice of Emerson the abolitionist penetrates his silence on questions related to slavery (Cavell 208). Cavell’s answer to this problem is to argue for a specifically political function of philosophy itself, which, in the context
of “Fate,” is termed constitutional amending. Such amending occurs in an extra-legal context and rests on a notion of what Cavell terms the representative stance. “[T]he human being is the being who can take a representative—public—stance,” the being who “knows the (moral, objective) imperative to the stance” (Cavell 198). The interest of the essay “Fate” then, is that in it Emerson gives “the basis of his authorship in that passage about riding alternatively on the horses of his private and his public nature […] that objectivity is not a given but an achievement” (Cavell 203).

But before we can understand Emersonian “double consciousness” as an egalitarian principle crucial for contesting and amending the constitution of politics, “we of course must ask […] what the source is of his conviction in his own objectivity, his ability, as he puts it in the poem he composed as an epigraph for ‘Fate,’ to read omens traced in air” (Cavell 200). For Cavell, this oppositional objectivity relies on language: “Emerson’s way of confronting fate […] is writing […] the power he claims for his words is precisely that they are not his, no more new than old,” that is in being passive and obedient to language, “to read omens traced in air,” Emerson is able to turn fate to power, receptiveness to expression, and reveal the inherent flaws in the governmental logic of slavery itself (Cavell 202). Hence, if at a more global level Cavell can establish that those omens or words are in fact the very language of the constitutional debates surrounding slavery, then “Fate” can be read as an amendment enacted in a common or ordinary context in the name of both socio-political and metaphysical freedom. The most central and convincing piece of textual evidence Cavell points to is a lecture on the Fugitive Slave Law from 1854, where we find Emerson using the terms fate and freedom in the explicitly political context of abolition. Yet, when placed in a broader historical context which includes both the 1848
lectures and his interest in a natural history of the intellect, Cavell’s own argument concerning authority, objectivity and language take on a rather different significance.

In the 1854 lecture on “The Fugitive Slave Law,” Emerson describes how liberty itself is constituted: “a barbarous tribe of good stock will by means of their best heads secure substantial liberty. But when there is any weakness in race, as in the black race, and it becomes in any degree matter of concession and protection from their stronger neighbors, the incompatibility and offensiveness of the wrong will, of course, be most evident to the most cultivated” (AS 80). Here authority and freedom are not simply linguistic and philosophical achievements but are instead achieved by the right mix of “stock” and intellect. The implication is anything but egalitarian. The responsibility to defend the “weaker race,” the ability to speak and judge in the place of others, is a result of the correspondence between the moral sentiment and natural laws which makes itself known to the “most cultivated” intellects. What separates the best minds of the “tribe” from the “wrong will” is the polarity or bias which governs not only the subject but the world itself: “There are two forces in nature by whose antagonism we exist: the power of Fate, of Fortune, the laws of the world, the order of things, […] the material necessities, on the one hand; and Will, or Duty, or Freedom, on the other. May and must: the sense of right and duty […] and the material necessities […] In vulgar politics, the Whig goes for […] the must; the reformer goes […] for the mays” (AS 81). The authority of amending and authorship then is primarily metaphysical and ontological and not, as Cavell seems to think, simply ethical and epistemological.

Yet, for Emerson, this antagonism is not beyond the meliorative logic of marriage: “each of these parties must of necessity take in, some manner, the principle of the other” (AS 81). If, as Emerson later argues in “Fate,” that “Fate involves the melioration,” it can also be said that there
is a very real limit on a particular individual’s “instinct to rise” (CW 6: 19, AS 82).

Acknowledging this limit was perhaps the only way to preserve teleology and come to an understanding of the imbalances in national development Emerson had begun to question after 1848. But given the preeminence of the metaphysical and the ideal, he could confidently assert “if we are whigs, let us be whigs of nature and science, and go for all the necessities. Let us know that over and above all the musts of poverty and appetite, is the instinct of man to rise, and the instinct to love and help his brother” (AS 82). The logic here is quite revealing: necessity always bears a relation to freedom, and though, from our limited perspective, it is quite difficult to see that our sufferings always contribute to progress, necessity is nonetheless the consequence and precondition of progress and freedom. In order to understand Emerson’s full and confident endorsement of determinism, then, we need to look to the scientific work he was appropriating both in his abolitionist work and his mature thoughts on his travels to England. As Walls has shown, the central question Emerson was facing in the 1850s was “how the masses could be organized into a true social science” which could meet the metaphysical demand for order in a world that was increasingly confronting “the Emersonian individual with dilemmas of chance, choice and determinism” (Walls 167).

Emerson’s involvement in the struggle for abolition pressed him to rely more than ever on the findings of natural science. As Finseth has argued, “an account of progressive freedom and racial melioration based in natural science worked to authorize the abolitionist cause by aligning its claims not only with moral law but with the very processes, the phenomena, of nature” (Finseth 735). Thus, it was poetic science and its ecstatic and prophetic intuitions which underwrote the confident authority and objectivity Cavell locates in “Fate.” But Emerson, in involving himself in the political realm, was forced to admit, “whilst I insist on the doctrine of
the independence and the inspiration of the individual, I do not cripple but exalt the social action. Patriotism, public opinion, have a real meaning, [...] A wise man delights in the powers of many people. Charles Fourier, noting that each man had a different talent, computed that you must collect eighteen hundred or two thousand souls to make one complete man. We shall need to call them all out” (LL 11). What the political crisis of the 1850s had made clear was that abolition would require “the powers of many people” to be coordinated, that the particular, national and universal mind would need to be unified. Thus, as Nicoloff has argued, “Moving in his own thinking from an emphasis upon individual liberty to an emphasis upon corporate destiny, Emerson welcomed all theories which seemed to hem man in and attach him to a fate, formulas for ‘national genericulture’ which would explain the triumphs and failures of nations as well as individuals” (107).

While Nicoloff overstates the ease with which Emerson accepted the deterministic implications of fate, he is correct in locating the importance of Robert Chamber’s idea of arrested and progressive development. That influence had allowed Emerson to argue that for an organism at “the precise moment of ascent, [...] some more or less astounding and provoking challenge” would occur and that “the corollary to this theory of growth was that it was that it was in the very moment of initial ascent that nations exercised the greatest mental power” (Nicoloff 235). The importance of Chambers’ evolutionary theories for Emerson’s own concern with melioration becomes particularly clear in English Traits (1856). In that book he would argue that the English mind was “in a state of arrested development” because the English people did not “occupy themselves on matters of general and lasting import, but on a corporeal civilization [...] there is cramp limitation in their habit of thought [...] there is a drag of inertia which resists reform in every shape” (CW 5: 172). What arrested development named was “the method by which
organisms developed from lower to higher […] where the final form of an organism was
determined by the stage at which development was arrested in the embryo […] change occurs
when, in response to external conditions the ‘embryonic progress’ is arrested or advanced” or, as
he would say in “Fate,” “the races meliorate, and man is born. But when a race has lived its term,
it comes no more again” (Walls 170; CW 6: 8). In short, British materialism marked the end of
its melioration, the close of its “term.”

In the chapter titled “Race” in English Traits, Emerson noted that while “an ingenious
anatomist” had claimed that “races are imperishable, but nations are pliant political
constructions” he had not founded his theory on a law or disclosed its “ideal or metaphysical
necessity” (CW 5: 24). In pointing to the lack of consensus concerning “where a race begins or
ends,” Emerson suggested instead that the “inconvertibleness of races as we see them is a weak
argument […] since all our historical period is a point to the duration in which nature has
wrought. Any the least and solitariest fact in our natural history, such as the melioration of fruits
and of animal stocks, has the worth of a power in the opportunity of geologic periods (CW 5: 24,
27). For Emerson race was therefore a factor in any account of England’s historical development
and its social “traits” but, as he says, “whilst race works immortally to keep its own, it is resisted
by other forces. Civilization is a reagent, and eats away the old traits” (CW 5: 26). Melioration
finally overcomes limitation but only when nature offers up the “opportunity” for civilization.
Thus, England’s power was a result both of “geologic” opportunity and of the racial hybridity
that accompanied its geographic expansion: “The best nations are those most widely related; and
navigation, as effecting a world-wide mixture, is the most potent advancer of nations. The
English composite character betrays a mixed origin. Everything English is a fusion of distant and
antagonistic elements” (CW 5: 27). The trade-off is severe. Emerson refuses to fix race, but in
doing so, endorses imperialist navigation in the name of a kind of hybridized international
development.

In “Fate,” Emerson makes clear that the need for cultivation and intermixing the
melioration of the intellect demands “cold and sea will train an imperial Saxon race, which
nature cannot bear to lose, and, after cooping it up for a thousand years in yonder England, gives
a hundred Englands, a hundred Mexicos. All the bloods it shall absorb and domineer: and more
than Mexicos, —the secrets of water and steam, the spasms of electricity […] the chariot of the
air, the ruddered balloon are awaiting you” (*CW* 6: 17). But the double bind of melioration was
that it just as often could be put to progressive ends—in arguing for a global inter-racial
marriage—as it could uphold an implicit white supremacy. As Walls writes, “Emerson had to
accept as fact that Indians and blacks were less developed, hence a link with the animal
kingdom” (Walls 184). Emerson’s concern for a reunification of the United States and an end to
slavery took the shape of what Finseth has called “blood cosmopolitanism,” or an “understanding
of national destiny that envisioned racial struggle as integral to the ascent and inevitable union of
the United States” wherein “the volatile energy of racial conflict, like that of indidual dissent,
would serve not to disrupt the Union but to provide the dialectic of change and progress
necessary to its well-being” (Finseth 730). Thus, the teleological energy of the universal mind
would domineer all the blood of the various races in its unfolding, only sparing those
components needed for the new hybrid human fit for the modern age.

When commenting directly on the massive movement of peoples across the globe in the
nineteenth century in the pages of “Fate,” Emerson argued:

> We see the English, French, and Germans planting themselves on every shore and
market of America and Australia, and monopolizing the commerce of these
countries. We like the nervous and victorious habit of our own branch of the family. […] The German and Irish millions, like the Negro, have a great deal of guano in their destiny. They are ferried over the Atlantic, and carted over America, to ditch and to drudge, to make corn cheap, and then to lie down prematurely to make a spot of green grass on the prairie (CW 6: 8)

This passage is nothing if not chilling, as it appears to suggest that imperialist modernization and racial oppression are the necessary consequence of both melioration and America’s national destiny. The obvious question to ask is how Emerson, the passionate abolitionist, could say such a thing? Eduardo Cadava has argued that “when Emerson evokes the figure of guano in his essay ‘Fate,’ he recalls a commodity that bears the traces of the history of American imperialism and colonization” (OE 119-120). But, for Cadava, this evocation, this “linking of a natural development that gives birth to the related process of colonization and capitalism,” is meant as “an evocation and analysis of the various kinds of discourses that throughout history” have justified racial inequality and slavery (OE 115, 111). Thus, “Emerson takes the risk of ventriloquizing the language of pro-slavery propaganda” to “recontextualize this language not only within an antislavery argument but also within a more general reflection on the nature of race and the violence that takes place in its name” (OE 121). Cadava suggests that “Fate” offers “a kind of secret genealogy of what makes racism and slavery possible” (OE 106).

But what falls out of view in assigning discourse this kind of power is the story about language Emerson had told since Nature (OE 106). If Cavell sees the words of “Fate” as amending, then for Cadava they ventriloquize. But Emerson’s claims about the “irresistible dictation” authorizing his moral critique is rooted in a metaphysical stance that is no less guilty of racial essentialism. “Fate” gains its authority from an inhuman, impersonal speech emanating
from an “original cause” that offers power to the human intellect on the condition of its receptivity (CW 6: 2). Only when we open our eyes “to the omnipotence of [divine] law”—accepting “what is, must be”—does “truth come to our mind” allowing us to “act as legislators” and “speak for nature” (CW 6: 14). While such prophetic judgment might condemn slavery and show man to be “a stupendous antagonism, a dragging together of the poles of the Universe” rather than a mere “order of nature,” it nonetheless sees in inequity and limitation an inexorable moral order that can only be welcomed and never challenged (CW 6: 12).

This is evident by following Cadava’s situation of Emerson’s figure of guano in the context of capitalist modernization. This figure marks Emerson’s single encounter with the writings of Marx. In a journal entry from 1853 labeled “Fate,” Emerson cites Marx’s “Forced Emigration” article from the New York Tribune: “the classes & the races too weak to master the new conditions of life must give way” (SJ 606). In that article, Marx had argued that the rural population was being merged with the industrial proletariat in the process of industrial development. Consequently, the “German and Irish millions” were being forcefully displaced across the globe to feed its vital labors to modernization very much like the guano that was being imported to America to keep agricultural production profitable (SJ 606). But where Marx and Emerson part ways, is that, for the former, industrialization did not reveal an organic unity of mind and nature but a metabolic rift instead. The optimism Emerson projected in “Fate” would be for Marx a dangerous mystification: “A breath of will blows eternally through the universe of souls in the direction of the Right and Necessary. It is the air which all intellects inhale and exhale, and it is the wind which the worlds into order and orbit. Thought dissolves the material universe, by carrying the mind up into a sphere where all is plastic […]. Always one man more than another represents the will of Divine Providence to the period” (CW 6: 15).
But to be clear, the power that emerges from the intellect’s dissolution of fate never appears in its ideal form. As Emerson writes in “Power,” “power, to be sure, is not clothed in satin. ‘Tis the power of the lynch law, of soldiers and pirates; and it bullies the peaceable and loyal. But it brings its own antidote; and here is my point,—that all kinds of power usually emerge at the same time; good energy, and bad; power of mind, with physical health; the ecstasies of devotion, with the exasperations of debauchery” (CW 6: 34). There is, here, a certain parallelism between Marx and Emerson when it comes to the question of creative destruction, a certain faith in the face of fate that the tension between modernization and humanity can be reconciled even if through bloodshed. Yet, when it comes to identifying the source of such optimism, the two couldn’t be farther apart: Emerson’s slow recognition that we are “incompetent to solve the times” and unable to “reconcile” the tension between the ideal would always be supplemented by his poetic science’s marriage of material knowledge and spiritual intuition: “We are sure, that, though we know not how, necessity does comport with liberty, the individual with the world, my polarity with the spirit of the times” (CW 6: 1, 2).
Chapter Two

“I could see that the scientific task of the twentieth century would be to explore
And measure the scope of chance and unreason in human action, which does not yield to argument but changes
slowly and with difficulty after long study and careful development”
—W.E.B. Du Bois

As a Black intellectual committed to understanding the processes of racialization, the
effects of the color line, and the origins and meanings of the concept of the negro, W.E.B. Du
Bois was deeply concerned with the growing influence of the modern sciences. More
particularly, he was both a critic of and participant in the emergence of the social sciences in
America at the turn of the century. As my epigraph indicates, the patterned regularities, laws, and
deterministic tendencies uncovered by scientific research drew his attention to shifting
understandings of human agency and their socio-political and ethical implications. In the
opening of the twentieth century, disciplines like sociology, ethnology, and anthropology served
as key sites of mediation between the natural world and human sociality. Both racial and social
issues became shared concerns in light of the spread of statistical forms of inquiry, intensifying
interest in evolutionary biology, and the political dilemmas generated by modernization. While
many thinkers in this period looked to the interanimations between nature and culture, tarrying
with the specter of determinism as they studied the connections between the natural and human
sciences, Du Bois’s commitment to the eradication of white supremacy placed his thinking on a
different trajectory. In this chapter, I show how his reflections on the relationships between law
and freedom, determinism and chance, and the manifest and scientific images of the world issued
from a unique vantage that led him to develop hybrid modes of inquiry and composition that
trouble any categorical division between aesthetic and scientific modes of abstraction.
While Du Bois has been received as a vital figure in the development of the Harlem Renaissance, a founder of Black Studies, and an integral thinker of the African American experience, he has not, until very recently, been acknowledged as a key interlocutor in the momentous interdisciplinary debate concerning the impact of statistical and biological discoveries for thinking about human agency and social development. He is perhaps most familiar as the figure who inaugurated a widely influential account of the Black subject’s experience of double consciousness. Yet, what is often forgotten is that in his initial formulation he linked the burden of double consciousness with the gift of second sight. Du Bois’s second sight made him one of the most acute and sensitive critics of social science and social Darwinism when he was coming into his full power as an intellectual in the era historians have termed the classical period of sociology (1890-1910). Far from being a minor figure in the realm of sociology, Du Bois, according to Aldon D. Morris, “founded the first school of scientific sociology in the United States” (Morris 1). Morris’s work not only recovers the foundational role Du Bois played in the history of American sociology but also highlights his unique methodological innovations in his attempt to study and describe the processes of racialization and the structures of Black social life in America. In sharp contrast with “White social scientists,” Morris argues, “Du Bois insisted that the newly emerging social sciences be built on careful, empirical research focused on human action” (Morris 3). “Because he believed that an authentic social science was possible and that superior and inferior races did not exist,” Du Bois established “a sociological laboratory where systematic empirical research was conducted to determine the scientific causes of racial inequality” (Morris 3). Though he sometimes voiced a variant of the “value-free ideal” in matters pertaining to the veracity of scientific forms of investigation in his early writings, he was actually committed to an instrumentalist and activist
conception of the sociologist’s vocation that made space for the incalculable, affective, and qualitative dynamics of human experience.

While Du Bois believed scientific methods could produce bodies of objective knowledge that might combat widespread pseudo-scientific assertions concerning white supremacy, he did not uncritically embrace positivism. Instead, he bolstered his empirical work with speculative explorations of modes of experience and expression that evaded statistical and mathematical measurement. Given the widespread linkages between social and biological determinism and overtly racist popular accounts of Black inferiority, Du Bois worked on two fronts simultaneously. He tirelessly worked gathering data that often evidenced “patterned behavior that unfolded in lawlike fashion,” while simultaneously highlighting “unpredicted lines of human action driven by chance” (Morris 26). Rather than embrace a static opposition between law and freedom—or collapse them in an Emersonian fashion—he suggested that “human agency had to be studied as a creative force capable of generating new directions and possibilities” out of the very “patterned social structures” which condition everyday life (Morris 29). While his dialectical view of the relations between chance and regularity owed much to paradigmatic changes in the natural sciences and his familiarity with the work of the pragmatists, his interest in racialization sensitized him to the normative and political dimensions of these new scientific paradigms. As Elazar Barkan has argued, “during the mid-nineteenth century, race became an all-consuming passion and was to prove especially alluring to the evolving social sciences” (Barkan 696). The work of Francis Galton, the founder of eugenics, was of particular importance because his attempts to align “heredity and genius” helped to advance and popularize “the development of statistics” (Barkan 699).
As we already glimpsed in Emerson’s reflections on fate and race, evolutionary thinking in the life sciences and social scientific deployments of statistical reasoning, led many to see individuals and their capacities in relation to groups and populations who existed in a developing historical, biological and environmental matrix. Du Bois, with the help of figures like Franz Boas, moved away from biological accounts of race toward cultural accounts that emphasized the capacity of individuals to stray from limits imposed by supposedly predictive and objective categories. Striking out on a middle road, he acknowledged that race was in some ways a unifying or shared factor in the way social groups take shape, but he did so without accepting Galton’s premise that heritable characteristics account for the whole meaning of race.

Nevertheless, in the early decades of the twentieth century, Du Bois was still struggling with the concept of race as he moved toward a more constructivist and international understanding of what it meant to be a “negro.” As we will see, the shifting implications of debates about race directed his attention to the scientific advances of his day. In The Negro (1915), for instance, he argued that the effort to clearly delineate the “scientific determinants of race” had gradually been “given up” as more and more thinkers realized “that there [were] no hard and fast racial types” (Negro 9). Instead, scientific research had given rise to the recognition that “race is a dynamic and not a static conception, and the typical races are continually changing and developing, amalgamating and differentiating” (Negro 9). This is to say that Du Bois articulated a contingent and evolving biocultural understanding of racial difference. Given that “no scientific definition of race was possible,” attention to the “striking differences” between “men and groups of men” could “only indicate the main divisions of men in broad outlines” (Negro 7). Thus, cultural and sociological inquiry was an essential supplement to the work of biologists.
Like the other figures discussed in this project, then, Du Bois respected the sciences while also stressing aesthetic and affective experience—αἴσθησις or aiesthesis—as the necessary precursor and ground to rule-bound rationality. He stressed the roles embodiment and imagination played in volition and thought working to trace the intersections and entanglements between social and economic forces and the “souls” of emplaced and finite human persons. His concern for the experiences and emotions of distinct individuals and broader social groups led him to see aesthetic experience, artistic form, and cultural practices are providing unique kinds of knowledge. Throughout his wide body of writings, music, song, sound, and lyric poetry emerge as privileged sites through which the affective and speculative experiences of individuals and groups are made communicable and thus available for public reflection.¹ Far from treating aesthetics as autonomous from social and historical forces he emphasized how aesthetic experience and form resonates with—and remains entangled in—the material, historical world while also carving out new possibilities and forms of organization from it.² Simply put, Du Bois recognized that art and aesthetics were integral concerns for both modern social science and a democratic society. Although his equation of art with propaganda in the mid-1920s has inspired intense debate and his own works of fiction have often warranted criticisms for their tendency to play into tired generic formulas and overt political allegorizing, the aesthetic dimensions of his work are not bound by ideological dogma or generic conventions. Du Bois’s pioneering of a

¹ Marina Bilbija has argued that “music, and African American spirituals in particular,” acted for Du Bois as “an ‘alternate archive’ of feeling and experiences” that might “address questions that traditional histories could never adequately pose or answer” (Bibija 71). Music thus serves as a metaphorical register for thinking about “bondage and freedom” as song is frequently linked with “the ineffable experience of emancipation” (Bibija 72). See Bilbija, “Democracy’s New Song: Black Reconstruction in America, 1860-1880 and the Melodramatic Imagination.” The Annals of the American Academy (2011): 64-77.

² As John Gilroy has argued, Du Bois’s “self-consciously polyphonic form” of composition, with its singular fusion of history, statistics, sociological description, poetic figuration and Biblical allusion was a result of his recognition of the inadequacies of “available scholarly languages” to reckon with the moral, political and “intellectual dilemmas” he faced (Gilroy 115). See Gilroy, The Black Atlantic: Modernity and Double Consciousness (New York: Verso, 1996).
sociology that was not premised on determinism alone but took creativity into account opens a new way of understanding the relationship between democratic practice and aesthetic inquiry in these writings that moves beyond ideology or propaganda.

In fact, Du Bois is often most insightful, poetic, and imaginative in texts and essays which subvert and challenge categorization. Ross Posnok has suggested that one of the defining features of Du Bois’s work is its pragmatist tendency to make “productive use of tensions,” often adopting “denaturalizing strategies of incongruity” (Posnok 40-41). This is particularly evident in the boundary defying works considered here, where the scientific and aesthetic rub up against one another at surprising junctures. Perhaps the most familiar instance of such formal hybridization and contrapuntal organization is Souls of Black Folks (1903), a text renowned for its rigorous structural design. As we will see in what follows, the core set of metaphors set loose in Souls—the veil, double consciousness, and second sight, as well as the rich communicative and affective powers of music, song and voice—traverse the discursive fields in which Du Bois moved and act as nodes of entanglement between the aesthetic and scientific.3 Refusing a facile divorce of fact from feeling, or reason from imagination, Du Bois inhabited a meeting-place between the aesthetic and scientific animated by a concern for social justice and the phenomenological dynamics of social identification and differentiation in a democratic society.4

3 Andrew Weheliye has argued that the presence of musical notation and canonical lyric poetry throughout Souls enacts a crucial and unique remix or dub in which Du Bois enacts a crucial historical revision wherein Black subjectivity and its productive and exploited agency are made integral to the development of Western modernity. Weheliye writes that Souls “transposes spirituals into the realm of ‘legitimate’ written culture” and thereby “vernacularizes European writing” so that “poems by Schiller, Byron, Lowell, and Whittier” form “a symbiosis with the spirituals” (Weheliye 99). In doing so, “Du Bois slyly forces these Western texts to testify to slavery and the absent presence of black subjects, both as empirical entities and as apparitions integral to and unequivocally of Western modernity. Read or listened to in tandem with the musical bars, then, the poems are the lyrics to the ‘Sorrow Songs, creating a new form of spiritual in their admixture’” (Weheliye 99). See Weheliye, Phonographies: Grooves in Sonic Afro-Modernity (Durham: Duke University Press, 2005).

4 Nick Bromell has argued that Du Bois outlines a vital theory of “democratic reasoning” that emphasizes the importance of “situated and embodied” experience while privileging “the knowledge gained by those who are least empowered and who suffer the most in the polity, suggesting that their perspective is the one by which the polity most needs to be guided” (Bromell 166). From this pluralist and pragmatist perspective, “no individual’s
In this chapter, I work against a common break narrative—often supported by Du Bois’s own accounts of his career—that suggests a rapid and total turn from social science and reformism into propagandistic art and revolution. Building on the work of scholars who have traced the intersections of Du Bois’s scientific work and his literary texts, I show how the aesthetic and the scientific are not opposed but complementary registers in his thinking. From his singular vantage, either art or science taken in isolation would be insufficient to meet the complexities of any sustained inquiry into the problem of the color line. As he would later explain in *Dusk of Dawn*, race is best understood as a “group of contradictory forces, facts and tendencies” rather than as a clear and distinct “concept” (*Dusk of Dawn [DD] 133*). This is why he refused to divorce reason from imagination, and it is why, from *The Souls of Black Folks* to his later autobiographies, histories, and novels, we see him modulating from the exacting descriptions of the social scientist to a more allusive, figurative style as he struggles to untangle the meanings and consequences of racial differentiation. Adrienne Brown and Britt Rusert have shown how “Du Bois used fiction to test out and amplify his developing philosophical and sociological positions” (Brown and Rusert 819). Maria Farland has argued that the “oscillation between scientific and literary modes” we find in Du Bois’s early works challenges the suggestion that his turn to political activism entailed a “defection from scientific work” and a

democratic reasoning is by itself truly able to comprehend the whole of any matter” and so we must turn to the imagination in our encounters with the limits of knowledge and reason (Bromell 160). Du Bois’s “democratic epistemology” stresses that “differentiated suffering” serves as “the source of the community’s knowledge” while calling attention to the fact that “the social recognition” of suffering “has to be an act of imagination” (Bromell 168, 177). Because “the democratic whole is always open to further revision and wide inclusion,” Du Bois argued “that the imagination plays an indispensable role in the creation of a democratic political culture” (166). Du Bois’s understanding of the unique challenges and demands of a democratic social world explains his penchant for hybrid forms of imaginative writing. It also explains why “a secularist” and “master of empirical argument and icy logic” he nonetheless continued to draw on and valorize African American spirituals populating his most ‘scientific’ of texts with figures associated with music (Bromell 167). See Bromell, “‘Honest and Earnest Criticism’ as the ‘Soul of Democracy’: Du Bois's Style of Democratic Reasoning.” *A Political Companion to W.E.B. Du Bois.* Ed. Nick Bromell. Lexington: The University Press of Kentucy, 2018. 159-180.
diminished sense of the value of “empirical data” (Farland 1018-1020). Rather than simply locate the determining presence of science in his literary texts, as some scholars have done, I show how questions raised by the spread of modern science beyond the laboratory led him to compose texts which probe and grapple with the challenges of achieving a genuinely democratic social order in a period animated by the specters of racial and social determinism. My interest, then, is in delineating how the methods and insights of both modern science and art are joined in his developing program for achieving Black liberation, a project in which the relation between freedom and limitation, law and chance, are of the utmost concern.

The central focus of this chapter is on two books written in a crucial period in Du Bois’s early career—John Brown (1909) and Darkwater: Voices from Within the Veil (1920)—where questions of scientific determinism, democracy, racial violence, and aesthetics are prominent. My first section sets the stage for interpreting these works by tracing Du Bois’s shifting relation to scientific sociology, highlighting his investment in the epistemic virtues associated with—as well as his growing awareness of the limits of—scientific forms of explanation and prediction. These methodological and theoretical writings about social science bring into sharp focus the importance of attending to the affective and aesthetic dimensions of human experience in any sociological account of human agency. By looking to a posthumously published essay entitled “Sociology Hesitant” (1905; pub. 2000) which is, in Ainsworth Clarke’s words, Du Bois’s “clearest intervention in the debates over the relationship between the natural and historico-cultural sciences,” I show how he fused German Historicism and American Pragmatism to develop an empiricism that paved a middle ground between positivism and an anti-modern rejection of the scientific worldview (Clarke 198). Emerging from debates in the field of fledgling social sciences at the turn of the century, this empiricism was uniquely sensitive to the
profound political and ethical significance of the meanings and implications of science as they entered into the cultural sphere in the form of eugenics and other modes of determinist thinking. “Sociology Hesitant” insists that ours is a world in which law and chance, freedom and fate, coexist in a dialectical relation that demands a fundamental rethinking of human conduct and the methods of sociological inquiry. In its affirmation of the presence of chance in human affairs and the pressing need to determine the limits imposed on individuals by broader social structures, this essay lays out an itinerary that Du Bois would follow for the whole of his career.

Next, I turn to Du Bois’s biography of John Brown to show how Brown afforded a case-study for reflecting upon both the limits of chance and the vexed ethical issue of how to achieve social reformation in an unjust society without violating the social norms requisite of an inclusive and pluralistic society. As William Cain has argued, John Brown was written at “a crucial juncture in Du Bois’s life, while he was contesting the formidable authority of Booker T. Washington, laboring mightily in the Niagara movement, and helping to found the NAACP—and as he was also preparing to take the momentous step of exchanging his academic position at Atlanta University” to take up editorship of The Crisis in New York (Cain 307). As Cain shows, Brown was a figure that occupied Du Bois’s imagination both before and after the 1909 publication of his biography and can be seen as a site where the entanglements of activism, sociology, and literature come into view. John Brown, like Du Bois’s later and more familiar Black Reconstruction (1935), works to reorient “his reader’s sense of political struggle, which is made fundamentally by the masses, not by exalted heroes” and thereby “redefines the history of abolitionism as the story of arduous black initiative” where “black forces” like the “spell of Africa and the animations of the black masses” are central (Cain 325).5

---

5 As Lawrie Balfour argues, “Du Bois’s reconstruction of Brown’s life and legacy, like his re-vision of Reconstruction history, engages the past in order to reflect on democratic possibilities in the present and to offer a
John Brown also evidences the pressures exerted by evolutionary biology on Du Bois’s thinking as in it we see a variant of what Michael Dorr and Angela Logan have called Du Bois’s “assimilationist eugenics,” an account of human evolution that rejected racial essentialism but still embraced the idea of “‘fit’ and ‘unfit’ people” (Dorr and Logan 72). By “constructing a ‘scientific’ counternarrative to combat the ‘scientific racism of mainline white eugenicists’” in the conclusion of his biography of Brown, Du Bois “sought to ‘fight fire with fire,’ turning racist theory on its head” (Dorr and Logan 71). He does so by articulating an alternative reading of Darwin, Weissman, and Galton that gives rise to another, intergenerational conception of human freedom attuned to the reality of biocultural evolution and the vital role affect and imagination play in generating unpredictable events and possibilities (Dorr and Logan 71). John Brown re-centers black initiative and long neglected historical forces originating in the slave trade while emphasizing how affective and aesthetic experiences contain transformative and ethical potential by delineating how Brown’s quest to eliminate slavery was shaped both by chance encounters with black subjects as well as economic and legislative structures.

The emphasis on the power of sympathy, religious belief, and song in John Brown as well as its account of the generational unfolding of human freedom are then shown to be integral to Du Bois’s thinking about the vital role of both art and education in a democratic society in the pages of Darkwater: Voices from Within the Veil. Much like Souls, Darkwater is a hybrid text which gathers together a number of fugitive texts, written between 1900 and 1920, while also fusing a range of compositional modes. As Arnold Rampersad suggests, Darkwater “incorporates and dramatizes the tensions between the forces that shape his thought, especially

---

vantage on both past and present that provides theoretical traction for envisioning a different future” (Balfour 48-49). See Balfour, Democracy's Reconstruction: Thinking Politically with W.E.B. Du Bois (New York: Oxford University Press, 2011).
between socialism, black nationalism, liberal idealism—the triangulation essential to his middle Years” (Rampersad 170). I bring this chapter to a close by considering two chapters of the book—“The Immortal Child” and “The Ruling of Men”—show how my earlier discussions of the visions of social struggle, human agency, and bio-cultural development inform his arguments for the importance of education in a democratic society. For Du Bois, the transformative force of industrial and institutional modernization must be paired both with an egalitarian affirmation of the innate capacities as well as with potentialities of all persons and the creation of modes of organization and governance that draw from the resources of both artistic and scientific forms of inquiry and expression. By emphasizing the importance of the affective and imaginative experiences of all individuals—and the importance of sympathy and communication—Du Bois posits a view of democratic action and governance that turns on an understanding of the growth and operation of an inclusive community of inquirers united by “the Wanting of the Wants of All” (Darkwater: Voices from Behind the Veil [DW] 92). For such a community, both art and science are vital means for realizing the potentials and hopes of its members in a world shaped as much by chance as much as by law.

Limits and Chances

In 1897, Du Bois remained confident that systematic and rigorous studies of the color line and the so-called Negro problem could “be furnished by two agencies alone: the government and the university” (The Problem of the Color Line at the Turn of the Century: The Essential Early Essays [EE] 93). It is no surprise, then, that his experiences at the University of Pennsylvania and the University at Atlanta, plus his turn to a more public form of political activism, eventually led him to break with both of these institutions in 1910 (EE 93). As he would recount in his reflective essay “My Evolving Program for Negro Freedom” (1944), in the
first decade of the twentieth century his attitudes towards “social science began to change” when he recognized that “in the study of human beings and their actions” no “rift between theory and practice, between pure and applied science” was possible, unlike “in the study of sticks and stones” (“Program” 46). Facing a set of “situations that called—shrieked—for action, even before any detailed, scientific study could possibly be prepared,” Du Bois invented an improvisatory, flexible and experimental mode of critical practice that cuts across any ready-to-hand or common place binary precisely because of its processual and provisional character (“Program” 47). In a remarkable passage, he writes:

It was as though, as a bridge-builder, I was compelled to throw a bridge across a stream without waiting for the careful mathematical testing of materials. Such testing was indispensable, but it had to be done so often in the midst of building or even after construction and not in the calm and leisure long before. I saw before me a problem that could not and would not await the last word of science, but demanded immediate action to prevent social death. I was continually the surgeon probing blindly, yet with what knowledge and skill I could muster, for unknown ill, bound to be fatal if I hesitated, but possibly effective, if I persisted. (“Program” 47)

Importantly, Du Bois doesn’t announce a total abandonment of science here, but instead he shifts away from some of its central assumptions and norms. Casting himself in the role of a technician working in the external world as a carpenter and in the internal world as a surgeon, he emphasizes the integral relation between theory and practice. This is particularly clear in the assertion that “the social scientist [can] not sit apart and study in vacuo; neither on the other hand, [can] he work fast and furiously simply by intuition and emotion, without seeking in the
midst of action, the ordered knowledge which research and tireless observation might give him” (“Program” 47). This interplay between intuition and emotion, and between research and tireless observation. is, I would argue, the shaping force of Du Bois’s thinking.

Though he recognized that “not science alone could settle this matter, but force must come to its aid,” he nevertheless stressed that scientific modes of research and observation couldn’t be abandoned (Writings 557). While his legendary sociological work The Philadelphia Negro (1899) treated the problem of racism “as a matter of education, as a matter of knowledge; as a matter of scientific procedure in a world which had become scientific in concept,” the waves of racial violence sweeping the nation at the turn of the century forced him to reconsider this straightforwardly scientific approach (Writings 557). More particularly, the lynching of Sam Hose in 1899 marked a shift that he frequently returned to in many of his writings. In Dusk of Dawn, he explained:

At the very time when my studies were most successful, there cut across this plan which I had as a scientist, a red ray which could not be ignored. I remember when it first, as it were, startled me to my feet: a poor Negro in central Georgia, Sam Hose, had killed his landlord’s wife […] he was] lynched, and they said that his knuckles were on exhibition at a grocery store […] Two considerations thereafter broke in upon my work and eventually disrupted it: first, one could not be a calm, cool, and detached scientist while Negroes were lynched, murdered and starved; and secondly, there was no such definite demand for scientific work of the sort that I was doing. (Writings 603)
The murder of Hose is but one beam in the “red ray” of racial violence cast across the United States. One effect of this spectacular violence was to enact an ethical and emotional blow to scientific detachment that cast light on Du Bois’s own marginalized position within the academy and its institutionalized neglect of the question of blackness itself.

The frequent and spontaneous outbreak of extra-legal violence also stood as concrete evidence of the fundamental incalculability of human action and the limits of mere fact. Du Bois’s exposure to racial violence in the American South thus made him sensitive to the presence of chance and the “rhythms and tendencies; coincidences and probabilities” that existed alongside the “actions of physical law in the actions of men” (“Program” 48). As we will see, chance was a doubled concept for Du Bois that simultaneously marked the possibilities and dangers of the contingencies operative in human action. In his account of his intellectual development, he underwent a transition from the influence of “Schmoller and Weber” back to the thinking of “Royce and James” (“Program” 47). Through his studies at Harvard and abroad in Germany, Du Bois came into contact with a set of interlocutors—William James, Josiah Royce, and George Santayana in Cambridge; Gustav Smoller, Wilhelm Dilthey, and Max Weber in Berlin—all of whom were all concerned with the relationships between the natural and human sciences. If, as he would later explain, “the main result of [his] schooling” at Fisk University had “been to emphasize science and the scientific attitude,” then his advanced academic work made him aware of the theoretical and ethical risks associated with a purely positivist program (Writings 590).

---

6 Numerous commentators have stressed the formative influence of both German Historicism and American pragmatism on Du Bois’s singular tendency to “turn apparently opposing forces” like law and chance or art and science “into complementary ones” (Lemke 75). See Sieglinde Lemke, “Berlin and Boundaries: Sollent versus Geschenhen" in boundary 2 (2000): 45-78.
In this way, as Shamoon Zamir suggests, Du Bois was, in his earlier years as a student, enveloped in “the epistemological crisis that dominated philosophy, science and the social sciences in the late nineteenth and early twentieth centuries” (Zamir 1). His exposure to American Pragmatism and German Historicism aided him in thinking through the possibilities of a wholly scientific sociology. At the same time, his passionate and personal investments in the so-called Negro Problem, especially at a time of widespread racial violence and political domination in the United States, determined the engaged and restless nature of his thinking and made him uniquely sensitive to the critical limits of existing institutions and the risks of a rising determinism. It is important to acknowledge how transformative Du Bois’s two years abroad in Europe were on both a personal and an intellectual level. In his own words, his “Wanderjahre in Europe gave” him the opportunity to look “at the world as a man and not simply from a narrow racial and provincial outlook” (“Program” 35). German society proved to be a more open environment and thus served as an instructive standpoint from which to reframe his own life in America. His studies at the University of Berlin occurred in the midst of what Sieglinde Lemke has described as “the controversy over the value and purpose of scientific research (Werturteilsstreit) that dominated the social sciences in Berlin and Europe between 1883 and 1911” (Lemke 56). Du Bois studied with three figures who organized the Verein fur Sozialpolitik (Association for Social Policy)—Gustav Schmoller, Adolf Wagner, and Heinrich von Teritschke. Kenneth Barkin has argued it was from their work that Du Bois “developed a strategy for dealing

---

7 For a sensitive and short exploration of Du Bois’s engagements with German historicism and American pragmatism, see Kwame Anthony Appiah’s Lines of Descent: W.E.B Du Bois and the Emergence of Identity. Appiah has noted that at Harvard the “combined forces of James and Royce” led Du Bois to “a body of argument attuned to the nonrational wellsprings of human behavior and another attuned to the collective dimension of human purpose and strivings” (145). Thus, “in the conjunction of James and Royce, two amiable sparring partners, you had the former’s appreciation of the contingency of social forms and the latter’s sense of their power, value and even necessity. You had the pragmatist’s suspicion of the ‘natural’ and the idealist’s sense of how purpose arose in community” (Appiah 147). See Appiah, Lines of Descent: W. E. B. Du Bois and the Emergence of Identity (Cambridge: Harvard University Press, 2014).
with the color line in the United States” (Barkin 89). The Verein exemplified a project for social reform in which historical, theoretical, and scientific research might shape debates in a public sphere undergoing a massive social and economic transition. Du Bois’s attempts to “mitigate racism in the United States” through organized research and knowledge production from 1894 until 1910, including his 10-year research program at Atlanta University, owe much to his studies and experiences in Germany. Upon his return to the US, however, the model exemplified by the Verein came to seem impractical as he experienced academic marginalization and became embroiled in a long running conflict with Booker T. Washington.

Du Bois’s thinking about the relations between chance and law should be seen as a part of a broader philosophical shift at the turn of the century which concerned two novel forms of scientific explanation: evolutionary accounts of biological development and the emergence of statistical models of order and change. As Robert Brandom suggests, these shifts found their definitive expression in the work of the American pragmatists. The pragmatists embraced “evolutionary-statistical forms of intelligibility,” shifting from one modal pole—that of necessity—to that of probability (Brandom 7). In breaking with Newtonian conceptions of law and order, they became more sensitive to the processes of adaptation and habit, generating a more provisional and fallible conception of law-like regularities in the natural and social world. Philosopher and historian of science Ian Hacking has described in detail how the emergence of statistical studies of social groups in the nineteenth century relying on probabilistic methods opened the way to viewing the world as “regular and yet not subject to universal laws of nature” (Hacking 1). The very forms of sociological investigation and statistical data collection in which Du Bois was engaged with thus helped to enact a “taming of chance,” well before breakthroughs in twentieth century physics, led many to abandon familiar and longstanding conceptions of
causality (Hacking 5).\textsuperscript{8} In short, in this period chance ceased to be seen as an irrational or foreign force. Instead, thinkers began to approach it as something that operated within and alongside law-like regularities. Ironically, the dogged pursuit of a deterministic social science gave rise to an acceptance of the actuality and presence of chance itself.

Du Bois’s thinking about how both law and chance operate in the social field find its clearest articulation in the posthumously published essay entitled “Sociology Hesitant” (1905). This essay was written in the wake of Du Bois’s trip to the 1904 St. Louis Congress of Arts and Sciences, an event intended to exemplify the unity of scientific knowledge at the opening a new century. But rather than evidencing unity, the congress, or Du Bois, “served to emphasize painfully the present plight of Sociology” and exemplified a “fundamental confusion of thought at [its] very foundations” (EE 271). Given the “increased and increasing interest in human deeds,” evidenced by a general concern with “the individual life and motive, the machine-like organizing of human economic effort, and the extension of all organization to the ends of the earth,” he stressed that sociology ought to have been esteemed as one of the most promising and rich fields “for the Scientist,” rather than ambiguously categorized as a minor branch of the tree of universal knowledge (EE 272). The essay argues sociology’s development in Auguste Comte’s wake was haunted by a fateful and strange hesitation “as to the real elements of Society” (EE 272). Pointing to Comte’s suggestion that unlike in the “inorganic sciences” the sociologist ought not “proceed from the simple to the compound,” Du Bois argues that Comte, perhaps unintentionally, substituted the study of an abstracted ‘society’ for an empirical account of particularized “Human Action” (EE 272).

\textsuperscript{8} For a particularly clear example of the way statistics and art meet in Du Bois’s work, see \textit{W.E.B Du Bois’s Data Portraits: Visualizing Black America} (eds. Whitney Battle-Baptiste and Britt Rusert, New York: Princeton Architectural Press, 2018).
From this initial misstep or hesitation, it was a short jump to Spencer’s invocation of other metaphysical abstractions like the “biological analogy” and “consciousness of kind” which could only contribute to rising social Darwinism and an uncritical embrace of the categorizing logic of racialized thinking (EE 273-274). Instead of “seeking men as the natural unit of associated men,” sociologists “strayed further in metaphysical lines, [. . .] confounding Things with Thoughts of Things” (EE 274). At the heart of these difficulties was sociology’s relation with what Du Bois terms “the Great Assumption of real life”; namely, the assumption that “in the deeds of men there lies along with rule and rhythm—along with physical law and biological habit, a something incalculable” (EE 274). Once this grounding assumption is acknowledged, the idea of “launching of a science which would discover and formulate the exact laws of human action and parallel ‘heat as a mode of motion’ with a mathematical formula of ‘Shakespeare as pure Energy’ or ‘Edison as electrical force’[. . .] seemed to be and was preposterous” (EE 274). Thus, the emergence of sociology was infused with “a hesitancy in attacking the great central problem of scientific investigation today—the relation of the science of man and physical science” (EE 277).

Du Bois’s point was that while this assumption is not subject to the established protocols of verification, it nevertheless underlies the work of the most successful and methodologically self-conscious social scientists. The reason for this foundation is because “this assumption is ever with us—it pervades all our thinking, all our science, all our literature; it lies at the bottom of our conception of legal enactments, philanthropy, crime, education and ethics; and language has crystallized the thought and belief in Ought and May and Choice” (EE 274). Though unwilling to leave behind human normativity and the realm of human intentionality, he does not deny the scientific contributions of a number of sociologists. Against those who might truck in
abstraction, the “true students of sociology” had refused to “cloud their reason with metaphysical entities undiscovered and undiscoverable, and […] also refused to neglect the greatest possible field of scientific investigation because they are unable to find laws similar to the law of gravitation” (EE 276). By applying “statistical measurement and historical research” to “the distribution of population by dwelling, age, and sex,” and “by a study of the social outcast called the criminal,” these true students of society made “the unit of investigation” the “Individual Man” (EE 276). Yet, any empirical account of individual persons must involve what moves under the earlier headings of “ought, may, and choice.” Therefore, when human agents are under investigation there can be no radical separation of fact and value. The way forward from these early hesitations required a “working hypothesis which will include Sociology and physics” and the provisional assumption “that this is a world of Law and Chance” (EE 277).

Du Bois recognized that the power and promise of scientific social inquiry would be compromised without some kind of “reconciliation of the two great wings of Science” (EE 278). By admitting chance and indeterminism as postulates, he was clear that one didn’t need to “hinder the search of natural law” (EE 227). Rather, such postulates simply suspend “as unproved” the “improbable” and “wilder hypotheses” of radical determinism (EE 277). However, it is true that when we look “over the world we see evidence of the reign of law”; or, as Du Bois goes on to write, as we rise “from the physical to the human there comes not simply complication and interaction of forces but traces of indeterminate force until in the realm of higher human action we have chance” (EE 278).

It is notable that “Sociology Hesitant” frames the question of law and chance temporally and aesthetically in terms of rhythm. If the rhythm in “birth and death rates and the distribution of sex” reveal clear limits to chance, then as we rise in
“the realm of conduct we note a primary and a secondary rhythm. A primary rhythm depending as we have indicated on physical forces and physical law; but within this appears again and again a secondary rhythm which while presenting nearly the same uniformity as the first, differs from it in its more or less sudden rise at a given time, in accordance with prearranged plan and prediction and in being liable to stoppage and change according to similar plan” (EE 278; emphasis added).

Notice that we see the force of chance operative in the very act of composition because, as Nahum Chandler notes, the phrase “at a given tune” is likely a typo meant to read “at a given time.” In keeping with Du Bois’s insight into the co-production of chance and law, we should not read this typo as a mere mistake. Du Bois’s talk of rhythm clearly moves in the musical realm that The Souls of Black Folks had already established as a vital register for thinking about the historical transmission of tradition, memory, and collective experiences of joy and sorrow.

Questions pertaining to both song and rhythm were of intense interest for many scientists, philosophers, and psychologists working in a new evolutionary paradigm. Both Charles Darwin and Herbert Spencer, for instance, attempted to offer evolutionary explanations for the origins of music and its practical and cognitive functions. While Darwin emphasized the role of musical expression in the process of sexual selection, Spencer suggested that Darwin’s emphasis on “the expression of amatory feeling” overlooked a wider range of feelings and emotions that excited the production of sounds (Spencer 450). Against Darwin, Spencer emphasized the “overflow of energy,” which tied emotion and energy in ways similar to Sigmund Freud (Spencer 453). He also turned to anecdotes from his Descriptive Sociology (1873-1881) in which various

---

“primitive” musical practices are shown to have little to do with sexual reproduction but instead emerge from “immediate” situations and the feelings they produce (Spencer 453). In short, human musical capacities had both a transdisciplinary significance in the social and biological sciences and a close linkage to the operations of chance and affective spontaneity in the adaptive development of the human race.

Du Bois’s thinking was distinguished from Darwin’s and Spencer’s, however, by his skepticism about any naturalistic reduction or obsessions with human origins. His own focus was on the social effects and expressive powers of music. This is particularly evident in a passage which appears in Black Reconstruction in America where song is located both inside and outside the realm of determinate causality or temporal origin:

A great song arose, the loveliest thing born this side the seas. It was a new song. It did not come from Africa, though the dark throb and beat of that Ancient of Days was in it and through it. It did not come from white America—never from so pale and hard and thin a thing, however deep these vulgar and surrounding tones had driven. Not the Indies nor the hot South, the cold East or heavy West made that music. It was a new song and its deep and plaintive beauty, its great cadences and wild appeal wailed, throbbed and thundered on the world’s ears with a message seldom voiced by man. It swelled and blossomed like incense, improvised and born anew out of an age long past, and weaving into its texture the old and new melodies in word and in thought. (Black Reconstruction 124)

10 Unsurprisingly, however, Spencer’s account of the development of music is bound up with a teleological and hierarchical account of civilizational progress where musical complexity is linked to the “finer” or more sophisticated feelings on offer in more civilized societies.
Notice how biological terms associated with birth and physiology intersect with the rhythmic beat of music. Du Bois’s prose, with its pauses, recursions, and periodic dactyls, has a pulse akin to scripture and preaching. The origin and tempo of the song described above, cannot be reduced to geography or the coursing of blood but is, like smoke, seemingly indefinite and dynamic. Though novel and improvised, this song incorporates embodied melodies and words which pre-date and support it. In keeping with what he theorized in “Sociology Hesitant,” “Law and Chance” here work in “conjunction” so that in the unfolding of order another secondary uniformity—which we might think of as an antiphonal echo, stutter, or murmur—is able to spontaneously emerge (EE 278). In passages such as these, Du Bois committed himself to asymptotically charting the ways social, historical, and natural rhythms intersect to produce unexpected acts which are then reincorporated into the fabric of history. In the next section, we will see how Du Bois’s scientific training, his pragmatist skepticism about deterministic and positivistic sociologies, and his tendency to link music with chance, intersect in his thinking about the life and legacy of John Brown.

The Legacy of John Brown

On January 25, 1904, Du Bois received a letter from George W. Jacobs & Company, commissioning him to write a biography for their American Crisis series. Initially, Du Bois had wanted to write a biography of Frederick Douglass but was informed that Booker T. Washington has already been tapped to write one. In response, Du Bois suggested he might write on Nat Turner, but the editor, Ellis Paxson Oberholtzer, insisted on John Brown. David Levering Lewis notes it took five years for Du Bois to finish John Brown (Lewis 357). In his initial proposal for a Turner biography, he wanted “to trace slave insurrections from Toussaint L’Overture to John Brown” while “recapturing the beginnings of abolitionism” and the “activities of free Negros in
the North” from “the general subjective Negro point of view” (Lewis 356). John Brown remains faithful to these ambitions by presenting history from an African American point of view while exploring how the desires and agency of black subjects helped determine Brown’s plans and actions. Though the book contained a number of factual errors and was received with rather harsh criticism, Du Bois long considered it one of his favorite and most important books. In it, we see him attempting to “measure carefully the limits of […] Chance in human conduct” as he describes and analyzes the emergence of John Brown’s radical acts (EE 278). Put differently, the book is a rich and careful inquiry into the ways individualized human action both emerges from social and historical experience and later comes to shape and determine those experiences. The question of John Brown’s life and afterlife is thus one of determinism and chance, limitation and liberty. Implicitly, the book asks us to consider the following question: By what combination of chance and law was Brown pressed to take such radical steps to address the inequity and moral bankruptcy of American slavery?

In John Brown affect, sympathy, imagination, and historical spirit play fundamental roles in Du Bois’s account. Du Bois presents Brown as a white man who, “touched” by the plight of Black Americans and “the bitter tragedy of their lot,” is also animated by trans-Atlantic cultural ideals and socio-economic forces. Though he readily admits that Brown’s “long continued intimacy” with Black subjects largely exceeds “written records,” the fact of those relationships grounds Du Bois’s justification for the production of “another life of John Brown” after the work of several previous biographers (John Brown [JB] 10). Such embodied intimacy is materially singular and therefore operates as a wellspring for chains of action and thinking which cannot be statistically reduced or predicted. Du Bois’s biography, then, is issued from the “vastly important inner development of the Negro American” and stands as a “tribute to the man who of all
Americans has perhaps come nearest to touching the real souls of black folk” (*JB* 10). This callback to *The Souls of Black Folks* reveals an underappreciated continuity in Du Bois’s development of a hybrid genre of writing which blends the literary and the sociological. Like his earlier work, *John Brown* defies easy categorization. While much of the text reads as an assemblage of quotations from existing historical sources, it frequently breaks into speculations that dramatize events and disclose social forces which have no clear warrant as historical facts. Perhaps most interestingly, the book concludes with an extended discussion of the limits of biological and evolutionary accounts of human agency, adapted from the lecture “Evolution of the Race Problem” presented by Du Bois in 1909 at the National Negro Conference in New York alongside John Dewey and Ida B. Wells.

Given the dramatic and unexpected nature of Brown’s raid and the complexity of the beliefs which inspired it, the event serves as a key example of the limits of positivist methods which simplify complex, subjective, and affective determinants. Due to the profound role played by religious belief and singular events in Brown’s life, Du Bois must make space for other modes of causality and temporality that operate in the aesthetic, embodied, and imaginative registers of human experience. Of course, in making space for more indefinite and incalculable forces, he must also posit other forms of temporal transmission and social causation while accounting for their distinct rhythmic pulse. Against the linear, mechanical, and progressive logic operative in deterministic understandings of human agency, Du Bois highlights how disparate cultural traditions, previous social upheavals, and affective experiences of sympathy and injustice intersect to produce radically new notions of possibility and purpose that alter the course of history.
The trans-historical semiotic and affective powers of song emerge at crucial junctures throughout the text, thereby opening up a more speculative historical register of temporal passage—a “secondary rhythm”—wherein the concatenation of older events and desires produces new conceptions of the present and the future. This is evident in Du Bois’s choice to situate and frame Brown’s life between the Haitian Revolution and the publication of The Origin of Species. By associating the meanings of Brown’s actions with both the revolutionary agency of enslaved peoples and changing scientific paradigms, Du Bois’s present reshapes his narrative of the past. Writing after Reconstruction’s failure, in an era of profound racial violence and amidst the ascendancy of biological and social determinism, he argues that the legacy of Brown’s life must now encompass a wider and more speculative set of influences and consequences.

The biography begins by situating Brown in a rich, multifaceted historical lineage, arguing that “to his making went the stern justice of a Cromwellian ‘Ironside,’ the freedom-loving fire of a Welsh Celt, and the thrift of a Dutch housewife” (JB 15). Brown appears as the product of the curious and paradoxical forces at work in the colonization of “the New World,” and Du Bois connects him directly to the violence and enslavement that formed the United States (JB 15). He is, nonetheless, also presented in an idealistic fashion as an expression of the “wonderful awakening of culture” termed the Renaissance, a child of “the mighty stirring” of the Reformation, and the product of those who were the “prime actors in laying the foundations of human liberty in a new century and a new land” (JB 16-17). These influences form a vital backdrop, but they do not serve as the sole motivators for Brown’s actions. What remains to be added is the animating force of what Du Bois terms the “mystic spell of Africa” and the “call” of black subjects to which Brown was attuned. On the opening page we read:
The mystic spell of Africa is and ever was over all America. It has guided her hardest work, inspired her finest literature, and sung her sweetest songs. Her greatest destiny — unsensed and despised though it be, — is to give back to the first of continents the gifts which Africa of old gave to America's fathers' fathers. Of all inspiration which America owes to Africa, however, the greatest by far is the score of heroic men whom the sorrows of these dark children called to unselfish devotion and heroic self-realization: Benezet, Garrison, and Harriet Stowe; Sumner, Douglass and Lincoln — these and others, but above all, John Brown. (JB 15)

Beyond simply foregrounding the productive presence of Africa in the development of American culture, Du Bois here argues that the heroism of the white protagonists of the abolitionist movement was dependent upon their receptivity to the sorrows of the enslaved. The “call” answered by Brown and others echoes throughout the text, and its animating, if indefinite, force becomes, in Du Bois’s presentation, a determining factor in the outbreak of the Civil War.

Throughout the text, metaphors of complex dynamics and intersecting forces are associated with notions of historical process. Often Du Bois uses figures associated with the Atlantic Ocean and the flowing movements of water to recall both the transatlantic founding of America and its connections to the slave trade. At the heart of John Brown is a deep and grinding struggle between repression and liberty that can be seen as originating in the transatlantic passage of both Europeans and Africans. The doubled nature of the founding of the New World thus inform Du Bois’s thinking about how chance and law operate in the life of John Brown. Living in a time when Americans “found themselves whirled in the eddies of mighty movements,” at the intersection of a “system of slavery twisting them backwards toward darker
ages of force and caste and cruelty” and the swirling and “swift currents of liberty and uplift,” Brown distinguished himself as a white man by being willing to point “the way to liberty” through the tumultuous and antagonistic currents of his time (JB 17).

Importantly, Du Bois connects Brown’s recognition that “the cost of liberty was less than the price of repression” to the “humanistic enthusiasm of the French Revolution,” but more surprisingly, the “flash” of the Haitian Revolution (JB 59).¹¹ Du Bois emphasizes, for instance, the coincidence of the Haitian Revolution with Brown’s birth by noting that “there was hell in Hayti in the red waning of the eighteenth century, in the days when John Brown was born”; as “the dark figure of Toussaint” brought the “shudder of Hayti” throughout all “the Americas,” Brown, “from his earliest boyhood,” saw and felt “the prices of repression” (JB 59). Anticipating a skeptical response to such seemingly unrelated and disparate events, he argues that:

human purposes grow slowly and in curious ways; thought by thought they build themselves until in their full panoplied vigor and definite outline not even the thinker can tell the exact process of the growing, or say that here was the beginning or there the ending. Nor does this slow growth and gathering make the endless wonderful or the motive less praiseworthy. (JB 72)

This pragmatist understanding of the indefinite origins and continuity of human purposes and their resistance to any exact calculation proves here to be both a limit and opportunity.¹² Though the impossibility of total knowledge blocks the way to a definitive answer for the biographer or

---

¹¹ Du Bois is careful to note that before Toussaint there had been uprisings in “Jamaica […] the Danish Isles […] and South Carolina”; these outbreaks “foretold the possibility of coordinate action and organic development” (JB 62).

historian, it also marks a speculative opening for a more pluralistic, social, and dynamic conception of human agency that stands in contrast to an Emersonian view of the self-reliant individual. Du Bois explains that “it is not always the apparent leaders who do the world’s work”; it is “more often that those who sit in high places” simply “represent and mask public opinion and the social conscience, while down in the blood and dust of battle stoop those who delivered the master-stroke—the makers of the thoughts of men” (JB 102). By locating the productive force of “representative men” in the toil and violence of social struggle, Du Bois’s biography can more directly link Brown to forces, events, and persons in the world he inhabited.

As is already clear, Du Bois posits two levels of socio-historical causation. The first is the broader world historical level which comprises movements and events like the Renaissance, the French and Haitian revolutions, the Reformation, and the Fugitive Slave Law. The second is concerned with the more contingent and embodied order of everyday experience. Of course, how these two levels intersect is a pressing and puzzling question. Du Bois suggests that affective and aesthetic experiences serve as the meeting-place between the two. The power of song and voice are thus integral for his presentation of Brown’s motivations and for the continuing legacy of his actions in American social life. For instance, when characterizing the “great unrest” surrounding slavery he notes “it was not merely moral leadership from above — it was the push of physical and mental pain from beneath; — not simply the cry of the Abolitionist but the up-stretching of the slave. […] Something was forcing the issue— call it what you will, the Spirit of God or the spell of Africa. It came like some great grinding ground swell,— vast, indefinite, immeasurable but mighty, like the dark low whispering of some infinite disembodied voice — a riddle of the Sphinx. It tore men's souls and wrecked their faith” (JB 92-93). Uniting the moral and the material, the affective and intellectual, the mundane and the mystical, the abolitionist and the
slave, this immeasurable but mighty voice resonates across a spectrum that encompasses both the personal and the social. Though this account risks mystification in its appeal to spirits and spells, it does so in order to counter reductive and deterministic understandings of socio-historical development that would discount the importance of religious beliefs in determining volitional acts and thus would fail to grasp the dynamic force of chance in the unfolding of history.

Unwilling to treat Brown as an isolated savior, Du Bois emphasizes Brown’s dependence on the physical presence and agency of black subjects who activated “the tender chords of his acquaintanceships and sympathies” (JB 71). Foregrounding the essential role of the fugitive slave, he argues that these runaway slaves both “saved slavery and killed it” (JB 64). The fugitives saved slavery by preventing the south from undergoing the “blood-sacrifice of Hayti,” but they killed slavery in “presenting themselves before the eyes of the North and the world as living specimens of the real meaning of slavery” (JB 64). Moreover, figures like Fredrick Douglass and Harriet Tubman, in organizing “a great black phalanx that worked and schemed and paid and finally fought for the freedom of black men in America,” fostered a social movement that intersected with John Brown’s rebellion in crucial ways (JB 64). Though Du Bois does not claim for Brown any deep or direct knowledge of the radical and subversive acts of men like Vesey or Turner, he does suggest that:

Of all this development John Brown knew far more than most white men and it was on this great knowledge that his great faith was based. To most Americans the inner striving of the Negro was a veiled and an unknown tale: they had heard of Douglass, they knew of fugitive slaves, but of the living, organized, struggling group that made both these phenomena possible they had no conception. From his earliest interest in Negroes, John Brown sought to know individuals among them
intimately and personally. He invited them to his home and he went to theirs. He
talked to them, and listened to the history of their trials, advised them and took
advice from them. His dream was to enlist the boldest and most daring spirits
among them in his great plan. (*JB* 184-185)

Brown’s intimacy with fugitive slaves—and his willingness to listen to their *voices*—is presented
here as fundamental if he wished to understand the conditions of possibility for his heroic and
tragic acts. Brown’s embodied and affective experiences of black agency and social life thus
serve as an epistemological foundation for his faith in capacities and possibilities long
considered impossible and improper.

Du Bois understood this emphasis on the transformative powers of sympathy and
conversation—as well as Brown’s deep commitment to a redemptive, ameliorative Christian
tradition—would not only seem anachronistic but fundamentally flawed to readers living in a
period heavily influenced by eugenics. And yet, as Kyla Schuller has argued, “in response to the
brutal hierarchies of the new determinisms that identified racial inequality as a basic fact of
nature,” Du Bois worked to evidence “the possibility of biosocial transformation” in order to
affirm the force of sympathy and moral beliefs (Schuller 173-174). In arguing that “race
materializes as an index of cultural development over time, rather than as a fixed and innate
biological difference,” Du Bois, like Franz Boas, suggested that “race is contingent on culture
rather than a genetic condition” (Schuller 175). Francis Galton was thus one of Du Bois’s
principal opponents because his theory of heredity “suggested a substance that was as immutable
as it was innate,” one fundamentally “impervious to individual experience” (Schuller 177).
Indeed, the work of Galton and scientists like August Weissman was often taken to mean that
“no amount of public charity, assistance, or sympathy could alter the unit characters that
controlled for feeblemindedness, sexual perversion, alcoholism, racial status and other conditions they understood to be hereditary” (Schuller 180). In Du Bois’s estimation, these new deterministic hereditarian theories posed a radical threat to democracy, undermining the very ideas of social transformation or reform to which he was committed. *John Brown* thus challenges these theories by insisting upon the vital role that cultural practices, aesthetic experiences, and environmental factors play in human development where “biological and social factors have distinct processes over the course of individual lifetimes but intertwine over the course of phylogenetic development” (Schuller 189). If eugenics posited racial groups as bound within a fixed hierarchical structure, Du Bois saw social groupings as ebullient and dynamic structures that developed and shifted over time, shaped as much by chance as by law.

Drawing on the fact that “Lamarck and Darwin had extended the secular framework of human time from the biological limits of the individual body to the epochal timeframe of the species,” (Schuller 193) Du Bois argued that evolutionary biology hadn’t so much negated earlier understandings of human freedom and agency, as it did highlight the need to recognize the temporal and social status of human agency as it develops in “an endless chain of selves” (*JB* 284). At stake, then, in the question of Brown’s legacy is the issue of how the acts of earlier generations shape the lives of their descendants both biologically and socially. Put differently, Du Bois was considering how, even after corporeal and biological death, figures like Brown could be said to live again. As he well knew, this proposition was already voiced in the lyrics of “John Brown’s Body” (1861).

By looking to Brown’s early life to consider how the past determines the future, Du Bois singles out a particularly vital incident which “stands out as foretaste and prophecy,” an event or “incident of which we know only the indefinite outline, and yet one which unconsciously
foretold to the boy the life deed of the man” (JB 22). Upon being invited into the house of a “certain landlord,” Brown saw “another boy in the landlord’s yard” from the vantage of the parlor, a “black, half-naked and wretched man” (JB 22). Then, “in John’s very ears the kind voices of the master and his folks turned to harsh abuse with this black boy. At night the slave lay in the bitter cold and once they beat the wretched thing before John’s very eyes with an iron shovel, and again and again struck him with any weapon that chanced” (JB 22; emphasis added). A recognition dawned on John Brown. In an instant, he understood that the black boy was no mere thing but “active intelligent, and with the great warm sympathy of his race did the stranger ‘numerous little acts of kindness,’ so that John readily […] acknowledged him ‘fully if not more than his equal’” (JB 23). We see here how the rapid modulation of voice offers Brown an intimation of the presence of the veil separating black from white. What’s more, this formative experience is wholly contingent, though made possible by a set of determining social, legal, and economic structures that terminate in the fact of enslavement.

In this scene, then, we are presented with an image of sympathetic recognition with Brown positioned inside looking out as he witnesses the transformation of kind voices to the sounds of hatred and harsh brutality. To those familiar with Du Bois’s corpus, this scene is recognizable as a kind of inversion, double or echo of the first chapter of Souls, where Du Bois recounted his first recognition of the veil separating Black from white,

In a wee wooden schoolhouse, something put it into the boys' and girls' heads to buy gorgeous visiting-cards—ten cents a package—and exchange. The exchange was merry, till one girl, a tall newcomer, refused my card,—refused it peremptorily, with a glance. Then it dawned upon me with a certain suddenness
that I was different from the others; or like, mayhap, in heart and life and longing, but shut out from their world by a vast veil. (Writings 114-115)

That Brown, unlike the young girl in the Massachusetts schoolhouse of Du Bois’s youth, was attuned to the injustice and brutality of racism led him to ask a question alongside “a million and a half black bondsmen” (JB 23). Brown’s chance act of sympathetic recognition in his boyhood thus contrasts with Du Bois’s early suffering, and there opens a pathway between biographer and subject. As we can see, in writing his biography of Brown, Du Bois’s own double consciousness and its attendant second sight led him to reflect, in radical ways, on the strange and incalculable rhythms and echoes in history that disrupt linear understandings of temporality. A philosophy attuned to the actuality of double consciousness must not treat historical recurrence as a necessary or deterministic force but instead as an unpredictable repetition opening onto an uncertain and malleable future.

At the same time, by framing his own biography from the point of view of the “inner development of the Negro American,” and by imagining Brown’s deepest and unverifiable motives, Du Bois ruptures the bounds of the purportedly objective or disinterested historian. Thus, in reflecting on Brown, Du Bois was also thinking through his own life and finding in the overlap sources of hope, possibility as well as new problematics for inquiry. Nahum Chandler’s recent arguments about John Brown are helpful for grasping these complex historical dynamics. Chandler writes,

[T]he telling of the story of Brown’s friendship with the Negro is also the story of the death of a “White” man. And the telling of the story of the martyrdom of John Brown is also the story of his life as an icon of the possibility of a new beginning, the story of a social being formed within the idea of belonging simply and purely
to a “White” race who yet came to recognize himself as configured within the movement of an unsettled question” and thus “developed a profound disjunction from the world into which he was born.” (Chandler 113-114)

This profound metaphysical disjunction evidences the radical possibility of a white subject who “discovered from the ‘inside’ out the enigmatic difficulty of living on the basis of a kind of death, one that entails ‘two souls, two thoughts, two unreconciled strivings, two warring ideals,’ configuring the meaning, for oneself and thus for history, of one’s own body” (Chandler 127). Brown not only experienced his own form of double consciousness but also a kind of double death: dying “once as that ordinary historical being called a ‘white’ man” and “again as that flesh-and-blood being who can only be given a ‘proper’ name” (Chandler 115). The question of death and its relation to life was, of course, central to American evangelical Christianity, and so there can be no question that for Brown “the theological position of death within Christianity” was fundamental (Chandler 114). Yet, for Du Bois, the question of life after death—of Brown’s legacy or immortality—bears on the actual and material world he inhabited and faintly signals the possibility of the emergence of some new mode of social belonging not founded on the oppositional logic of racialization.

Du Bois, therefore rejects the idea that Brown should be seen as a crazed and violent religious enthusiast. While Brown saw the world as “a mighty drama” in which both he and god were actors “in the play,” and though he confessed to thinking he heard “voices from the Other Land” beyond the grave, he was also deeply practical (JB 37). Explaining Brown’s doubled nature, the text notes that his “saturation in Hebrew prophecy” as well as his experiences of the chastisement of death, the sense of personal sin and shortcoming and the voices from nowhere, deepened, darkened and broadened his religious life. Yet
with all this there went a peculiar common sense [...] a homely shrewd attention to all the little facts of daily existence. Sometimes this prosaic tinkering with things burdened, buried and submerged the spiritual life and striving. There was nothing left except the commonplace, unstable tanner, but ever as one is tempted thus to fix his place in the world, there wells up surging spiritual life out of great unfathomed depths — the intellectual longing to see, the moral wistfulness of the hesitating groping doer. (*JB* 37-38)

This dynamic interplay between the religious and the commonplace are essential for understanding the unfolding of Brown’s raid and his capacities not only to organize and plan his assault but also to sympathize with and inspire those who would accompany and support him. To be clear, Du Bois does not endorse or affirm the operation of divine forces in the unfolding of history. Instead, he emphasizes the essential and shaping role of religious beliefs and cultural norms in the conduct of living agents. Thus, he is careful to note that Brown’s men were:

> idealists, dreamers, soldiers and avengers, varying from the silent and thoughtful to the quick and impulsive; from the cold and bitter to the ignorant and faithful.

They believed in God, in spirits, in fate, in liberty. To them the world was a wild, young unregulated thing, and they were born to set it right. It was a veritable band of crusaders, and while it had much of weakness and extravagance, it had nothing nasty or unclean. On the whole, they were an unusual set of men. (*JB* 216)

While some “had been attracted by the then rampant Spiritualism […] and] some of them were musical, others dabbled in verse”; their “broader common ground of sympathy lay in the personality of John Brown—— him they revered and loved” (*JB* 216). We can glimpse here how Du Bois’s affirmation of how the long-neglected capacities of ordinary and common agents can
be mobilized by the force of particular individuals and the bonds of sympathy and imagination they produce. Acknowledging all sorts of indefinite forces at work as well as the importance of subjective and religious factors, Du Bois nonetheless stresses that it is the embodied and empirical fact of Brown’s uniqueness that made his raid possible.

Far from being merely subjective and isolate, these bonds of feeling come to take on a wider significance in the wake of Brown’s raid. Thus, he notes what occurred after Brown’s death:

A great surging throb of sympathy arose and swept the world. That John Brown was legally a law-breaker and a murderer all men knew. But wider and wider circles were beginning dimly and more clearly to recognize that his lawlessness was in obedience to the highest call of self-sacrifice for the welfare of his fellow men. They began to ask themselves, What is this cause that can inspire such devotion? The reiteration of the simple statement of "the brother in bonds" could not help but attract attention. The beauty of the conception despite its possible unearthliness and impracticability attracted poet and philosopher and common man. (JB 267)

Here we see how the power of sympathy works to stage a question which John Brown had answered in and through his acts. Du Bois notes Brown “did not use argument, he was himself an argument” (JB 256). Brown’s “voice was a call to the great final battle with slavery”; and as we have already seen, his call was itself a response and extension of the cries and voice of Black subjects (JB 280). Of course, news of Brown’s raid spread quickly through newspapers and speeches. But, in a charged moment in the text, Du Bois points to the fact that two years after Brown’s execution “in the spring of 1861 the Boston Light Infantry was sent to Fort Warren in
Boston harbor to drill,” and there “a quartette was formed among the soldiers to sing patriotic songs and for them was contrived the verses, John Brown's body lies a-mouldering in the grave, His soul is marching on” (JB 280) As he is careful to note, the song was “set to the music of an old camp-meeting tune — possibly of Negro origin — called, ‘Say, Brother, Will You Meet Us?’ The regiment learned it and first sang it publicly when it came up from Fort Warren and marched past the scene where Crispus Attucks fell. Gilmore's Band learned and played it and thus the song of John Brown was started on its eternal way!” (JB 280).

Although song is figured as a powerful and lasting medium of sympathetic and social transmission, Du Bois acknowledges that the ideological and religious influences that determined Brown’s raid had waned with the rise of evolutionary thinking. Nonetheless, through song Brown’s influence survived. In 1906, Du Bois himself had sung this song at the site of Brown’s fort during the initial meeting of the famous Niagara movement. In the end, Brown embodies an ethical stance informed by a “religion of equality and sympathy and sympathy with misfortune” originating in the “Hebrew” tradition, the centrality “of freedom and power” expressed in the “social doctrines of the French Revolution,” and an “inchoate but growing belief in a more just and more equal distribution of property” informed by his own experiences in the world of production and trade (JB 281). If “up to the time of John Brown’s death” such a stance was “a growing, conquering, social thing,” in the wake of his execution a profound shift took place (JB 281). Du Bois explains that “many would rightly find reason for [the] change in the coincidence that the year in which John Brown suffered martyrdom was the year that first published the Origin of Species” (JB 281). Darwin’s emergence at the close of John Brown highlights how a “tremendous scientific and economic advance” was “accompanied by distinct signs of moral
retrogression in social philosophy” crystalized in eugenics, white supremacism, and Social Darwinism (JB 281).

Explaining that “the splendid scientific work of Darwin, Weissman, Galton, and others has been widely interpreted as meaning that there is essential and inevitable inequality among men and races of men”— and that “with this interpretation has gone the silent assumption that the white European stock represents the strong surviving peoples,”—Du Bois asserts that “the chief difficulty has been that the natural place in which by scientific law the black race in America should stay, cannot easily be determined” (JB 281-282). Thus, he argues that “when a social policy, based on supposed scientific sanction, leads to such a moral anomaly, it is time to examine rather carefully the logical foundations of the argument” (JB 283). Given the blurriness of racial categories, he concludes that “ignoring the fact that the era of physical struggle for survival has passed away among human beings and that there is plenty of room accessible on earth for all”; social Darwinism irrationally “makes the possession of Krupp guns the main criterion of mental stamina and moral fitness” (JB 285). Fighting fire with fire, he points to the fact that “even armed with this morality of the club and every advantage of modern culture, the white races have been unable to possess the earth; many signs of degeneracy have appeared among them; their birthrate is falling, their average ability is not increasing, their physical stamina is impaired, their social condition is not reassuring, and their religion is a growing mass of transparent and self-confessed hypocrisy” (JB 285)

Against those who would advocate for the elimination and purification of supposedly lesser stocks, Du Bois counterintuitively explains that “freedom of development and equality of opportunity is the demand of Darwinism and this calls for the abolition of hard and fast lines between races, just as it called for the breaking down of barriers between classes” (JB 295). To
allow the best or fittest to survive requires acknowledging that “vertical race distinctions” are constructions that hinder “human evolution.” Embracing a democratic, “peaceful, personal, and social” mode of selection will allow “the best to rise to their rightful place” (JB 286). Building on his account of Brown’s life, Du Bois stresses that “climate, human contact, faculties of communication and what we call accident, have played a great part in the rise of culture among nations: to ignore these and assert dogmatically that the present distribution of culture is a fair index of the distribution of human ability and desert, is to make an assertion for which there is not the slightest scientific warrant” (JB 284; emphasis added). As we can see here, the full spectrum of influence—from chance, embodied social relation, to song and language—is made just as integral to the temporal development of social structures and human capacities as biological and environmental factors are.

Veering quite close to Emerson’s “Fate,” in his revisionary reading of natural selection Du Bois argues that:

what the age of Darwin has done is to add to the eighteenth century idea of individual worth the complementary idea of physical immortality of the human race. And this, far from annulling or contracting the idea of human freedom, rather emphasizes its necessity and eternal possibility -- the boundlessness and endlessness of possible human achievement. Freedom has come to mean not individual caprice or aberration but social self-realization in an endless chain of selves, and freedom for such development is not the denial but the central assertion of the revolutionary theory. So, too, the doctrine of human equality passes through the fire of scientific inquiry not obliterated but transfigured; not
equality of present attainment but equality of opportunity for unbounded future attainment is the rightful demand of mankind. (JB 284)

On this account, evolution is framed primarily as an advance on an understanding of the necessarily historical, generational, and social character of human agency. In the wake of Darwin, “freedom for Du Bois becomes access to time itself, and equality a condition of group potential […] rather than an individuated capacity of self-possession” (Schuller 193). As we will soon see, this insight was fundamental for Du Bois’s thinking about the importance of developing new educational infrastructures and his related emphasis on the transformative nature of aesthetic and affective experience in a democratic culture.

Yet, this is precisely where the question of eugenics or managed reproduction must be considered because “if equality and freedom materialize in an endless chain of selves that stretches across generations, then reproduction becomes a central strategy of liberation” (Schuller 194-195). If a focus on the biological led Du Bois to embrace exceedingly problematic and class-inflected ideas about reproduction and traits, it also carried over into his reflections on the socio-cultural sphere. Without downplaying Du Bois’s own participation in assimilationist eugenics, it is vital, nevertheless, to recognize that social, rather than biological, reproduction was the predominant tone of his activism and program for reform. Despite the risks associated with biological determinism Du Bois’s thinking about modern theories of heredity in the final chapters of John Brown contributed to his later profound rethinking of human agency, particularly evident in the pages of Darkwater. More particularly, new biological theories led him to see agency in light of an overlapping and co-determining network of temporal, social, and biological processes in which both chance and law played a role. Thus, while his “efforts to define race as a historical entity, his attempts to debunk purported racial differences in
intelligence, and his steadfast objection to racial supremacy” entailed a “nuanced deployment of hereditarian ideas in his social theorizing,” for him “the complexity of human development exceeded the ‘either-or’ simplisms of heredity versus environment, nature versus nurture” (Dorr and Logan 96).

Democracy Against Determinism

Like *Souls* and *John Brown* before it, *Darkwater* fuses and integrates a range of styles, modes, and concerns. More specifically, it embodies the entanglements of art and science, song and sociality, liberty and law so characteristic of Du Bois’s early work. At the same time, it also forecasts his later turn to internationalism and Marxism. In the postscript to *Darkwater*, Du Bois explains, “I venture to write again on themes on which great souls have already said greater words, in the hope that I may strike here and there a half-tone, newer even if slighter, up from the heart of my problem and the problems of my people. Between the sterner flights of logic, I have sought to set some little alightings of what may be poetry” (*DW* ix.) Once again adopting the vocabulary of music and second sight, he stresses the generative interplay between the logical and the poetic. This interplay has a structuring role in the book’s organization, as it is made up of ten sections which each include textual pairs that join pieces of poetry and fiction—including Du Bois’s familiar work of science-fiction “The Comet”—to theoretical and critical essays that explore political and sociological subjects. The structure of the work thus embodies the central ideas expressed in many of its chapters, namely that the problem of the color line demands one engage the so-called subjective and objective sides of racialization simultaneously. As Manning Marable notes, as a book composed “during a period of tremendous social change” and emerging

---

13 Importantly, Du Bois did not embrace the “three central political goals of Anglo-American eugenics: coercing sterilization, illegalizing immigration, and preventing cross-racial relationships,” though he did stress the importance of managed “reproduction and racial health” (Schuller 197, 202).
into a world responding to the Russian Revolution, the outbreak of war in Europe, and the rise of the Klu Klux Klan, *Darkwater* presents “the world of ‘work and wealth,’ of ‘beauty and death,’ from the perspective of black folk” while also working “to offer white America a way out of its own racial hatred, through the salvation of hope in humanity” (*DW* vi).

Unsurprisingly, questions of possibility, probability, and the distribution of power and agency runs throughout the book, shaping its considerations of how education might help to advance a now inter-generational struggle for freedom. As we have already seen, for Du Bois these issues must be thought on a more expansive temporal and geographically scale than was typical. By acknowledging the capacities of traditionally neglected groups—the racially othered and enslaved, the lower classes, as well as women and children—in chance moments in the past while, at the same time, tarrying with contemporary determinist understandings of social order and agency, he casts his eyes forward to imagine a situation in which the tremendous powers and technologies harnessed in the unfolding of capitalist modernity might be shared in a more pluralistic community of inquirers. This utopian aspiration is particularly evident in “A Hymn to the Peoples,” the concluding poem of the book. This poem imagines a “primal meeting of the Sons of Man/ Foreshadowing the Union of the World” gathering at twilight, sitting “all as one” while awaiting the breaking of a new day (*DW* 161). As we will see in later chapters, this image of the meeting-place was not unique to Du Bois alone. Into the scene this hymn describes Du Bois casts an image of the:

High visioned hordes that lie and steal and kill,

Sinning the sin each separate heart disclaims,

Clambering upon our riven, writhing selves,

Besieging Heaven by trampling men to hell! (*DW* 161)
Looking to the social world just outside of the poem’s frame, Du Bois refuses an overly idealized reconciliation. Immediately after acknowledging the violence and waste of the present, the poem returns to the “sons of man” who sit in darkness:

Here—here in the white Silence of the Dawn
Before the Womb of Time,
With bowed hearts all flame and shame,
We face the birth-pangs of a world:
We hear the stifled cry of Nations all but born—
The wail of women ravished of their stunted brood!
We see the nakedness of Toil, the poverty of Wealth,
We know the Anarchy of Empire, and doleful Death of Life!
And hearing, seeing, knowing all, we cry:

Save us, World-Spirit, from our lesser selves!
Grant us that war and hatred cease,
Reveal our souls in every race and hue!
Help us. O Human God, in this Thy Truce,
To make Humanity Divine! (DW 162)

These stanzas contrast a highly irrational and paradoxical form of social reproduction—wealth is poverty, empire is anarchy, and death unnaturally cuts short the growth of life— with a shared desire for salvation. The focus here is on the capacity of sensation and cognition to create intelligible moral ends that are grounded in a world-spirit. As in John Brown, the sound of a cry resonates on a world stage opening a speculative horizon from which one might imagine a
deeply material salvation of man, a realization of a kind of “kingdom of ends.” Moreover, the poem’s attention to the intergenerational progress of the human species through the “womb of time” is linked with an emergent moment of revelation in which the souls of all peoples are valued and respected. This moment remains beyond the horizon as an aspiration turning on a collective cry or desire, one that demands a radical form of mutual recognition. In place of an Emersonian theodicy rooted in impersonality and isolation, Du Bois here emphasizes the vitality of interpersonal contact.

In his striving for a democratic modernity, then, Du Bois was not content to rely on a theologically inflected form of imaginative projection alone. In his debates with Booker T. Washington, Du Bois had argued strenuously against a merely instrumental and industrial educational system for African Americans. In Darkwater, we see that his emphasis on the centrality of the humanities and the arts is tied to the challenges presented to achieving a truly democratic society in an evolutionary and industrializing world. Because democracy demands an unending commitment to transformation, growth, and change on the part of the populace, structures that foster the continuous development of human capacities and potentials must be constructed collectively. But this collaborative project entails recognizing that “all children are the children of all” and not merely the children of “individuals and families and races” (DW 127). Only in light of such a realization can we commit ourselves to train and guide “the whole generation,” valuing it as a “reservoir” from which “genius, talent and intelligence” must be educated in order to “serve all the world” (DW 127).

---

14 This phrase comes from Immanuel Kant’s Groundwork of the Metaphysics of Morals (1785). There is much left unsaid about Du Bois’s relationship to Kant and post-Kantianism in this chapter. Both Fred Moten and R.A. Judy have done invaluable work on Du Bois’s relationship with Kant. See Judy’s Sentient Flesh: Thinking in Disorder, Poiesis in Black (Durham: Duke University Press, 2020).
Responding to claims concerning the innate, biologically fixed limits on particular races and classes, Du Bois focuses on exceptions which give lie to supposedly ontological rules in order to project a future in which coming generations are allowed to flower without the constraints imposed by racial and economic segregation. He argued that “if the great battle of human right against poverty, against disease, against color prejudice is to be won, it must be won, not in our day, but in the day of our children's children” (DW 119). The duty of the present generation, then, is to fight attempts to purify the genetic and cultural complexity of the human race fueled by determinist thinking. Only then might leaders “accomplish the immortality of black blood” so that a day may come when “the color of a man’s skin [will] be no bar to the outlook of his soul” (DW 119). Because “infinite human differences [do not] argue relative superiority and inferiority,” “human equality” does not mean a “lack of difference” (DW 122). There is simply no warrant for exclusionary practices which obstruct the continuing evolution of the human race. *Darkwater* thus asks us to think “how new an aspect of human differences may assume” in a world where “all men are educated,” as Du Bois points to examples in the present which intimate the possibilities of a truly egalitarian and pluralistic social world (DW 122). Du Bois’s faith in the power of education to realize underdeveloped and untapped human capacities in those populations which have been deemed unfit and constitutively inferior is, in this way, central to his linking of Darwin and democracy.

The connections between his intergenerational and biocultural understanding of freedom and his thinking about education are clarified in his essay “The Immortal Child.” The essay opens by reframing the immortality of the soul in terms of biological evolution before looking to the example of the musician and composer Samuel Coleridge-Taylor.
If a man die shall he live again? We do not know. But this we do know, that our children's children live forever and grow and develop toward perfection as they are trained. All human problems, then, center in the Immortal Child and his education is the problem of problems. And first for illustration of what I would say may I not take for example, out of many millions, the life of one dark child. 

(DW 114)

Emphasizing the transformative and developmental power of education to improve and perfect distinct cultural and biological lineages, this passage posits the training and care of children as the central site of social and political struggle, the ground of all human problems. In accounting for the life of Coleridge-Taylor, “The Immortal Child” breaks with an Emersonian conception of genius by stressing “a series of chances” and “happy accident[s]” that allowed for the growth and recognition of the composer’s “genius” against all supposed laws and limits (DW 115; emphasis added).

From the start, Du Bois emphasizes that Coleridge-Taylor was lucky “to be born in Europe and to speak a universal tongue” because “in America he could hardly have had his career” (DW 117). Given the American penchant “to discourage, choke, and murder ability when it so far forgets itself as to choose a dark skin,” Du Bois notes that Coleridge-Taylor would, as an American, be “all wrong” to “many millions of people” (DW 117, 119). He then enumerates the reasons why:

First, he ought never to have been born, for he was the mulatto son of a white woman. Secondly, he should never have been educated as a musician,—he should have been trained, for his "place" in the world and to make him satisfied therewith. Thirdly, he should not have married the woman he loved and who
loved him, for she was white and the niece of an Oxford professor. Fourthly, the children of such a union—but why proceed? You know it all by heart. (DW 119)

Notice how questions of reproduction and education overlap in this passage. From his racially mixed ancestry to his professional career and marriage, Coleridge-Taylor stands outside of the bounds of normality. As a figure of the unlikely and unexpected, he embodies the way a series of chances and accidents is incorporated into the orders of an existing social world.

From the start of his life, Coleridge-Taylor “was a musician, and as choir-boy and violinist he walked unhesitatingly and surely to his life work” (DW 115). For him, existence “was neither meat nor drink,—it was creative flame; ideas, plans, melodies glowed within him. To create, to do, to accomplish; to know the white glory of mighty midnights and the pale Amen of dawns was his day of days” (DW 115). The sheer creative generativity of Coleridge-Taylor’s genius and his spiritual nature counter those who would foolishly claim black subjects’ innate incapacity for creativity and stands as evidence of the value and importance of supposedly useless or impractical talents. Moreover, in treating “existence” as “creative flame,” Du Bois extends his argument about the importance of embodiment in historical thinking. But because Coleridge-Taylor died from pneumonia at the very early age of 37 due to his lack of financial resources and quality medical care, he also exemplifies the wastefulness and irrationality of a social world dominated by the imperatives of industrialization and the exclusionary logic of racialization. Simply put, his death was not an accident but rather an event probabilistically determined by racialization. Thus, Du Bois will emphasize that though “we may well talk of the waste of wood and water, of food and fire [. . .] the real and unforgivable waste of modern civilization is the waste of ability and genius,—the killing of useful, indispensable men who have
no right to die; who deserve, not for themselves, but for the world, leisure, freedom from
distraction, expert medical advice, and intelligent sympathy” (DW 116).

Coleridge-Taylor was renowned for his three cantatas based on Longfellow’s *Song of
Hiawatha* which quickly brought him fame in England and led him to travel to the US in 1904.
While in America, he began to compose a number of piano compositions based on “negro
spirituals” which, for Du Bois, are a vital mark of sympathetic recognition and transnational
understanding: “[T]o his own people—to the sad sweetness of their voices, their inborn sense of
music, their broken, half-articulate voices,—he leapt with new enthusiasm. From the fainter
shadowings of his own life, he sensed instinctively the vaster tragedy of theirs. His soul yearned
to give voice and being to this human thing” (DW 117-118). Once again music serves as a force
for expressing deeply felt and communal affects which cannot ever be fully honored or captured
discursively but which nonetheless exercise a profound social and historical force. Though his
life was needlessly cut short, “the real lesson of the life of Coleridge-Taylor” was plain to Du
Bois: “[H]umanly speaking it was sheer accident that this boy developed his genius. We have a
right to assume that hundreds and thousands of boys and girls today are missing the chance of
developing unusual talents because the chances have been against them; and that indeed the
majority of the children of the world are not being systematically fitted for their life work and for
life itself” (DW 120). Coleridge-Taylor reveals how chance is limited and determined by a set of
practices, expectations and norms that falsely appear as laws or regularities. But, Du Bois insists,
in the realm of human experience the force of the accidental presses up against the supposedly
lawful or natural to reveal its contingency thereby making room for a new demarcation of
systematic or biological limitation that would more fully accommodate chance.
At stake here is the pressing question of, if education is the best tool for bio-cultural advancement, why are determinists able to produce statistical evidence of biologically fixed limits? Du Bois responds that “the fundamental cause of our failure in human education […] is due to the fact that we aim not at the full development of the child, but that the world regards and always has regarded education first as a means of buttressing the established order of things rather than improving it. And this is the real reason why strife, war, and revolution have marked the onward march of humanity instead of reason and sound reform” (DW 120-121). In short because education has been treated as an instrumental vehicle for the maintenance of an established social order, it has only been by accident and chance that its transformative powers have been established by figures like Coleridge-Taylor and Du Bois himself. Against familiar rationales for education, Du Bois argues that the purpose and guiding ideals of education should be reimagined:

Given as the ideal the utmost possible freedom for every human soul, with slavery for none, and equal honor for all necessary human tasks, then our problem of education is greatly simplified: we aim to develop human souls; to make all intelligent; to discover special talents and genius. With this course of training beginning in early childhood and never ceasing must go the technical training for the present world's work according to carefully studied individual gifts and wishes. (DW 122)

This democratic and liberatory conception of education honors all practices which are necessary to our continued existence and uplift—be they artistic or scientific—and makes the development of each particular soul the primary focus of educational effort. Far from being a finite course of schooling, education is seen here as an unending practice of technical training that keeps pace
with a changing world by drawing forth a given person’s special talents and genius. Such a vision stands in sharp contrast to the movement “to make the Public School primarily the handmaiden of production” (DW 122). Rather than imposing imperatives and goals in an a priori fashion according to an immediate and simplified conception of values, Du Bois suggests that each individuated soul is naturally and historically endowed with gifts and capacities, incapable of any predictive measurement, capacities that might be bolstered and adapted so as to be passed to the coming generations of human subjects who will in turn perfect and transform the scope and scale of human intelligence. In the close of “The Immortal Child,” then, we can see how Du Bois’s thinking about evolution’s role in the continuous development of the human race intersects with the political and economic consequences of modernization.

Such concerns also orient the essay “The Ruling of Men,” where he explores the challenges posed to realizing a democratic social order in a world being reshaped by modern science and technology. This essay is clearly connected to the issues of human conduct so brilliantly raised in “Sociology Hesitant” as well as the questions of freedom, law and liberty explored in John Brown. Here, Du Bois suggests that “the ruling of men is the effort to direct the individual actions of many persons toward some end. This end theoretically should be the greatest good of all, but no human group has ever reached this ideal because of ignorance and selfishness” (DW 78). Any legitimate form of democratic rule must aspire to a general good and create structures and institutions that educate the populace by uncovering their unique gifts while cultivating a general sense of sympathy and generosity. Yet, because “Life and civilization in the late 19th and early 20th century were Industry in its whole conception, language, and accomplishment: the object of life was to make goods [and] before this giant aspect of things, the new democracy stood aghast and impotent” (DW 79). “Men sneered at ‘democracy’ and
politics,” Du Bois continues, “and brought forth Fate and Philanthropy to rule the world—Fate which gave divine right to rule to the Captains of Industry and their created Millionaires; Philanthropy which organized vast schemes of relief to stop at least the flow of blood in the vaster wounds which industry was making” (*DW* 79). But this fatalistic and half-hearted embrace of philanthropy is profoundly insufficient for realizing a democratic world of freedom and inequality. For Du Bois, the possibility of democracy demands a nation recognize that “it holds in the heads and hearts of its individual citizens the vast mine of knowledge, out of which it may build a just government [. . .] more and more it calls those citizens to select their rulers and to judge the justice of their acts” (*DW* 83).

In keeping with his thinking about evolution, education and intergenerational development, Du Bois suggests that:

The real argument for democracy is, then, that in the people we have the source of that endless life and unbounded wisdom which the rulers of men must have. A given people today may not be intelligent, but through a democratic government that recognizes, not only the worth of the individual to himself, but the worth of his feelings and experiences to all, they can educate, not only the individual unit, but generation after generation, until they accumulate vast stores of wisdom. Democracy alone is the method of showing the whole experience of the race for the benefit of the future. (*DW* 84)

Figuring the people as a dynamic and temporally extended collectivity that stands as the ultimate epistemic and ethical foundation of legitimate authority and rule allows Du Bois to stress the importance of both education and the entire realm of individuated, phenomenological, and affective experience. Far from being totally atomistic, personal feeling and experience have an
important social and historical dimension. By valuing the multiplicity of perspectives equally, a
democratic society greatly expands its own powers of inquiry, self-control, wisdom and
intelligence. In developing means of making intelligible the spectrum of human experience,
democracy remains in keeping with Du Bois’s idiosyncratic reading of Darwin because it places
questions of reproduction and selection in a collective sphere that is neither splintered by—nor
ignorant of—categories like race, gender, and class. But “if democracy tries to exclude women
or Negroes or the poor or any class because of innate characteristics which do not interfere with
intelligence, then that democracy cripples itself.” (DW 84)

Of course, in order for all members of a society to be given the means for determining
their future, there must exist a meeting-place where the personal experiences of each soul
become public. The question of the relation of freedom and restraint, chance and law, enter once
again as Du Bois considers the normative and legal constitution of American democracy in an
era of industrial modernization. Traditionally, the role of government has been to “lay down only
very general rules of conduct, marking the limits of extreme anti-social acts, like fraud, theft, and
murder” with the assumption that “within these bounds was Freedom” and “the Liberty to think
and do and move as one wished,” though in reality “freedom was found in experience” to be both
“much narrower” and “much broader” (DW 90). On the one hand, “in matters of Truth and Faith
and Beauty” the “air of freedom is wide, almost limitless, for here, in the highest stretches,
individual freedom harms no man, and, therefore, no man has the right to limit it” (DW 90). The
realm of ideality and imagination is thus the least constrained and richest space of freedom. But
“on the other hand, in the valleys of the hard, unyielding laws of matter and the social necessities
of time production, and human intercourse, the limits on our freedom are stern and unbending if
we would exist and thrive” (DW 90). Unwilling to accept a facile opposition of the ideal and
material, Du Bois is explicit that “this does not say that everything here is governed by
incontrovertible ‘natural’ law which needs no human decision as to raw materials, machinery,
prices, wages, news-dissemination, education of children, etc.; but it does mean that decisions
here must be limited by brute facts and based on science and human wants” (*DW* 90). In such a
situation, the “future and mighty fight for Freedom” must begin in the realm of ideas before it
can be actualized in the social world (*DW* 90).

Du Bois posits that “the paradox which faces the civilized world today is that democratic
control is everywhere limited in its control of human interests” (*DW* 90). Though “mankind is
engaged in planting, forestry, and mining, preparing food and shelter, making clothes and
machines, transporting goods and folk, disseminating news, distributing products, doing public
and private personal service, teaching, advancing science, and creating art” the “scientific and
ethical boundaries of our industrial activities are not in the hands of scientists, teachers, and
c thinkers; nor is the intervening opportunity for decision left in the control of the public whose
welfare such decisions guide” (*DW* 90). Because the “making of the rules of Industry” is “not in
the hands of All, but in the hands of the Few,” the “wants of mankind” do not find any input or
expression in the material, economic and industrial organization of the world (*DW* 157). In such
a situation the status of law is plagued by a profound contradiction: those who determine
industry oppose law as “interfering with the ‘freedom of industry,’” while at the same time the
also oppose “free discussion and open determination of the rules of work and wealth and wages,
on the ground that harsh natural law brooks no interference by Democracy” (*DW* 90).

Emphasizing the profound threats posed by deterministic appeals to natural laws,
eugenics, and scientific racism, Du Bois argues:
Great as are our human differences and capabilities there is not the slightest scientific reason for assuming that a given human being of any race or sex cannot reach normal, human development if he is granted a reasonable chance. This is, of course, denied. It is denied so volubly and so frequently and with such positive conviction that the majority of unthinking people seem to assume that most human beings are not human and have no right to human treatment or human opportunity. All this goes to prove that human beings are, and must be, woefully ignorant of each other. It always startles us to find folks thinking like ourselves. [...] All this proves that none are so blind as those nearest the thing seen, while, on the other hand, the history of the world is the history of the discovery of the common humanity of human beings among steadily-increasing circles of men. (DW 84-85; emphasis added)

Contrasting the inevitable partiality of any soul with the long and slow historical recognition of the common humanity of all, Du Bois links the broad, though unjustified, embrace of biological and social determinism with questions of social recognition and affective identification. Though human nature is “infinite” a world characterized by inequalities of power and authority, social estrangement, and physical segregation makes human nature “finite by choking back the mass of men” from practicing their own autonomy (DW 81). In a truly democratic society, no set of citizens should be allowed to “interpret and act” on behalf of others (DW 81). One cannot merely disprove the claims of racial science but must also engage in interpersonal normative struggle without relying on externally imposed laws and mores. As we have already seen, aesthetic and affective experiences open forms of intimacy and sympathy between subjects offering a chance for agents to recast their own norms and desires. For Du Bois, art does not simply provide
images of goodness and beauty we might strive towards; it also fosters virtual meeting-places in which one might “sit with Shakespeare” or move “arm in arm with Balzac and Dumas” (*Writings* 438).

Nevertheless, art’s transformative democratic potentials remain stunted if it is reserved as a luxury for the rich or treated as wholly unrelated to questions of sociality and politics. This is why Du Bois calls for the use of the “power of public rewards” to de-commodify the arts (*DW* 87). He asks, “if millionaires can buy science and art, cannot the Democratic state outbid them not only with money but with the vast ideal of the common weal” (*DW* 87). In light of the powerful historical force of industry in determining both the present and the past, this intervention is necessary. Like Dewey, Du Bois suggests that so long as industry is determined by the wills of the few and the determining pressures of the market, democracy cannot truly be actualized. Thus, “unless men rule industry,” the possibility of making laws, educating children, or creating beauty will appear to be but the airy desires of backwards generations whose time has passed (*DW* 91). Unwilling to deny that “the problem of the democratization of industry is tremendous,” Du Bois suggests that:

> We must spread that sympathy and intelligence which tolerates the widest individual freedom despite the necessary public control; […] We must stand ready to defer to knowledge and science and judge […] and finally we must face the fact that the final distribution of goods—the question of wages and income is an ethical and not a mere mechanical problem […] All this means time and development. It comes not complete by instant revolution of a day, nor yet by the deferred evolution of a thousand years—it comes daily, bit by bit and step by step, as men and women learn and grow and as children are trained in Truth. (*DW* 91)
This processual, intergenerational, and incremental vision of social transformation turns on the interaction between a healthy respect for scientific research and a recognition that ethical questions pertaining to distribution can never be reduced to mechanical rules but instead operate in the deeply unpredictable realm of human judgement. Du Bois sees the arts and sciences as integral parts of a continuous process of human development belonging to all members of the human family rather than the exclusive possessions and achievements of particular experts and specialists. Establishing a meeting-place in which the insights of modern science and art can be commonly shared is thus essential for the fate of American democracy.

In Du Bois’s vision of democracy, the aesthetic is primary because before any project of socio-political reform must come “the Will to Human Brotherhood of all Colors, Races, and Creeds; the Wanting of the Wants of All” (DW 92). As we saw in John Brown, such radical acts of willing and desiring are rooted in the affective and aesthetic dimensions of life and they depend on the communicative powers that operate in the intonations and rhythms of voice and song. The transformative force of chance is most evident in those sensual and imaginative registers of perception and cognition attuned to phenomenal particularity and embodied feeling. We can read Du Bois’s suggestion that art is a unique form of propaganda as a recognition of the integral ties between imaginative labor and the emergence of feelings and ideals which come to shape our conduct in a common world across time and space rather than as a reductive diminishment of the arts. The social powers of aesthetic experience are thus the animate ground of a democratic community of inquiry oriented towards an ever-unfolding future where all souls are seen as invaluable and equal collaborators working in a world of law and chance.
Chapter Three:
“To Refine, To Clarify, To Intensify”:
William Carlos Williams, Science, and Imaginative Empiricism

“The poet thinks with his poem, in that lies his thought, and that in itself is the profundity.”
- W.C. Williams

“Communities which hasten to shed the naïve sapience of empiricism find themselves locked out of their destiny.”
— Michael Serres

William Carlos Williams combined the experimentalism of the scientist, the integrative, process-based vision of thinkers like Ralph Waldo Emerson and the pragmatists, and the technical and formal innovations of an international avant-garde in his decades-long attempt to reckon with the challenges and possibilities of modernity without lapsing into the reactionary anti-modernism that captured many of his most talented contemporaries. Working in a period of transformation shaped by the overlapping regimes of rationalization, institutionalization, and purification central to America’s modernization, he explored the generative, messy, and contingent forms of contact and intermixture that underwrite our knowledge, and he did so in order to clarify the foundational role of imagination in human thought and action. While his simultaneous investments in the primacy of material things and the transformative force of imagination have led many to suggest that he was a contradictory thinker caught between Romantic idealism and a mechanical materialism, I argue that Williams adapted his own scientific training to develop an experimental and improvisational poetics that, in Stanley Scott’s

---

1 Williams’s considerable affinities with Emerson have been detailed by Ian Copestake’s *The Ethics of William Carlos Williams’s Poetry* (Rochester: Camden House, 2010). Donald Markos’s *Ideas in Things: The Poems of William Carlos Williams* (Rutherford: Farleigh Dickinson University Press, 1994) places him in an organicist lineage including Emerson and Whitehead. As I hope to make clear in this chapter, the continuing debates concerning Williams’s allegiances to either idealism or materialism obscure both his own considerable insights into the interplay between the material and ideal in experience as well as his lifelong interest in the *practical* dimensions of thought.
words, breaks with the very dualistic and “mechanistic worldview inevitably engendered by the presuppositions of Cartesianism” that produces a grounding rupture between things and ideas (Scott 122).

In this chapter I look to two experimental texts written in a formative period in Williams’s early career — *Kora in Hell: Improvisations* (1920) and *Spring and All* (1923). I show how his poetics took shape in response to the spread of a turn-of-the-century “epistemological ideal” that equated objectivity and the “scientific temper” with a calculated diminishment of the “emotional, aesthetic and volitional factors in the observation and interpretation of nature” (Bordogna 95, 92). As historians of science and technology have shown, this ideal was integral to the formation of a professionalized, disciplinary regime of standardized knowledge as well as debates about the proper organization of a democratic society being rapidly reshaped by industrialism. Williams, much like John Dewey, was an acute critic of this appropriation of science and worried that new conceptions of knowledge threatened to delegitimize and disrupt modes of feeling and thinking necessary for the health of a democratic culture. While many figures in this period either praised or condemned the impersonal objectivity of science, Williams focused on the lessons that might be learned from its fallible, creative, and experimental ethos. Somewhat counterintuitively, the revisionary post-Romantic account of imagination we find in Williams’s early experimental texts indexes his engagement with the epistemological shifts that attended the economic, material, and cultural transformation of America in the twentieth century. More importantly, Williams’s account of the imagination’s role in human experience informs his claim that poetry, not science, is “the base of knowledge itself,” leading him to position the poem as a vital arena for critical inquiry in a democratic society (*The Embodiment of Knowledge* [EK] 143). As Robert Creeley has noted that the
imagination is central for Williams because it establishes both the “limit” and “possibility” of any order or “system”—be it poetic, political, or scientific—while animating “applications of human potential” that are fundamentally incalculable (Creeley xii). As we will see, this recognition of the spontaneity of imagination led Williams to reject the pervasive idea that what cannot be specified categorically or subsumed under a law cannot be counted as knowledge.

As critics like Deric Corlew and T. Hugh Crawford have shown, Williams’s complex relation to modern science owes much to his medical training at the University of Pennsylvania and the University of Leipzig as well as his career as a practicing physician. While in medical school he was exposed to turn-of-the-century advances in biology, physiology, and psychology that detailed the systematic interconnections among mind, body, and environment as he experienced the creative dimensions of actual and active laboratory research. This scientific background led him to join figures like Ezra Pound and Gertrude Stein in aligning modernist aesthetic experimentation with the scientific breakthroughs of thinkers like Charles Darwin, Louis Pasteur, Albert Einstein, and Marie Curie. Yet, his experiences in medical school also revealed the limitations of a new organization of the disciplines, sensitizing him to the cultural consequences of the spread of scientism into all reaches of life. Williams was, as we will see, a tireless critic of those “closed lobbies of thought” comprised of isolated specialists seeking “to

---

2 As he once explained, “the practice of medicine” combined “the best features of both science and philosophy with that imponderable and enlightening element, disease, unknown in its normality to either,” (Imaginations [I] 363).

3 T. Hugh Crawford’s Modernism, Medicine and William Carlos Williams (Norman: University of Oklahoma Press, 1993) has detailed how Williams’s early “medical and scientific studies” informed his own “form of modernism” (Crawford 4). For more on Williams’s familiarity with “the emerging fields of psychology and neuroscience” (Crawford 70) and their influence on his understanding of poetic form and the imagination see Deric Corlew’s “The Mind and the Nervous System: Synaptic Space in the Poetry of William Carlos Williams,” Mosaic 43.3 (2010) 69-86.

4 Lisa Steinman’s Made in America: Science, Technology, and American Modernist Poets (New Haven: Yale University Press, 1987) has traced how Williams’s poetics of process intersected with popular accounts of Einsteinian physics. My own interest lies not in how Williams applied science or filled his poetics with scientific content but instead in how questions raised by the prominence of science and its methods in this period helped to shape his thinking about the normative and social functions of art and imagination.
halt the mutation of truth under a single aegis [by] fixing it to a complexion of their private manufacture” (Selected Essays [SE] 204). He mobilized his own scientific training against misguided and reductive invocations of the epistemic supremacy of science. While he sometimes disparaged science and philosophy, Williams’s poetics were not fundamentally anti-scientific. Instead, his “real enemy” was a kind of “doctrinaire formula-worship” that flattened the dynamism of inquiry into a mechanical process obscuring the imaginative dimensions of the arts and sciences (Imaginations [I] 285).

While Williams’s attempts to break with inherited discursive and perceptual conventions mark his work as identifiably modernist, his aesthetic innovations should be distinguished for how they align a poetic striving against habituated modes of experience with a democratic project of re-enchanting the everyday world. This revaluation of ordinary experience does not turn on an irrationalist or subjectivist rejection of instrumental reason but entails, instead, a dramatic recasting of our received Cartesian understanding of the relationship between the knower and the known. By presenting another image of the activity of thinking that honors the embodied, environmental, social, and ultimately imaginative dynamics of inquiry and experience, Williams projected an alternative to this emerging organization of knowledge in the very forms of his texts. This flawed view of knowledge was explicitly patterned after an idealized understanding of science that cleaved a shared world of experience into disparate and often opposed epistemological fields reserved for certified specialists. In his rendition of the now familiar story of modern disenchantment, Williams argued that the monistic and mystical drive for absolute certainty typically associated with religion was not so much extinguished with the rise of natural science but subtly transformed into a new and powerful dogma. Put differently, Williams rejected the teleological project underlying Emersonian poetic science. Rather than
standing as evidence for the essentially enchanting, fallible, and incalculable dynamics of our worldly engagements, science was associated with a kind of messianic and teleological purification of human knowledge—what Dewey called “the quest for certainty”—that would eventually halt the mutations of truth and put the dynamic searching of thought, with all of its uncertainty and surprise to rest for once and for all.

Writing against this dangerous and “sacred lie of the inviolability of science” and the emergence of “a structure of society of graduated importances” in a posthumously published essay from 1919 ironically entitled “Advancement of Learning,” Williams argues that the “idolatrous following” of natural science has resulted in “unnecessary confusion” rather than enlightenment (“Advancement of Learning” [AL] 97-99 passim). More particularly, the essay highlights the serious normative and theoretical difficulties posed by the changing nature and organization of the sciences in the later nineteenth century by pointing to the case of the French entomologist Henri Fabre. Even though Fabre had been praised by many naturalists for his meticulous empirical work on the insect world, he had broken with the currents of history in persistently arguing that “there must be a divine, preordaining intelligence” operative in the natural world (AL 94). Fabre upheld “a certain wasp” that “sting[s] her prey in nine separate and never to be deviated from places” so as to “paralyze without killing” as evidence of the irrationality of Darwin’s account of “the origin and survival of species” (AL 94). Williams stresses that this Emersonian “resort to a ‘divine’ explanation […] is nothing at all” and that “Fabre was wrong on scientific grounds”; but nonetheless he still argues that this divine turn was the product of an “instinct for truth” (AL 94). Though Williams was a committed Darwinian, he understood that questions of purpose, value, and meaning were always involved in human inquiry. Thus, he sympathetically framed Fabre as “too passionate a lover” to be able to
“accurately distinguish” between “the knowledgeable thing, the wasp, the bee, the ant” and a “science that exists as a fact always neatly to be set up” (AL 94).

Far from endorsing a hard and fast split between fact and value, Williams here insists on the incapacity of any epistemic system to exhaust or explain the richness of an empirical entity like Fabre’s wasp. The idolatry of scientific reductionism and the idealist metaphysics of creationism were simply two sides of the same coin, united by a desire to find an absolute rational foundation for experience. As he would argue at greater length a decade later in The Embodiment of Knowledge, when science “is used out of its category to give meaning” to all phenomena, when it “becomes a fetish, a catch-all, when it seeks to be absolute,” it clouds “the field of vision” (Embodiment of Knowledge [EK] 86-87). Williams’s cosmology thus had little room for Emerson’s metaphysical archetypes and totalizing analogies. Against those who upheld science and logic as the sole means for modernizing knowledge, Williams took a more sophisticated and pluralistic stance, arguing that scientific inquiry itself “is founded on a postulate” that cannot be apodictically grounded by logic because novel hypotheses and cognitive breakthroughs emerge spontaneously as the result of an imaginative engagement with the empirical world most often associated with the arts (AL 99-100). Hence, his radical and seemingly opaque formulation that “art is the pure effect of the force upon which science depends for its reality” (SA 77). Put differently, both art and science are driven forward by the

5 Some philosophers of science might insist that Williams here conflates the “context of discovery” with that of “justification by overlooking the fact that science eventuates in a communal process of justification and verification that is not “subjective.” But, as Thomas Kuhn has shown, that philosophical distinction turns on a conception of “objectivity” that is undermined by the actual history of science itself. For a deeper discussion of these issues, see Kuhn’s “Objectivity, Value Judgment and Theory Choice” in The Essential Tension (Chicago: University of Chicago Press, 1977) 320-339. For a careful account of the rise of this radical positivist epistemological ideal, see Lorraine Daston and Peter Galison’s Objectivity (New York: Zone Books, 2008). Iwan Morus has traced in some detail the way “new kinds of instruments and new regimes of laboratory discipline” that sought to “eliminate dependence on the bodily senses as arbiters of truth” contributed to a theoretically incoherent and ahistorical conception of scientific knowledge at the turn of the century (Morus 807). See his “Worlds of Wonder: Sensation and the Victorian Scientific Performance” Isis 101.4 (2010) 806-16.
imagination’s capacity to ceaselessly re-enchant a seemingly familiar and fixed world of experience. As I explain below, Williams’s resolutely non-Romantic claims about the transformative force of imagination and its role in the formulation of knowledge emerged from his yearlong experiment with improvisational prose writing conducted from 1917 to 1918.⁶ In the wake of this extended experiment, Williams suggested that the imagination spontaneously operates at the nexus of perception and judgment incalculably redistributing the relations that marry mind and world. Without invoking transcendent capacities for the imagination, Williams says that imagination is vital because it establishes a future for inquiry when categorical and habituated forms of judgment reach their limits. The imagination’s role in fostering unexpected perceptual and inferential leaps was, for him, apparent not only in the act of aesthetic composition but in the notable scientific breakthroughs which populate his texts: Darwin’s theory of natural selection, the Curies’ work on radioactivity, and Einstein’s theories of relativity.

Given Williams’s well-established connections to the work of the American pragmatists, it is unsurprising that his critiques of positivism resonate with arguments made by Charles Sanders Peirce, William James, and John Dewey concerning the continuities between aesthetic, normative, and scientific forms of thought.⁷ More specifically, Williams’s emphasis on the

---

⁶ Bruce Holsapple has rightly noted that this initial foray into improvisational writing initiated a particularly fruitful period of writing and theorizing that culminated in the publication of a number of Williams’s most successful and experimental works, including *Spring and All*, *The Great American Novel*, and *In the American Grain*. While these works are often praised for their formal and aesthetic daring and read alongside advance in the visual arts, they are also deeply concerned with the changing nature of knowledge, agency, and value in the modern world. See Holsapple, *The Birth of Imagination: William Carlos Williams on Form* (Albuquerque: University of New Mexico Press, 2016).

importance of imaginative breakthroughs and the aesthetic dimensions of scientific inquiry find a
distinct echo in Peirce’s discussions of abduction. Abduction names an incalculable and quasi-
instinctual process of hypothesis formation that underlies “all the ideas of science” (The
Essential Peirce [EP] 2.205).⁸ On Peirce’s account, abduction arises “like a flash” in the midst of
experience as a “shading off” or “gradation of” perception unexpectedly offering the subject a
“new suggestion” (EP 224, 227). As John Kaag has explained, abduction cannot be “described in
terms of traditional logical analysis” because it is not “prescribed by any a priori rule or
constraint but rather discovers and develops the constraints of an evolving situation” in concert
with the “emotional rhythms” and environmental affordances of experience (Kaag 97).
Williams’s process-based poetics, with their emphasis on action, emplacement, and
improvisation, privilege abduction by situating the concrete work of art as uniquely capable of
making the imagination’s spontaneous leaps intelligible and available for reflection.

Yet, as Williams well understood, to acknowledge the importance of abduction requires
that we trouble the givenness and seemingly transparent immediacy of experience itself. Because
abduction is a consequence of the temporal unfolding of thought as it makes contact with things
moving in a living world, it demands we adopt an ever-developing and dynamic picture of
experience irreducible to the mere correlation of atomistic bits of external sense-data with an
internal and pure system of logical categories. In place of an inherited empiricist conception of
experience, pragmatists like Peirce and Dewey sketched a relational, evolutionary, and

---

⁸ As Thomas Alexander has explained, if historically imagination has functioned as “the psychological property of
having images of absent or nonexistent objects” or as “a power of primary and unlimited creativity, acting above and
beyond any discursively rational understanding,” pragmatists suggest that it is “neither merely an extension of the
passive capacity of sensation, subsumable under pre-established rational categorical structures, nor is it a purely
intuitive source of novelty” but a “mode of action” or “dynamic structuring of experience that arises from our lived
embodiment” that opens up genuinely new paths of action and inquiry by glimpsing the actual in light of the
inferentialist view that honored the continuously growing and infinitely branching plentitude of experience. As we will see, Williams endorses this pragmatist reframing of experience by forging a serial poetics that delineates the accretion, creation, and abductive assemblage of relations at play in aesthetic reception and production. Because he embraces the implicitly serial view of experience found in the work of the classical pragmatists, Williams rejects the idea that the poet first thinks and then writes. Instead, he suggests that the poet “writes and the best of him, despite his thought, will appear on the page even to his surprise, unrecognized or even sometimes against his will” (EK 7). This experimental and processual view of writing as a kind of abductive thinking in action leads Williams to argue that in the act of writing or reading we glimpse “a light, a bolt even” that “cuts through the chaotic murk of information” which illumines a genuinely new value or affordance in our experience of a shared world (EK 6).

While many have seen Williams’s emphasis on the poem’s status as an object and his investments in “no ideas in things” as evidence of a naïve rejection of abstraction, our recognition of both the epistemic shift he was responding to and his understanding of the abductive dynamics of imagining could clarify the social and political implications of his suggestion that the poet thinks in and with the poem. For instance, in Spring and All he argues that “in great works of the imagination A CREATIVE FORCE IS SHOWN AT WORK MAKING OBJECTS WHICH ALONE COMPLETE SCIENCE AND ALLOW INTELLIGENCE TO SURVIVE” (“Spring and All” [SA] 37). Here, form is a singular site for meditating and embodying the creative force of imagination. Because poetic forms are capable of showing the very constructive processes that underlie their existence, they can be said to complete science by making intelligible those abductive inferences that are often cleaved away in the institutional legitimizing processes of scientific knowledge. Works of art are thus
particularly rich and vital conduits that both foster the continued transmission of perceptual and ethical breakthroughs while generating novel thoughts and feelings for readers. Poems publicly exemplify ways of feeling and judging that cannot be reduced down to a formula, rule, or law, whether natural or divine. This is why Williams argues that art is essential for the continuing survival of a host of cultural achievements and social capacities. He terms that condition of survival *intelligence*. Poems do not record the spiritual ascent of the imagination but instead act as bulwarks against the tendency of thought to ossify into a sclerotic pattern of repetition and negation that block the emergence of something new.

Attending to the complex dependencies between imagination, experience, and form in Williams’s work helps to more exactly specify the sense in which his poetics are to be characterized as *democratic*. Critics have long located the democratic strain in Williams’s work in his vernacular descriptions of ordinary things while also exploring the seemingly paradoxical nature of his simultaneous adoption of modernist claims about the autonomy of aesthetic form and his suggestion that poems formally reflect the social, economic, and material contexts of their composition. As will become clear, critics have faltered here in hewing too closely to the things in Williams’s poems rather than the thinking they embody and facilitate. I follow John Beck in arguing that Williams’s democratic poetics can be substantially clarified by placing Williams’s poetry in conversation with Dewey’s philosophical reflections on the meanings and challenges of democracy. Much like Williams, Dewey argued that “the foundation of democracy” was rooted in a “faith in human intelligence and the power of pooled and cooperative experience” (*The Later Works of John Dewey, 1926-1953* [LWD] 219). Crucially neither intelligence nor experience are to be understood as “complete,” instead they are growing processes that generate “the knowledge and wisdom needed to guide collective” and democratic
actions (LWD 219). As William Caspary notes, Dewey’s conception of democracy as a mediated, evolving, and communal process of articulating and momentarily resolving interpretive and ethical disputes owes much to his own conceptions of scientific method. To forge a Deweyan “democratic community,” thus requires “methods of creative inquiry”—evident in both art and science—that lead to the discovery and invention of new ideas and shared values that grow and transform through messy and tense forms of dialogical exchange (Caspary 43). Underlying this view of the democratic experiment is a recognition of the necessarily social nature of human intelligence. As I have already indicated, Dewey saw this a form of social and creative inquiry “exemplified in the natural sciences” where the dependence of an individual mind on a set of external objects and instruments and a community of inquirers was particularly evident (Caspary 43).

While Williams’s debts to Dewey’s work are well established it is important to acknowledge that their intellectual kinship was not free from tensions. Perhaps the clearest point of difference concerns Williams’s continued emphasis on the pedagogical and practical values of the art of poetry in an aspiring democratic society. As Williams argued, while Dewey looked for “a solution to the problem of education” in the fields of philosophy, “psychology and sociology,” Williams critiqued Dewey’s neglect of poetry’s power to exemplify the very experimental, dialogical, and open-ended modes of transformative inquiry central to their shared view of a democratic culture (EK 7). Though Dewey praised the arts far more than his fellow philosophers, his aesthetic theory often voices a fairly conventional account of organic unity that frequently risks uncritical idealization. In texts like Kora in Hell and Spring and All, we can glimpse a far richer, more localized, and contingent view of both modern America and aesthetic experience. In these works, Williams dialectically suspends the harmonious experience of consummation so
central to Dewey’s aesthetics and the Romantic tradition from which it descends. His singular re-conception of the processual and abductive “dance” of the imagination and his formal innovations acknowledge that the transactive practices democracy demands must tarry with tensions, tragedies, and paradoxes. Williams recognized that poetry was uniquely suited to make such tensions intelligible for later collective acts of social and epistemic action.

This chapter is organized into two sections. In the first section, I turn to *Kora in Hell: Improvisations* to trace how Williams’s revisionary account of the role and function of the imagination emerged from his yearlong improvisational experiments. These experiments led him to emphasize the generative dynamics of poetic form in discovering and extending novel forms of abstraction, categorization, and perception. As we will see, Williams’s complex and multi-stage compositional practices adapt the observational techniques and experimental methods of science to mediate the incalculability of improvisation and to test the scope of the imagination’s abductive processes. *Kora* breaks with Emerson’s account of imagination’s ties with the supersensible and transcendent to emphasize its necessary links with everyday experience and its generative dependence on material things. The improvisations gathered in the book record and register how the “dance” between the poet’s imagination and worldly objects renews and reenchants a familiar world by enacting a “disjointing process” that incalculably unsettles conventions, categories, and habits (I 285). Williams thus positions poetic composition as a rigorous and singular mode of empirical inquiry in a world where “science [is stuck] doing slavery service upon gas engines” (I 13). Forgoing any attempt to construct a poetic science, *Kora* gives rise to what Beck has called an “imaginative empiricism” in which the creation and reception of aesthetic forms is positioned as a way to sustain and explore shared ways of thinking that evade established disciplinary epistemic norms (Beck 36).
In my second section, I show how the insights concerning imagination and form struck on in the improvisation are extended and developed in Williams’s most successful early experimental text *Spring and All*. While this book has been praised for its aesthetic innovations and includes some of his most familiar early poems, I argue that the formal dimensions of the work cannot be fully appreciated when separated from its attempts to clarify the vital and misunderstood role of imagination in human thinking. By focusing on how *Spring and All* reframes reading as a creative and collaborative activity and uses a densely interrelated series of poems to both embody and awaken imagination, I show how the text is animated by a democratic and pedagogical ethos. Put differently, Williams asks the reader to aid him in remediating a crippling divorce of imagination from both rationality and reality. As Aleksandra Hernandez has suggested, the book’s wild shifts between poetry and prose allow the reader to experience the continuities, relations, and dependencies “undone by the corporatization of labor, the institutionalization of education and the sciences, and the professionalization of the arts,” thereby revealing how the imagination enables “the traffic […] between science and literature, poem and world, reader and poet” (Hernandez 70-71). By inviting the reader to actively experiment with and engage in dynamic and uncategorizable modes of thinking and feeling made possible by poetry and imagination, Williams demonstrates the role art might play in the broader project of realizing a meeting place that would nurture a more pluralistic and inclusive organization of knowledge.

**A World of New Values**

Long after *Kora in Hell: Improvisations* was published in 1920, Williams explained that he “had no book in mind” when he initially committed to write “something” every day “for a year” (*I 3*). By abandoning the conventions of verse and any aspiration for aesthetic perfection,
he discovered that the process of improvisation could activate “that elasticity of the attention which frees the mind” from habituated modes of thinking and thereby bring about a revaluation or re-enchantment of a seemingly unremarkable and familiar world (I 82; original emphasis). As Stephen Fredman has noted, Williams’s improvisations concern themselves with “the details of mundane existence,” mapping the way “experience actually happens” or unfolds (Fredman 15). Improvisation “breaks forth extemporaneously” as a “meditation upon the moment” that “continues beginning throughout its length” in a kinetic mode of inventive searching brought about by improvisations’ “formal requirement of novelty”; indeed, the sentences of Kora often proceed by “contradiction, paradox and non-sequitur” (Fredman 15-16). Consequently, they make significant demands on the reader’s own ingenuity and attention. After having “assembled a fairly bulky manuscript,” Williams began a second phase of composition—in part as a response to Pound’s prodding—in which he wrote “notes of explanation” that would shed light on his rather opaque texts (I 29). Initially whim and instinct led the way. However, in later reading over, interpreting, and selecting different improvisations, he began to observe patterns and commonalities latent in the relations between drafts that informed his understanding of the imagination. Put simply, rather than beginning with a fully formed and coherent theory of the imagination, Williams’s account emerged through the later stages of this recursive compositional experiment.

Williams himself calls explicit attention to the close relationship between his compositional methods and his understanding of the imagination in Kora. He writes, that “by the brokenness of his composition” he had made himself “master of a weapon he could possess […] in no other way” (I 16). Without his recursive, diurnal practice he would have never grasped the vital role played by imagination in mediating everyday experience and generating new trains of
thinking and feeling. Throughout the text, he emphasizes that imagination supports a form of “vigorous conception” in which one glimpses “the thing itself without forethought or afterthought but with great intensity of perception” (*I* 18,8). Because imagination momentarily suspends established forms of judgment in favor of a form active receptivity, we cannot reflect upon it directly but only through the consequences which follow from its leaps and insights. The act of improvising—of writing—was thus central for his thinking about imagination because it allowed him to extend and record the fleeting, abductive transformations that occurred in “the condition of imaginative suspense” (*SA* 48). Later, it permitted him to study and “know” the imagination “in the largeness of its proportions” by reflecting upon the texts that had accrued day after day (*SA* 48). This two-phase approach marks a meeting place between the observational and notational practices of the scientist and avant-garde aesthetic techniques—outlined in part by Wassily Kandinsky—that prioritized chance, spontaneity, and juxtaposition. It made it possible for him to mediate the fleeting and often toxic leaps of the imagination without constraining the scope of its movements.9 Though he abandons revision and embraces chance, uncertainty, and accident, Williams’s improvisational practice is not unmediated, automatic, or thoughtless. Instead, it is animated by the generative tension between freedom and limitation, incalculability and repetition.

When *Kora in Hell* appeared in print two years after the conclusion of Williams’s yearlong experiment, readers encountered eighty-four improvisations arranged into twenty-seven

---

tripartite sections or chapters, each of which included italicized interpretations. Though they initially appear as stochastic or random, each section actually presents a matrix of relations that extend or branch in numerous directions, to reveal a world of continuities and openings. Preceding this complex array of improvisations is a wandering prologue that shifts between personal recollections, private correspondences, and theoretical polemics. The prologue highlights how techno-scientific modernization threatens to diminish the richness of bodily experience and fix the dynamism of experience. More specifically, Williams argues that when “the so-called natural or scientific array” becomes the fixed and singular measure of order or knowledge, it becomes “the walking devil of modern life” by binding “the senses” and the imagination within the confines of categorical thought and make the world appear as a lifeless “finality” (I 14). As the philosopher and historian of science Ludwik Fleck would argue in his 1935 Genesis and Development of a Scientific Fact, when naturalized or scientific bodies of fact are treated as ontological absolutes, they threaten to obstruct the very development of scientific inquiry itself by obscuring “our own participation in perception,” thereby leading us to “feel a complete passivity in the face of a power that is independent of us; a power we call ‘existence’ or ‘reality’” (Fleck xxvii). Building on his own discoveries of the imagination’s transformative role in re-ordering perceptual experience, Williams argues that the only way of breaking through the “apparition” which attends scientism is to free imagination from the shackles of preconception so that it can “make its way by compass and follow no path” (I 14).

For Williams, an overreliance on habituated, categorical forms of thinking results in perception becoming an “easy, lateral sliding” across a single and undifferentiated “plane” populated by pre-established, “associational or sentimental” values (I 14). Consequently, the act of improvisation “loosen[s] the attention” by awakening the imagination (I 14). In an imaginative
state, the poet enters another affective and perceptual mode that makes intelligible “in things those inimitable particles of dissimilarity to all other things which are the peculiar perfections of the things in question” (I 18). Imagining is a condition and quality of attention attuned to those unique and surprising qualitative “particles” distinguishing each empirical entity from the next. To imagine is not to tap ethereal currents but rather simply to recognize and value a thing’s sheer material singularity. Improvisational writing thus affords a much-needed opportunity to generate “new growths of passionate attachment” to the qualities and objects encountered in experience that are “dissimilar in every member” to the associational values and ideas which have typically organized thought and perception (I 22). Williams acknowledges the fleeting nature of such particularized and incalculable perceptual breakthroughs and doesn’t deny the claims of habit or the force of convention. This is why, on his account, the poet must engage in a recursive process of improvisation by staying in motion like an “acrobat” who “must exercise continually to keep his joints free” (I 28).

If, as he explains in one interpretive commentary, “a thing known passes into the muscles [and] the will is quit of it, save only when set into vibration by the forces of darkness opposed to it,” the systematizing modes of abstraction that produce knowledge bear an essentially problematic relation to the forms of attention that are their conditions of possibility (I 74; original emphasis). In bringing us into contact with the forces of darkness that oppose the reductive synthesizing of reason, improvisation reactivates our volitional powers and facilitates a “shifting of category” in which concrete particulars are momentarily broken free from the webs of conceptual association that mask their particularity (I 285). As Sherman Paul has shown, Williams used dance as a “fundamental image of the poetic process, the poem, and even the poem’s reception” as well as a figure for “the movement of the imagination” as it comes “into
contact with the world” and thus discovers “the particular motions of particular things” (68-72). The shifting, kinetic, and interactive dance of imagination with the things of the world is brilliantly embodied in the following improvisation:

The particular thing, whether it be four pinches of four divers white powders cleverly compounded to cure surely, safely, pleasantly a painful twitching of the eyelids or say a pencil sharpened at one end, dwarfs the imagination, makes logic a butterfly, offers a finality that sends us spinning through space, a fixity the mind could climb forever, a revolving mountain, a complexity with a surface of glass; the gist of poetry. D. C. al fin. (I 81)

If the pulsing alliteration and twisting syntax of this sentence presses us to experience and savor the material qualities of language before we are able fully grasp its meaning, the De Capo al fine that finishes the improvisation sends us back to the head so that we might consider each word and phrase with a renewed sense of attentiveness. In doing so, we experience the very thing this passage is describing: the power of “the particular thing” to captivate, energize, and reorient the mind.10 Here the finality or fixity encountered is generative because it is external to the categories and conventions of thought, so that the most mundane objects can be experienced as a “complexity with a surface of glass,” a paradoxically infinite fixity that supports and determines the dance.

As the preceding passage makes clear, Williams’s investments in things have to do with the capacity of objects to exceed our attempts to know them in an exhaustive or complete way.

10 There is an obvious echo here of Duchamp, who Williams explicitly discusses in the prologue: “according to Duchamp […] a stained-glass window that had fallen out and lay more or less together on the ground was of far greater interest that the thing conventionally composed in situ” (I 8). As is clear, then, Williams knew the determining roles context, convention and larger social structures play in constituting the thing as thing. His contention, of course, is that we can develop imaginatively novel relations without entering explicitly aesthetic spaces. For a discussion of Williams as a writer of the “democratic ready-made,” see Bob Perelman’s “Shock of the Familiar,” in Cambridge History of American Poetry (New York: Cambridge University Press, 2014) 557-82.
Of equal importance is the way it shows that imagination not only depends upon but also is dwarfed by the objects of the world. This is why he later emphasized in a letter to Louis Zukofsky that “the effect of a ‘thing’ surpasses all thought about it” (*SL* 102). If any given empirical entity is a plural *matrix* enduring in time, there is always some qualitative excess that ensures that a thing will necessarily outpace the idea attempting to organize it. Preventing the substitution of an idea for a thing is not, for Williams, primarily an epistemic question but a *practical* one. At stake in this battle against habit and the hubris of reason is the preservation of a whole range of affective, emotional, and cognitive experiences that have to do with how we value the world and situate ourselves in within it.

Williams’s imaginative empiricism thus anticipates and remains instructive for a wide range of contemporary theorists who have argued that renewed attention to objects and things might open up new—less anthropocentric—ethical, political, and speculative stances. His thinking about the dance of the imagination with (extra)ordinary things can, for instance, be productively compared with Jane Bennet’s revisionary account of enchantment. For Bennett, enchantment names a complex “mood” or “state of wonder” that simultaneously involves “a pleasurable feeling of being charmed by [a] novel and as yet unprocessed encounter” and a somewhat uncanny “feeling of being disrupted or torn out of one’s default sensory-psychic-intellectual disposition” (Bennett 4-5). Yet, as Williams recognized, “to be struck and shaken by the extraordinary that lives amid the familiar and the everyday” requires maintaining “sensory receptivity to the marvelous specificity of things,” developing mediating practices to keep the imagination actively in contact with the world (Bennett 4). Importantly, for Williams the re-

---

11 Williams understood, in Bill Brown’s words, that “the story of objects asserting themselves as things […] is the story of a changed relation to the human subject and thus the story of how the thing really names less an object than a particular subject-object relation” (Brown 4). See Brown, “Thing Theory,” *Critical Inquiry* 28.2 (2001) 1-22.
enchantment of experience and the reanimation of thinking that results from making contact with things does not involve magical or mystical forces, nor does it entail an outright abandonment of rationality. Rather, by enacting a “continual and violent refreshing of the idea” in and through the act of composition, Williams came to see that the empirical, everyday world is itself the ground of possibility that can never cease to shock and surprise us so long as it is seen imaginatively (I 22). When explaining the central lesson of his initial improvisations to Kenneth Burke, he would write that he discovered that “all things have their perfections and that perfection and perfection are equal” (The Humane Particulars [HP] 14). As we will see in the next section, this insight would have deep implications for Williams’s thinking about the modes of reflection best suited for democratic subjects.

My discussion thus far may have given the impression that the improvisations were merely a private or narrowly subjective affair profoundly out of balance with Williams’s attempts to posit modernist aesthetic experimentation in response to the homogenizing force of modern scientism. But the imaginative empiricism developed in Kora emphasizes the continuity and capaciousness of experience itself. In a striking passage that betrays his debts to both the poetics of Walt Whitman and the pragmatist’s reframing of experience, he describes the act of composition as follows:

*that which is heard from the lips of those to whom we are talking in our day’s-affairs mingles with what we see in the streets and everywhere about us as it mingles also with our imaginations. By this chemistry is fabricated a language of the day which shifts and reveals its meaning as clouds shift and turn in the sky and sometimes send down rain or snow or hail. This is the language to which few ears are tuned so that it is said by poets that few men are ever in their full senses*
since they have no way to use their imaginations. Thus to say that a man has no imagination is to say nearly that he is blind or deaf. But of old poets would translate this hidden language into a kind of replica of the speech of the world with certain distinctions of rhyme and meter to show that it was not really that speech. Nowadays the elements of that language are set down as heard and the imagination of the listener and the poet are left free to mingle in the dance. (I 59; original emphasis)

In stressing the complex, hybrid and worldly nature of the imagination’s “mingling,” this passage clarifies that the improvisations are not simply the outpourings of a private unconscious but actually are the results of a peculiar sort of worldly and social attunement. Through the act of composition, imagination amplifies a hidden and ever-shifting vernacular composed of the words, images, and events of a daily life that is irreducible to a single speaker or mode of representation. Rather than an autonomous lawgiver shaping passive matter, the poet is a participant-observer who collaborates with his materials to produce a form that owes as much to contingency as it does to agency.

To be clear, Williams does not believe that the act of making can be a wholly unconscious, impersonal, or automatic process, and he freely acknowledges that improvisation is a failure-prone method that often results in confusion or nonsense. But while the “linking of one thing with another” that occurs in the improvisational process frequently has “effects of a destructive power” and throws “all manner of things […] out of key,” his extended and multiphase experiment disclosed a “hidden desire for the dance, a lust of the imagination, a will to accord two instruments in a duet” at work in the improvisations (I 18-19). Such a discovery led him to suggest that the poet’s imagination, in its mingling with the everyday world,
incalculably “moves from one thing to another” to reveal a “one-thousandth part of a quality in common” amongst an array of particulars that have been cleansed of conventional associations. Poetic form can thus delineate a kind of “imaginative category” composed of entities of “nearly totally divergent natures” (I 14). Such an assemblage is formed through a process of ad-hoc apposition, and its members “meet in fellowship” without having to cede “the full color of their perfections” (I 19). Put differently, the improvisations chart an irreducible form of thinking determined by an interplay between the contingencies and determinations of empirical particularities and the generation of continuities that take shape in the act of composition without any clear telos. By breaking with any notion of form as mere containment, convention, or shape, Williams insists that his improvisations remain open to the reader so that their imaginations might “mingle in the dance.”

One particularly clear example of the imagination’s capacity to construct uniquely flexible and dynamic categories occurs in the twenty-seventh cluster of Kora in Hell. Here we see how improvisations composed at distinct moments are shown, by their apposition, to have a common relation while maintaining their autonomy and independence from one another. The first improvisation reads:

Doors have a back side also. And grass blades are double edged. It’s no use trying to deceive me, leaves fall more by the buds that push them off than by lack of greenness. Or throw two shoes on the floor and see how they’ll lie if you think it’s all one way. (I 80)

This writing displays the characteristics of emergence or self-organization; it incrementally builds and grows as a pattern is established in the first pair of sentences—an initial assertion that is modified by a second sentence beginning with a conjunction—that then recurs in the second
pair of sentences so that iteration leads to expansion and modulation, repetition to differentiation. In its very syntax and structure, we find a kind of doubling, a pushing of thought in a procession of words that continually “buds,” giving us an arrangement of particulars cast upon the page that have been allowed to “lie” as they fall without some belated act of tidying up. In linking the organic and inorganic—delineating relations between doors, grass blades, leaves, and shoes without ever positing a fixed term—this improvisation joins the objects without forcing them to relinquish their independence. If we begin with an assertion of a shared doubleness between doors and blades of grass, the third sentence then introduces a new conceptual register comprising questions of temporality, decay, and generativity. This shift culminates in the fourth sentence where a pair of shoes affirms or demonstrates the sheer fact of chance and contingency, while simultaneously echoing the falling leaves and doubled doors of the earlier sentences.

Thin on any context which might allow us to situate its claims in a broader argumentative framework, we move to the next improvisation which develops and diverts the concerns of the first:

There is no truth—sh!—but the honest truth and that is that touch-me-nots mean nothing, that daisies at a distance seem mushrooms and that—your Japanese silk today was not the sky’s blue but your pajamas now as you lean over the crib’s edge are and day’s in! Grassgreen the mosquito net caught over your head’s butt for foliage. What else? Except odors—an old hallway. Moresco. Salvago. –and a game of socker. I was too nervous and young to win—that day. (I 80-81)

Williams’s opening assertion can be read as a continuation of the earlier argumentative strand but one governed by a more flowing kind of thought in which the sonic and rhythmic qualities of language are primary. The alternating consonants of the elongated first sentence generate
movement and expansion first through a series of t sounds—“there,” “truth”—which are again doubled—“the,” “truth that,” “touch—and then a modulation between m’s and n’s—"me-not,” “mean noting”—and finally to “daises” and “distance” which establish a turn away from external flora to a domestic interior linked by a dash which registers a turn to an immediate “now.” In Williams’s second sentence, which describes the image of a head veiled with “grassgreen” netting, we immediately hear echoes of the earlier “grass blades” and “greenness.” These echoes invite us to consider how these passages blur boundaries and categories—plants, people, indoors and outdoors, natural and cultural, etc.—while also drawing us forward to see “what else” the imagination might offer. As the olfactory blends with memory, rhyme emerges as a structuring principle—"hallway” and “that day,” or the more interesting “Moresco” and “Salvago”—that contributes to a disorienting spatial-temporal shift. The starts, stops, and modulations of this second passage confirm Donald Byrd’s apt suggestion that in Williams’s improvisations “erotic proliferation never looks to any stability beyond the stability that the act itself affords” (Byrd 199). Provisional and searching, such proliferation breaks off unexpectedly sending us headlong into a new space of contemplation.

In the third and final improvisation of the cluster we read:

All that seem solid: melanchoiliias, idees fixes, eight years at the academy, Mr. Locke, this year and the next and the next—one like another—whee!—they are April zephyrs were one a Botticelli, between their chinks, pink anemones. (I 81)

Beginning with another seemingly philosophical proposition, this sentence strikes out against stability itself, insisting that any perceived solidity is, in fact, fading and fragile like a flower. Williams here assembles a chain of apparently incommensurate entities and scales—moods and persons, years and months. He thus reintroduces the floral and organic motifs of the earlier
passages but brings in an unexpected conditional that greatly expands the frame of reference or context. The phrase “April zephyrs” serves as a relay explicitly evoking Botticelli’s allegorical painting *Primavera* (1482). This complex allusion not only plays on the motif of seasonal renewal and the mythic figure of Kore or Persephone (the painting depicts Chloris’ transformation into Flora), but also allows the reader to re-locate a kind of classical beauty in the ordinary world of modern America. All of a sudden, the preceding image of a head surrounded by the “foliage” of green mosquito netting (see figure 1) takes on new significance as we see how the seemingly aimless dancing and disjointing of the imagination casts the familiar, solid and fixed in a new light.

![Botticelli’s “La Primavera”](https://upload.wikimedia.org/wikipedia/commons/3/3c/Botticelli-primavera.jpg)

**Fig. 1.** Botticelli’s “La Primavera” from: Botticelli, Sandro. “La Primavera.” *Wikipedia Commons*, Wikipedia, 21 Apr. 2021, upload.wikimedia.org/wikipedia/commons/3/3c/Botticelli-primavera.jpg.
Taken together, these three improvisations help us to understand Williams’s opposition to the cultural nostalgia and classical “rehash” of Pound and Eliot less as an outright rejection of tradition or Europe than as part of a subtle understanding of the relationship between art and the everyday (I 24). Rather than attend to “a lot of baying and snapping scholiasts,” he argues the modern artist ought to observe the everyday world, because even the “great masters of antiquity” found “inspiration” for their own work in a “bastard sort of knowledge of that diversity of context in things and situations” attained only when the imagination is allowed to dance freely (I 24, 48; original emphases). This “bastard sort of knowledge” affirms the diversity and value of a common material world and stands as the ground of Williams’s democratic poetics. As we have seen, the imaginative categories that composition makes possible are animated by an inclusive and egalitarian ethos that can draw seemingly opposed or unrelated realms of meaning and value—for instance, the classical and modern as in the preceding example—into a meeting place that discloses avenues for new trains of thought and action. In turning to Spring and All, we will see that the improvisations led Williams to treat poetic form itself as a shared means of imaginative discovery. This approach enabled him to advance a novel argument for the social and ethical role modernist art might play in a world being reshaped by modern science and industrial technology.

**Emplacing Knowledge**

In the midst of one of Spring and All’s many bursts of improvised prose, Williams looks back to “The Improvisations.” In Kora in Hell, he explains, “I let the imagination have its own way to see if it could save itself. Something very definite came of it. I found myself alleviated but most important I began there and then to revalue experience, to understand what I was at” (SA 43-44). As we have seen, this revaluation of experience was a consequence of his discovery
of the imagination’s capacity to support alternate modes of affective receptivity and abductive inference. Perhaps more importantly, it led him to position the act of composition as a critical resource for navigating a rapidly modernizing world. Admitting that the “fault” of his sprawling and opaque improvisations was their frequent “dislocation of sense,” he notes that “now I have come to a different condition. I find that the values there discovered can be extended. I find myself extending the understanding to the work of others and to other things” (SA 44). Spring and All can be seen to “extend” and advance Williams’s earlier experiments and insights in a number of different registers and directions. Formally, the later work adapts both the clustered and serial organization of Kora’s improvisations, retaining their powerful admixture of creative expression and critical commentary, while also introducing a new element: carefully lineated and interlinked poems that invite the reader to engage in imaginative mediation. Theoretically, Williams continues to explore the generative continuities between reading and writing, perceiving and thinking. And he does so while more explicitly advancing a claim for the way imaginative processes make possible breakthroughs and innovations in a wide range of fields including the scientific and the political.

Taken as a whole, Spring and All is simultaneously a statement of poetics, a novel argument for art’s social function, a critique of epistemic and institutional over-specialization, an argument concerning the vital, though neglected, role of the imagination in modernity, as well as an original work of art. Far from being clearly distinguishable, the critical and creative tendencies of the text overlap and interlace in ways that frequently undermine critical summation or discursive reduction. As Paul Jaussen has argued, the book’s unique argumentative density owes much to Williams’s attempts to illuminate the entangled and co-determining relationships among imagination, the mediating conceptual, social and linguistic forms which condition
experience and an “eruptive force” he calls life (Jaussen 18). Throughout *Spring and All*, “life” serves as an expansive term encompassing a set of processes and forces surging through the biological and cultural world that ceaselessly generate novelty, difference and, by extension, temporal and qualitative change. For Williams, life is “at any moment subversive of life as it was the moment before—always new, irregular” (*SL* 23-24). Thus, it acts both as an incitement to construct mediating structures that provide a necessary modicum of stability and as an uncontrollable, spontaneous and fugitive force which prevents any system or structure from attaining completion or closure. “Newness of life” is thus a fundamental and animating element in “all human activities,” including technical pursuits like “science;” paradoxically, however, established epistemic and linguistic “edifices tend to cover over [life] and deny its significance” (Jaussen 18).

By emphasizing the dynamism of life and its crucial role in the development of human history and experience, Williams seeks to call attention to the fact that we occupy a world which is always *new* and whose affordances and limits derive from an antiphonal interplay between opposed forces like destruction and creation, knowledge and ignorance, repetition and difference. From this vantage, the project’s titular reference to *spring* is not simply a natural or seasonal occurrence but a process of renewal which lays claim to *all* objects, systems of knowledge, persons, or events. As Jaussen is careful to note, despite Williams’s embrace of the transformative, anarchical energies of life, he nevertheless refused a vitalistic embrace of intuition. Instead, he argued that “life becomes actual” for us “only when” we “recognize it with the imagination and name it” (*SA* 41). In place of a dangerous appeal to pure immediacy or Emerson’s spiritualized impersonality, Williams argues that the imaginative process of poetic mediation is how we actualize life and draw it into contact with consciousness. If the abductive
nature of imagination facilitates contact with life, the forms composed in and through its dance with particular things render the new-in-the-old intelligible, thereby making “the advance of intelligence possible” (SA 28). As he would explain in the later essay “Against the Weather” (1939), the work of art is best understood as an object that serves “as evidence, in its structure, of a new world which it has been created to affirm” (SE 196). As an affirmational or evidentiary structure, the poem can never be fully autonomous from the social and material world or treated as epiphenomenal or epiphanic. Instead, the poem is an interface depending on a stable, but changing, world and on a reader possessing imaginative capacities commensurate with those of an author. By fostering contact between imagination and life, and between idea and thing, the poem supports an abductive process of renewal that enables both reader and writer “to enter a new world and have there freedom of movement and newness” (SA 68).

Williams’s account of the dynamic relations of life, imagination, and poetic form requires that he find ways to free his readers from inherited and deeply limiting assumptions about art. More specifically, he must combat prevalent commonplaces that oppose imagination to both rationality and reality. Far from being a “plaything,” the imagination is best understood as an “actual force comparable to electricity or steam,” which can be harnessed to do very real and consequential work in the social and material world (SA 49). If, as he suggests in a particularly important passage, the “force” of imagination is what allows us to “refine, to clarify, to intensify that eternal moment in which we alone live,” it is singularly resistant to a priori theorization or immediate reflection (SA 3). Given the abductive nature of imagination and its necessary entanglements with concrete particularities, it cannot be treated as if it were a distinct and “deducible” faculty. Thus, rather than produce a philosophically coherent account of imagination—a task which had long troubled philosophers and critics working in Kant’s wake—
Williams leveraged the powers of textual and poetic form to awaken and support imaginative modes of thinking and feeling, supplementing the limits of definition with the powers of demonstration.

In tying his claims for what the imagination is and does directly to the event and activity of reading, Williams disrupts the inherited accounts of artistic representation that typically orient reception, continually reminding his readers “how easy” it is “to slip into the old mode, how hard to / cling firmly to the advance” (SA 24). The jagged surface of Spring and All breaks with conventional representational and syntactic patterns in ways that disrupt habitual, more passive forms of reading, to focus the reader’s attention on their own interpretive acts. Mark Long has rightly argued that the “unexampled” structure of the book—with its typographical irregularities, incomplete formulations, frequent dashes and spaces, as well as its shifts between poetry and prose—asks the reader to discover or invent “an appropriate measure for the indirections, fragments and continuities” they encounter (Long 10). By doing so, Williams makes the act of reading echo or simulate the constructive and imaginative process of composition itself. The reader thus comes to occupy a similar position to the one Williams did as he transformed his first improvisations into a finished text. Echoing Kora’s account of the continuities between the poet and the improvisations’ audience, Spring and All suggests that as we “pirouette” with the book we reunite it with a living world and so infuse it with a “present passion” that sets the work in motion (SA 91).12 Product is thus transformed into process as the imagination is brought into contact with life through the mediation of poetic form.

12 Though it is certainly the case that all texts entail some kind of reconstructive labor on behalf of the reader, the form and design of a text can minimize or maximize the scope of a reader’s imaginative and creative involvement. What’s more, assumptions concerning the ontological status of art, its proper field of concern and the nature of imagination delimit the possibilities of any act of reception
Unsurprisingly, in the text’s very first pages we find Williams actively working to disrupt and reorient readerly expectations by arguing that “nearly all writing […] if not all art, has been especially designed to keep up the barrier” between the reader and their “consciousness of immediate contact with the world” (SA 3, 1). If “the reader knows himself as he was twenty years ago and he has also in mind a vision of what he would be […] but the thing he never knows and never dares to know is what he is at the exact moment that he is,” Williams emphasizes that “this moment is the only thing” he is concerned with (SA 2-3). Against a conception of reading as mere entertainment and any sense of art as “beautiful illusion,” the disorienting shifts of the first pages call attention to the constructed particularity of the work (SA 3). That shift reveals the dependence of the reader’s virtual experience upon the material and semantic dimensions of the text and the physical operations that occur in the immediate “moment” of reading (SA 1). In a strikingly Whitmanian move that marks the culmination of the opening section of the book, Williams directly addresses the reader writing that “in the imagination, we are from henceforth (so long as you read) locked in a fraternal embrace, the classic caress of author and reader. We are one. Whenever I say ‘I’ I mean also ‘you’. And so, together, as one, we shall begin” (SA 3-4). This invitation to collaborate not only directly equates reading with imagining but also clearly establishes the social and pedagogical dimensions of the book. *Spring and All* should thus be seen as a meeting place.

While Williams was hardly alone in seeking to make the work of art a site of instruction, his approach differs fundamentally from many of his modernist peers. Rather than adopt a didactic or authoritarian stance, *Spring and All* is animated by a democratic and egalitarian ethos.13 Instead of assembling edifying cultural fragments or engaging in a withering and

---

13 As James Breslin has established, *Spring and All* marks a definitive advance in Williams’s attempts to develop an explicitly democratic strain of modernist poetics. More particularly, he has shown that while the more imitative
negative critique of modernity, Williams affirms the sensual and imperfect world and seeks to share a \textit{method} for engaging with it that might actualize neglected potentialities through an intersubjective form of communicative and imaginative exchange. Building on Kora’s account of the imagination’s “disjointing process” (\textit{I} 285) through which we grasp the new, emergent and possible in the midst of a familiar world, \textit{Spring and All} argues for the vital role poetry might play in a period of rapid professionalization and specialization when “boys are sent with dullest faith to technical schools of all sorts,” and “knowledge is placed before” students “as if it were a stair at the top of which a DEGREE is obtained” (\textit{SA} 75, 77). By presenting the “curriculum of knowledge” in “the dead state,” and by having teachers inundate students with “masses of complicated fact” from a lectern, the modern “field of education” enacts a fatal divorce of theory from practice that minimizes the subject’s active role in the production and \textit{use} of knowledge and blocks their own imaginative capacities (\textit{SA} 75-76).

John Beck has argued that Williams joins Dewey in emphasizing the need for a new empirical and experimental approach to education in an industrializing democratic society. Both thinkers believed in a form of education that “teaches a way of being and knowing that draws the individual into the world in its complexity, not one that categorizes and separates,” and each in his own way sought to “redefine and reclaim science and scientific method as a means of achieving democratic change” (Beck 63, 60).\footnote{Andrew Jewett has shown that Dewey was but one of a number of American thinkers who believed that “scientific method embodied a broad and fundamentally democratic ethic,” the “empirical, antiauthoritarian” dynamics of which might support a “form of communication and a tool for ethical change, offered reliability without certainty and persuasion without coercion” (Jewett 96). As I have discussed in my introduction, Du Bois, Williams, and Rukeyser were vital participants in this broader cultural debate. See \textit{Science, Democracy, and the American University: From the Civil War to the Cold War} (Cambridge: Cambridge University Press, 2014).} For Williams, in particular, such a project

\textit{Al Que Quiere} frequently adopted a moralizing tone in which the poet is positioned above his ‘townspeople,’ in \textit{Spring and All} the poems focus on concrete “act[s] of perception” or “jolting moment[s] of discovery” and link poet and reader in the impersonality of “bodily consciousness” and empirical observation (Breslin 64, 76, 54). See Breslin, \textit{William Carlos Williams: An American Artist} (New York: Oxford University Press, 1970).
entailed a conception of both democracy and science as creative processes “akin to the creativity of artistic practice” united in their shared dependence on abductive leaps of imagination (Beck 158). *Spring and All* thus contrasts highly idealized and mechanical forms of thinking and learning with what occurs in the active moment of reading. More specifically, the text argues that by activating the imagination the work of art fosters an “emplacement of knowledge into a living current” wherein established divisions and distributions slacken, and we are enabled to momentarily “enjoy, to taste, to engage the free world” as something “detached” and “sufficient to itself” (*S4* 50). In emplacing the ideational order of knowledge and opening it to the determinations of the living currents surging through immediate experience, the poetic process aims to realize a meeting place by fostering that “contact between life and imagination” which is “essential to freedom” and the continued evolution of intelligence and all forms of inquiry (*S4* 19). Against the “TRADITIONALISTS OF PLAGARISM” who use “great weapons” like “science,” “philosophy,” and, most troublingly, “art” to control and delimit the possibilities presented by life and actively obstruct and “resent” the emergence of any “new order,” Williams appeals directly to the reader’s own experience of the work (*S4* 15-16). In short, he asks that his readers participate in the production of new bodies of knowledge and more inclusive forms of social relation.

As Williams’s talk of plagiarism indicates, mimetic accounts which treat art as a mere reflection of some more primary reality are the product of modern epistemological and metaphysical stances that disavow the flux and dynamism of life in favor of timeless essences and immutable principles. In sharp contrast to Emerson, *Spring and All* argues that “nature is the

---

15 As Allan Dunn has noted, the freedom provided though poetry “takes the paradoxical form of a necessary adherence to the shape of the moment” and has nothing to do with an evasion or overcoming of the claims of temporal or material limitation (Dunn 53). See Dunn, “Williams’s Liberating Need,” *Journal of Modern Literature* 16.1 (1989) 49-59.
hint to [artistic] composition not because it is familiar” or intuitively known but rather because it exhibits “the quality of independent existence,” of structure, form and actuality (SA 50). We should see the natural and artistic not as unified or “opposed” but “apposed,” running alongside one another in the continuum of experience, each “transfused with the same forces which transfuse the earth” (SA 50). Of course, in stressing the ontological parity between artificial and natural objects, Williams does not intend to diminish the specificity of poetic form. Instead, he calls attention to what is made possible by a work of art when it is “dealt with as a reality in itself” rather than as a mere reflection (SA 78). Williams thus adopts a position concerning the instrumental and pedagogical functions of poetic form akin to Dewey’s understanding of the work of art as “a device in experimentation carried on for the sake of education” that makes possible “new modes of perception” (LWD 164). From such a perspective, the poet “opens new objects to be observed and enjoyed” for the reader and renews their conceptions of the natural and social world in the same way “inventors of microscopes and microphones” do (LWD 164).

We can see how the poems in the series act as experimental devices or instruments that can foster and support the kinds of imaginative and generative reading practices Williams describes by looking to the seventh poem of the series later entitled “The Rose.”16 The poem begins by putting a number of the concerns already discussed into play:

The rose is obsolete

but each petal ends in

---

16 Bram Dijkstra was the first to suggest that Williams’s poem is a “translation” of Juan Gris 1914 collage Roses. In his account of the way the poem works to attain “tactile” and “concrete” qualities associated with visual art, he established a pattern of reading the poem as a thing more than a thought, a kind of still life whose primary orientation is presentational (Dijkstra 174). Without downplaying the cubist” nature of this poem, it is important to register that Williams is interested here not with bare or mere presentation but explicitly concerned with engagement. In this sense he comes much closer to Gertrude Stein (who owned Gris’s Roses) in emphasizing the relation between art-object and viewer. See Dijkstra, Cubism, Stieglitz, and the Early Poetry of William Carlos Williams: The Hieroglyphics of a New Speech (Princeton: Princeton University Press, 1969).
an edge, the double facet
cementing the grooved
columns of air—The edge
cuts without cutting
meets—nothing—renews
itself in metal or porcelain—

whither? It ends—

But if it ends
the start is begun
so that to engage roses
becomes a geometry—

(SA 30-31)

Here the repeated use of the qualifying conjunction “but”—along with Williams’s use of
dashes—has the effect of challenging expectations and deferring closure by enacting a continual
modification that draws the reader into the unfolding of the poem. As sentences merge into one
another, they register the shifting motions of mind. The poem’s sharp enjambments amplify this
syntactical stretching to build tensions. In beginning again and again, conjunctive and disjunctive
relations pass from foreground to background moving from the rose to its petals, from “end” to
“edge.” Like a rose, the poem we read is a structure whose component parts—its lines—“cut
without cutting” and have a “faceted” or overlapping quality. With endings and beginnings
spilling into one another, we move across line breaks searching for the subject of a given line or
phrase performing the very forms of visual engagement the poem is describing. As sense and intellect actively cooperate in a characteristically imaginative way, symmetries and patterns emerge—like the movement of the word “edge” from the left to right and back again—engaging the capacities of the formal structure of the work to enact a “geometry.” Though fragile and small, the petals of the rose have the capacity to form “columns of air,” just as the lines of the poem can restructure the flow of breath as the planes of a cubist work guide the movement of the eyes.

As the poem continues, we encounter a proliferation of roses that intersect with a larger system of cultural meaning and production:

    Sharper, neater, more cutting
    figured in majolica—
    the broken plate
    glazed with a rose

    Somewhere the sense
    Makes copper roses
    Steel roses—

    The rose carried weight of love
    but love is at an end — of roses

    It is at the edge of the
    petal that love waits
The repetition of words and phrases here mirrors the “sharper, neater” mechanical reproduction of the rose and its ubiquity as a cultural symbol of love. Against the reification of love that “weighs upon” the rose obfuscating its particularity, Williams situates love at the edge of the rose petal. The homophone (weight/wait) builds upon the earlier conceptual play on endings—end as obsolescence or withering and end as edge or destination (“whither?”)—and prioritizing forward flowing motion towards the boundary or line past which love waits. Rejecting the fixity of concurrence or static alignment, the poem’s logic and disjointed cubist form bespeaks an understanding of love as a temporal process of striving rather than a singular achievement, a process in excess of any singular symbol.

Following these repetitions, the poem breaks into a flood of surprising adjectives and then into fragmentation:

Crisp, worked to defeat
Laboredness—fragile
Plucked, moist, half-raised
Cold, precise, touching

What

The place between the petal’s
Edge and the
From the petal’s edge a line starts
that being of steel
infinitely fine, infinitely
rigid penetrates
the Milky Way (SA 31-32)

When we reach the isolated “what” that dangles between stanzas, that word simultaneously triggers a conditioned response that situates the reader both as an interlocutor who might wager an answer and, so long as the reader is subvocalizing, as the asker of the question. The rich dialogical dynamics of the poem are reinforced and amplified by the couplet which follows this pair of lines because it is marked by a visual and grammatical absence that serves as an explicit lure for the reader to generate meaning.

Of course, the question is how does that meaning get generated? One possible reading, which builds upon the association between petal and line and Williams’s emphasis on the immediate moment of reading, is to draw one’s eyes and imagination from this white-space to the very edge of the page into a more liminal zone—a “space between”—where we glimpse the intersections of various and overlapping planes of experience ranging from the real to the potential, the actual to the virtual, seeing, in short, how “the fragility of the flower/Unbruised/ Penetrates spaces” (SA 32). If this poem stands equally as a testament both to the power of objects—be they poems or flowers, artificial or natural—and the capacities of imagination to generate and renew meaning from experience, it also performs or sets into motion one of the animating ideas of the volume as a whole.17 Namely, that the obsolescence of the intellect’s

---

17 No doubt, Williams had in mind the long association between poetry and flowers most evident in the idea of poesy. Though it is beyond the scope of my current intervention, a comparison between this poem and John Clare’s “Pastoral Poesy,” not published until 1935, would be fruitful in understanding Williams’s debts and differences from the Romantics.
patterns and measures is only ever surpassed by attending to the affective and aesthetic dimensions of experience. The cure for disenchantment is not to be found in mysticism or the super-sensual but in renewed attention to the empirical world where we touch, see, and feel the imagination.

Yet “The Rose,” like all poems in Spring and All, does not exist in isolation and cannot be reckoned outside of a singular site-specific and temporally distinct reading. Throughout the work “so much depends / upon” the accretion of resonances, the suggestive echoes and the determinations of contingencies that enter through the reader’s acts of relating (SA 74). As Rachel Blau DuPlessis has suggested, in this kind of “serial work” meanings are “built by the ordering or sequencing of the parts […and] individual units gain in implication, but appear, paradoxically enough, perpetually suggestive and incomplete” (DuPlessis 95). The interplay between fullness and incompleteness that is achieved through Williams’s twenty-seven poem series is vital for resisting those operations of categorical thought and disciplinary knowledge-production that deny or obfuscate life’s challenge to reason’s hubris. Thinking in and with these poems fosters a mode of critical reflection that moves toward coherence without offering the consolations of closure. For the reader, each poem flits between being a complete or whole unit and a fragment by continuously calling the reader’s imagination to set “broken things into a dance,” thus improvising momentary coherence. As we saw in Kora, the paratactic, iterative dancing of the poetic imagination has a unique capacity to form mediating structures and assemblages whose novelty and idiosyncratic logic provide a kind of open-ended or incomplete coherence. This essentially poetic view of unity is the animating condition of possibility for any meeting place because it does not impinge on the autonomy of the particular in a manner remarkably like the way a scientific hypothesis seeks to make intelligible an unexplained
phenomena or event without pretending to exhaust its possibilities. In *Spring and All*’s poetic series we find that:

The aggregate
is untamed
encapsulating
irritants
but
of agonized spires
knits
peace (*SA* 57)

Put differently, the poetic aggregate is not tamed, disciplined, or smoothed over by idealization, but instead includes “irritating” elements that both make possible and undermine coherence.

This is why Williams suggests that “the pursuit of ‘art’ offers” a mode of thinking and valuing distinct from the categorical impulses of the “acquisitive understanding” or the narrowness of “religious dogmatism” (*SA* 42). By refracting the fundamental unevenness of the modern world, seriality allows the reader to experience the diversity of the modern in all its impurity. The forms of serial experience imagination and art empower thus work to fund the cognitive, affective, and ethical demands democracy makes upon human agents who always risk falling into the grips of reductive modes of categorical thinking. Alongside poems concerned with conventionally poetic subjects like flowers, farmers, and rural landscapes, we find fragments of urban modernity—“Wrigley’s, appendicitis, John Marin:/ skyscraper soup”—and we are encouraged to see the changes wrought by the spread of technology; to notice the way “the decay of cathedrals” is attended by “the phenomenal/ growth of movie houses” (*SA* 39, 59).
What is so remarkable is that Williams neither rejects nor uncritically embraces the emergence of mass production and industrial culture but seeks instead to present the contradictions of American modernity without falling prey to existing narratives which seek to justify it. Modernization is thus neither to be seen as a destructive process of secularization foreclosing on some prelapsarian possibility nor as a progressive and teleological force of rationalization moving us beyond primitive superstitions. Instead, modernization is to be met as a challenge and an opportunity that demands the experimental and incremental ethos of seriality and the collaborative labor of all persons.

While some poems in the series unfurl or delineate ways of seeing and attending attuned to the plentitude of ordinary things, thereby demonstrating a method for orienting oneself in a rapidly changing world, other poems collapse the distance between author and reader, and so abandon any presumed authority to resolve or reconcile the crisis brought about by rationalization. Williams calls attention to difficulties and paradoxes attending modernization because he recognizes the necessarily communal and social nature of any project of cultural transformation. By asking the reader to explore different relational combinations throughout the text, he transforms aesthetic reception into a kind of rehearsal for broader forms of social action and democratic reform. It is plausible to see fatalistic despair in his assertion that “The pure products of America / go crazy”—and in the familiar figure of modern America as a driverless car—the closing lines of the eighteenth poem (“To Elsie”) actually emphasize the inability of enlightened self-reliant individuals to heroically determine a collective. Williams’s focus is on
the need for social collaboration and cooperation. Thus, there can be “No one / to witness / and adjust, no one to drive the car” (SA 67; emphasis added).18

At the same time, Williams was no naïve populist. He recognized that appeals to communal action entail deep and fundamental dangers in a world of commercialized culture, historical inequities, and mass communication. Such an awareness is palpable in the twenty sixth poem of the series which concerns a summertime baseball game. The poem begins with a positive consideration of “the crowd” as a generality that

is moved uniformly

by a spirit of uselessness

which delights them—

all the exciting detail

of the chase

and the escape, the error

the flash of genius—

all to no end save beauty

the eternal— (SA 88-89)

---

The uniformity of Williams’s couplets leads us to cast our eyes over this opening assertion in ways that mirror a poet can glimpse affective excitement in physical movement from the stands and appreciates how and why one might link the high language of the aesthetic—spirit, delight, genius, beauty, eternal—with popular culture and mass spectacle. Yet this transparent democratizing or idealizing act is quickly complicated as the poem shifts its attention.

So in detail they, the crowd,
are beautiful

for this
to be warned against

saluted and defied—
It is alive, venomous

It smiles grimly
its words cut—(SA 89)

If in the opening of the poem we see the capacity of a crowd to value “uselessness” and “beauty,” these later lines assert that when considered “in detail” the individuals composing the crowd are themselves “beautiful.” In stacking conjunctions, Williams introduces a kind of dissonance that leads us to consider whether individual beauty is a consequence of a collective capacity to be moved by uselessness or if the predicate “beauty” is cause for caution, salutation, and defiance. The point of course is not to decide but to register the tensions between the particular and universal entailed by such a calculation.
As “they” become an “it,” the atmosphere and tone of the poem shifts, and particularized individuals enter into focus: “the flashy female with her / Mother” and “The Jew” who grasp the “deadly” nature of the crowd (SA 89). As the uniformity is pierced or “cut” apart by a more careful act of perceptual judgment, its multiple possibilities become vivid.

It is the Inquisition, the
Revolution

It is beauty itself
that lives

day by day in them
idly— (SA 90)

The often-jarring difficulty of ascertaining reference or antecedence captures the difficulty of keeping hold of distinctions and specificities when we face a mass of complexity or detail. Though “idle,” the power of social collectivities and their paradoxical capacities—reactionary or revolutionary—is registered as the poem delineates the continuous suturing movements of the eye.

This is
The power of their faces

It is summer, it is the solstice
the crowd is
cheering, the crowd is laughing
in detail

permanently, seriously
without thought (SA 90)

The poem’s physiognomy both flirts with and resists reductive stereotyping by ceaselessly
deferring syntactic closure. Williams neither asserts that all crowds are inherently thoughtless
nor affirms a familiar liberal individualism. Instead, he seeks to show how the forms of
imaginative awareness made possible by composition can hold incompatible judgements in a
tense unity. Rather than affirm ambiguity or a crippling deferral in the face of a fundamental
aporia, he insists on our need to come to grips with the problems history has produced through a
process of poetic mediation attuned to what Williams called the “pluralism of experience” (EK
149).

What grants poetry its singular social and epistemic function are its entanglement with a
common and everyday world and its capacity to support shared modes of imaginative and
abductive reflection that reveal unexplored possibilities and unacknowledged values. A poem,
when considered explicitly as an empirical object, is of value in a democratic society for
Williams because it can facilitate a “sense of mutual contact” between geographically and
temporally separate subjects supporting an “interchange of ideas” that might forge or disclose
intersections between distinct areas of concern and experience (SE 28-29). Anticipating Muriel
Rukeyser’s later call for a meeting place that might supplement the dangers of specialization,
which I discuss in the next chapter, Williams suggests that this interchange makes it possible for
the “information that is static in the liberal arts and sciences” to become “active—loosed from a
cupboard of dullness” and put to new uses in the present (I 296). In a late passage of *Spring and All* that mixes the language of physics and politics, modernity is figured as the locus of a “sharp division” between two contending forces (*SA* 70). On the one hand, there is the dominant “acquisitive—PROGRESSIVE force of the lump” where we find “the merchant, hibernating, unmagnetized” alongside other members of the “so called intellectual class,” each an “isolate, inactive” particle in a lifeless and fixed formation (*SA* 69-70). On the other hand, there is “the energizing force of the imagination” which surges “among artists” and “the social, energized class—ebullient now in Russia” pulling different individual “particles” into a transformative assemblage of experimental inquirers committed to the realization of a new world (*SA* 70).

As Williams’s recourse to the “phraseology of science” makes plain, his vision of the role imagination plays in the collective development of human agency owes much to the radical scientific breakthroughs of the late nineteenth century and so refuses the temptation to see the fractures of modern knowledge in terms of two cultures (*SA* 90). Just as physicists had overturned longstanding assumptions about the deep structure and order of the natural world, Russian soviets were attempting to enact new forms of democratic social and political organization. As we have seen, throughout *Kora in Hell* and *Spring and All* Williams’s imaginative empiricism seeks to contribute to the activation and actualization of an “ebullient” assemblage of agents who together might guide and appropriate the transformative energies of techno-scientific modernization while remaining in contact with the generative limitations that life imposes on any structure of knowledge. In arguing that “the study of all human activity is the

---

19 While critics like David Frail have argued that Williams’s early works make “individual autonomy the center of his politics and poetics” and emphasize imagination over any “social mediation” with a fallen modernity, passages like these from *Spring and All* show that both art and imagination are inexorably social and historical (Frail 6, 198). See Frail, *The Early Politics and Poetics of William Carlos Williams* (Ann Arbor: University of Michigan Press, 1987).
delineation of the crescence and ebb of” the imagination’s energizing force “shifting from class to class and location to location—rhythm,” he situates art as integral site for the subject to encounter and recognize its own imaginative agency (SA 70-71). As he would make particularly clear in later texts like *In the American Grain* (1925) and *Paterson* (1946-1958), the rhythms of imagination underwrite the historical, epistemic, and social shifts that are later appropriated by the acquisitive force of tradition. By joining the dance of imagination through and with the poems of *Spring and All*, the reader comes to see that their acts are comparable to the movements of imagination found in “geography in the era of Vasco de Gama, the arts in the twelfth century, psychiatry in the later years of the nineteenth century, astrophysics, organic chemistry; [or] French painting since 1820” (*SE* 242). In all this “variation”—in the “sciences as well as the arts”—we see the force of the imagination as the uniting and animating thread (*SE* 243).

Williams’s arguments concerning imagination and form emerged in and through his engagements and struggles against the spread of scientism, and positivist epistemologies led him to argue for the central role modernist art might play in the realization of another community of inquirers. In critiquing “the overemphasis, and continual hope that has been stuccoed upon Science,” as was evident in Emerson’s poetic science, and in arguing for a renouncement of its “transcendental pretentions,” Williams was clear that he did not want nor aim “to remove the benefits of science” for “it is the imagination that offers and would suffer the change” (*EK* 92, 88, 113). Instead, he argued that both science and philosophy acknowledge that they form “a part in the whole,” which was to be understood as related “to the other categories, horizontally, in the general body of man” (*EK* 88). In turning to the work of the poet Muriel Rukeyser in the next chapter, we will see that this aspiration to articulate another more pluralistic arrangement of knowledge was not unique to Williams.
Serendipitous and Foreboding:
The Meeting Place of Imagination, History, and Form in Muriel Rukeyser’s *Willard Gibbs*

“The time is long past when one encyclopedic scholar could list all human knowledge, or one science could account for method. The combining sciences, with all their pitfalls, are our threshold”

“The universe is made of stories, not of atoms”

--Muriel Rukeyser

In an often-cited passage from his 1959 Rede lecture “The Two Cultures,” C.P. Snow remarks that when in the company of humanists well-versed in the “standards of the traditional culture” and inclined to express “incredulity at the illiteracy of scientists,” he had been occasionally provoked to ask “how many of them could describe the Second Law of Thermodynamics” (Snow 14-15). After explaining that the response of the humanists was typically “cold” and “negative,” Snow pointed out that he “was asking something which is about the scientific equivalent of: *Have you read a work of Shakespeare’s?*” (Snow 15). Though the idea of there being “two cultures” mutually ignorant of, and at times antagonistic toward, one another other is most closely associated with this British intellectual, it was actually Muriel Rukeyser who first used the phrase. In her 1942 biography of the American scientist and mathematician Willard Gibbs (1839-1903), she noted that while their lives overlapped Herman Melville and Gibbs suffered a “gap between cultures,” for their “age,” as well as her own, “had two cultures” (*Willard Gibbs* [WG] 365). Far more interesting than the question of precedence is the fact that Rukeyser was one of the seemingly rare people who could have bridged the divide Snow pointed out, discoursing as well on Shakespeare as on the work of Rudolf Clausius, James Clerk Maxwell, Ludwig Boltzmann, and the very Gibbs who helped formulate the second law. From her first and award-winning book *Theory of Flight* (1935) to the end of her career, her work displays a serious
engagement with a range of technological and scientific discourses encompassing aeronautics, thermodynamics, chemistry, biology, mass media, and cybernetics. In what follows, I show how Rukeyser’s articulation of the neglected “meeting-place” between the two cultures in Willard Gibbs clarifies the importance of exploring entanglements of the poetic and scientific imagination in a democratic society being rapidly reshaped by industrial modernization. Unlike Snow, she grasped the inadequacy of received understandings of both poetry and science that would fool us into thinking that knowledge consists simply in the capacity to define the second law or describe King Lear.

Adrienne Rich has argued that in Rukeyser’s “seeing the fragmentary world of modernity not as irretrievably broken, but in need of societal and emotional repair” her predecessor was “one of the great integrators” of the twentieth century (Rich 35). Given that Rukeyser “refused to compartmentalize herself or her work, claiming her right to intellect and sexuality, poetry and science, Marxism and myth, activism and motherhood, theory and vision,” she often found herself occupying a barely intelligible middle ground between binary oppositions that shaped her historical moment (Rich 35). Keenly aware of the inadequacies of inherited historical narratives, “she created a poetics of historical sensibility” rooted in an experimental practice of life writing that would serve “as a resource to express and interpret contemporary experience and imagine a different future” through the composition of alternative historical narratives informed by a distinct conception of the American tradition (Rich 36). While scholars have emphasized

---

1 Clive Bush is right to observe that Rukeyser’s work was determined by her commitments to “complexity” and “inclusion” and that, in an increasingly dogmatic and absolutist world wedded to easy oppositions and rigid categories, it was quite difficult for her to find an audience which might comprehend the value and importance of her ambitions (Bush 380, 385). But, as we will see when we turn to Willard Gibbs, Rukeyser was acutely aware that “many of the canonical discourses of metaphysics, social and cultural practice, Marxism and science, not to mention the church, had failed precisely because they had taken an exclusivist approach (…) and failed to relate their respective visions” to the rich textures of human experience (Bush 392). See Bush, The Century’s Midnight: Dissenting American and European Writers in the Era of the Second World War (Oxford: Peter Lang Publishers, 2010).
Rukeyser’s understanding that “poetry shares in common with science a heightened capacity to recognize knowledge as process,” they have focused too much on the documentary strand in her work (Wechsler 125). Consequently, they have neglected her deepest engagements with the historical and imaginative relations between poetry and science in her biographies Willard Gibbs (1942) and The Traces of Thomas Hariot (1970). In a late interview, Rukeyser emphasized the centrality of biography and life to her poetics by explaining that “the poem seems to be a meeting-place just as a person’s life is a meeting-place […] it isn’t that one brings life together—it’s that one will not allow it to be torn apart” (Packard 171). While not blind to the deeply felt ruptures “in ourselves and in our relations with each other,” she was nevertheless insistent that “it isn’t a question of making them come together” but of recognizing that “they are together” and then “fighting that they not be torn apart” (Packard 171).

In asserting that her primary motivation was in fighting growing divides, including those between the disciplines, Rukeyser offers vital clues for grasping the distinctiveness of her poetics and their relation to a crucial historical and intellectual juncture. Her formative years overlapped with the emergence of a much lamented conceptual and normative crisis concerning the relation between what the American philosopher Wilfred Sellars has called the “manifest” and “scientific images of man in the world” (Sellars 373). Against those who would suggest that we must choose between the “manifest image” of a world populated by intentions, colors, and feelings or a “scientific image” of a world composed by the mechanical movements and interactions of odorless and colorless particles, Rukeyser understood that both of these images were produced by, rooted in, and only intelligible to living subjects whose own lived experiences exemplified their meeting or overlap. Like Sellars, she pursued an imaginative and “stereoscopic” vision that would remind us that these two images were in fact images of one world and one life (Sellars
Understanding Rukeyser’s idiosyncratic and dialectical conception of life is therefore crucial for her interest and concern for meeting places.

Informed by her readings of Charles Darwin and Samuel Taylor Coleridge, Rukeyser sought to honor the simultaneous unity and diversity of life in its most encompassing sense. In *The Life of Poetry* (1949), a work based in part on series of lectures Rukeyser gave at Vassar in 1940 when she was hard at work on *Willard Gibbs*, she explained that “our age, in its science and its poetry, has made available to all people the idea of one world” (*Life of Poetry* [LP] 163). Seeing how this “secular announcement” of a truly democratic and cosmopolitan world was being occluded by division and ignorance, she countered the idea of a “critical structure which insists that the forms of imagination are not only separate, but exclusive” by suggesting that, when seen alongside one another, modern science and modern poetry evidenced the deep “unity of imagination” (*LP* 163, 160). Yet, her challenge to claims about the deep and incompatible differences between art and science through an appeal to the force of the imagination posed then, and still poses today, obvious difficulties. Because “both science and poetry are languages ready to be betrayed in translation,” she was careful not to neglect the disciplinary specificity of natural science or pretend it was possible for it to replace poetry’s unique forms of phenomenological and normative reflection (*LP* 162). Nonetheless, she argued that the roots of both science and poetry “spread through our tissue […] and reaching our consciousness […] make a meeting-place” (*LP* 162). This meeting-place was no idealized plane lacking “opposites” but instead was a site of a particular mode of “unity” that did not rest on a static or mimetic conception of “identity” (*LP* 166, 162). While explaining the impact of Willard Gibbs on her own thinking,

---

2 For the clearest exploration of Rukeyser’s debts to Coleridge, see Meg Schoerke’s “‘Forever Broken and Made’: Muriel Rukeyser’s Theory of Form” in *How Shall We Tell Each Other of the Poet?: The Life and Writing of Muriel Rukeyser*, eds. Anne F. Herzog and Janet E. Kaufman (New York: St. Martin’s Press, 1999) 17-31.
Rukeyser declared that truth “is not a stream that flows from a [single] source, but an agreement of components” whose “arrangement is [their] life” (*LP* 167). The abiding question for her work then was *formal*: how to arrange and craft a new critical structure that might make intelligible the unity and meeting-places of the scientific and poetic imagination.

Building on a tradition of poetics encompassing Lucretius’s poetic atomism, Coleridge’s idea of *tautegory*, Walt Whitman’s anaphoric ensembles, and modernist compositional experiments with pastiche and collage, Rukeyser composed a number of life-writing projects that figured the lives and afterlives of their subjects as dynamic hubs though which seemingly disparate ideational and affective processes flowed and surged. She acknowledged that “Whitman’s fight for reconciliation was of profound value” to such a project because his “fight was the essential process of democracy: to remake and acknowledge the relationships, to find the truth and power in diversity among antagonists” (*LP* 80). Importantly, such “reconciliation was not a passive one”; “the unity” it established “was not an identification in which the range was lost” (*LP* 81). For both Rukeyser and Whitman, it was poetry’s singular capacity “to allow people to feel the meeting of their consciousness and the world” through a novel arrangement allowing for unity and difference that made it a vital resource in debates about the meanings of modern science for the health and future of democratic societies (*LP* x). In a formulation which evinces her research into the history of nineteenth century science, she argued that “the work that a poem does is a transfer of human energy, and I think human energy may be defined as consciousness, the capacity to make change in existing conditions” (*LP* xi). Building on the relations between kinetic energy, work, and the principle of conservation, she here figures poetry as a primarily *relational* and *communicative* activity perfectly suited to underwrite a dynamic exchange between distinct modes of thinking.
As we have seen, Rukeyser was hardly alone in thinking about the unity of knowledge in the first half of the twentieth century, but she distinguished herself by attending to the historical role imagination plays in the development of science, art, and politics. It is for this reason that I argue *Willard Gibbs* is best read in antipodal relation to the Vienna Circle’s articulation of a “Scientific World-Conception” and their international “Unity of Science” program. Infamously, the scientific world-conception “knows only empirical […] and analytic statements” (Carnap 308) and dispenses with “bold flights of ideas […] emotive comprehension” and “poetic and imaginative attempts to grasp wholes” as *meaningless* because they cannot, on the logical positivist program, be intersubjectively verified (Hahn 20). Rukeyser’s emphasis on the imagination in *Gibbs* and her defense of “unverifiable facts” in her life-writing projects should not be read as a simple rejection of the Vienna Circle but instead as a sympathetic—though heterodox—articulation of another more pluralist understanding of the Unity of Science program. Attending to these historical connections is important today because, as a work that emerged at a vital turning point in the history of disciplinary knowledge, *Willard Gibbs* presents a path not taken in the relation between the humanities and natural sciences. As Philip Mirowski and Isabelle Stengers have argued, this mid-century moment was characterized by a perspicuous borrowing of terms and concepts from the natural sciences through the drawing of often dangerous and misleading analogies between fields as distinct as physics, biology, economics, and sociology that, ironically, substituted the particular practices of the sciences for a simplified image of natural science.³ Stefania Heim has rightly suggested that *Willard Gibbs* can be read as

---
“a book wrought by analogy about the dangers and possibilities of analogy” (Heim 362). In what follows I suggest that Rukeyser’s careful tracing of the powers and limits of analogy in the socio-political realm has much to teach contemporary scholars animated by a growing interdisciplinary imperative.

After first looking to the unique challenges Rukeyser faced in writing a biography of an infamously technical scientist, I explore her ties to the Unity of Science movement in the late 1930s and early 1940s. Comparing Rukeyser’s thinking about the relation of poetry and science with George Sarton and John Dewey’s attempts to expand and humanize the Unity of Science program, I reveal how questions of method and imagination were central features of her dynamic historical account of the meeting-places between poetry and science in American history that were linked to her thinking about the confrontation between fascism and democracy. After describing for her revisionary account of the relations between imagination, method, and science, I explore how Rukeyser’s focus on Gibbs’s life and its surprising connections to other lives and events—including the now famous mutiny on the Amistad—allows her to produce a counter-tradition that might be used to realize America’s sunken and subverted democratic aspirations. By attending to the transmission and reception of the gifts of imagination across time and space, she emphasizes the dangers resulting from America’s “split tradition,” focusing on the still-unresolved problem of fostering mutual understanding and respect between scientists, other intellectuals, and the public. As I argue in the concluding section of this chapter, Rukeyser does not provide a tidy conclusion or solution to a centuries-long problem but breaks the way for an

---

4 Analogy functions as an organizing principle for Gibbs because the book is neither a “straight biography, with its arc and structure ready-made in the subject’s birth and death” nor “direct cultural analysis” but instead a spanning text that unfolds by establishing a surprising range of correspondences between distinct persons, times, and ‘fields’ in order to delineate “a history of imagination” in America (Heim 371). See Heim, "Another form of life: Muriel Rukeyser, Willard Gibbs, and Analogy" Journal of Narrative Theory 43.3 (2013): 357-383
ethically and politically necessary dialogical and creative exchange between poets and scientists.⁵

Before moving on, it is crucial to acknowledge that Rukeyser’s choice to write a biography Gibbs was curious on a number of fronts. First, Gibbs had led what would be to many a rather uneventful life; second, he was, and remains, a relatively unknown scientist. Likely because Gibbs’s most profound work was not conducted through empirical experiments but instead in a small number of incredibly long theoretical papers that were deductive and mathematical in nature, he remained a mostly marginal figure except to fellow experts who often recognized his brilliance only belatedly. One of the most valuable and radical aspects of Rukeyser’s Willard Gibbs is the book’s recognition of the centrality of the everyday, patient, technical, and seemingly mundane practices that underwrite meaningful and historically transformative intellectual work. Rukeyser emphasizes this fact, noting that “he worked alone; there was no spectacle involved, neither the fireworks of experiment and a visible proof, nor the novelty of a principle that seems to stem from nowhere, because the links are so intricately joined, and the gaps in reasoning unexpected. […] Continual re-discovery of his work has confirmed him again and again […] Gibbs has now received the highest recognition by his successors […] But there is no public notice. There is only a blank, and a confusion of names” (WG 6-7). Gibbs’s major theoretical contributions were to the fields of physics, chemistry, and mathematics. In concert with the research of James Clerk Maxwell and Ludwig Boltzmann, he transformed the application and understanding of the second law of thermodynamics and helped to create the field of statistical mechanics. As Rukeyser points out, Gibbs stood at the cusp of the

⁵ In the preface to Gibbs, Rukeyser explains in a provisional and pluralist spirit that “there are many ways to approach the story of an imagination which has had a powerful effect on our lives, and which at the same time is an emblem of pure imagination […] against a background of war. I offer this as simply one approach; […] if it breaks the way for many others to follow, it will have done well” (WG v).
momentous rise of theoretical physics and “in the history of science, his life offers a bridge between classical mechanics and contemporary quantum mechanics” (WG 4). As M. J. Klein notes, before the interventions of Maxwell, Boltzmann, and Gibbs thermodynamics concerned “the study of the interplay between heat and work”; but in Gibbs, especially, we see an elimination of “heat and work from the foundations of [thermodynamics…] in favor of the state functions, energy and entropy,” transforming thermodynamics into “the theory of the properties of matter at equilibrium” (Klein 5). That shift opened the way to consider chemical reaction mechanisms and equilibrium from a thermodynamic point of view.

Where Sadi Carnot, James Joule, and Rudolf Clausius had been “inspired by the behavior of steam inside an engine cylinder” and concerned themselves with the work it could produce from a dynamic macroscopic standpoint, Gibbs made the profound leap to consider the microscopic or “private lives of systems” seeking to account for observed thermodynamic properties of physical systems by conducting a statistical analysis of what he called ensembles (WG 234). Ensembles, as he envisioned them, were idealized collections of virtual copies of a single system in all of its possible phases. For Rukeyser, Gibbs’s turn to “the world of the ideal” with its delimitation of a closed system freed from “consciousness” and “the non-reversible physical world” entailed accepting the mediation of “pointer-readings” and mathematical probabilities in the face of the observational limitations of the macroscopic and phenomenal world of experiment (WG 235). Gibbs’s embrace of geometric methods allowed him in his 1902 Elementary Principles of Statistical Mechanics to bridge the statistical account of molecular motions found in Boltzmann and Maxwell and the laws of thermodynamics made famous in Clausius. He did so by formulating thermodynamic analogies between the observed macroscopic world and the idealized realm of the then unobserved dynamic interactions of microscopic atoms.
In short, Gibbs was that rare figure who chose to tarry with the problematic relationship between the “scientific image” and the “manifest image” of the world, a man capable of momentarily mediating disputes between his peers because of his deep respect for the ingenuity of their methods and his recognition that they were united in their search for truth.

In Rukeyser’s eyes, Gibbs’s work stands as a clear indication of the deeply speculative, theoretical, and imaginative dynamics of science that are often absent in popular representations of science as simply instrumentally useful or immediate in its epistemic purport. This view of science as vital for industrial invention or as unproblematically true was, for Rukeyser, a consequence of the modes of specialized training that produce a textbook image of science as a set of ahistorical formulas and technical methods. If this reception of science has unavoidably produced the two cultures whose war continues to this day, Rukeyser understood the need for a fundamentally new historical reception of physical and natural science that would attend both to the entanglements between the two cultures and the force of imaginative and affective dynamics at work in scientific practice. Against a wholly instrumental and rationalist view of science in America, her biographical project *Willard Gibbs* uncovers a grander absence than the man himself in American memory; namely, she unearths the neglected historical and imaginative meeting-place that shows the productive interactions between science, poetry, and politics in America’s democratic experiment. By revealing the possibility of attaining another sense of the past—another American tradition—she aimed to foster the emergence a future freed from the tragic ruptures of modernity.

Yet, because the force of imagination “is essentially different and misleading in history,” she could not write a conventional and linear history of either science or American culture in the fashion of Emerson (*WG* 129). The near imperceptibility and apparent spontaneity of the
imagination in human history presented profound challenges and her innovation was to practice an experimental mode of life-writing that idiosyncratically borrowed from the traditions of both poetry and science. Inspired by Gibbs’s use of analogies to bridge the gap between a non-observable and fundamentally probabilistic molecular framework and the macroscopic realm of ordinary experience, Rukeyser explored the use of analogies in the work of poets and scientists to highlight their involvement in a history whose continuities did not reflect familiar disciplinary distinctions. But as I have already cautioned, her goal was not to collapse the distinctions between poetic and scientific analogies, nor to argue for their metaphysical correspondence. Instead, she sought to show that without a recognition of the necessity of the combinatorial, affective, and relational leaps of imagination in our involvement with a shared world, that without any acknowledgment of both the unity and diversity of our lives, any glimpse of the meeting-place of the two cultures would remain a historical impossibility.

**Life Writing and Poetics**

In order to avoid the understandable confusions that arise when *Willard Gibbs* is approached in light of the received norms of either scientific biography or cultural history, we need to situate it within the development of Rukeyser’s poetics. *Gibbs* grew out of Rukeyser’s “Lives” sequence originally published in *A Turning Wind* (1939). Though she once suggested that her biography was a simply a footnote to the poem “Gibbs,” we will see that it served Rukeyser as a generative site from which to articulate a complex understanding of the intersections among history, politics, science and art in modern America. While the “Lives” sequence has drawn legitimate comparisons with roughly contemporaneous attempts to construct
a usable past in the face of a rising, and much lamented, culture of materialism, Rukeyser’s thinking about both history and biography are more ambitious, strange, and interesting than the work of figures like Lewis Mumford, Van Wyck Brooks, and Waldo Frank. In the untitled proem to the “Lives” sequence, for instance, the reader encounters a transformed image of the Lucretian torch: “in the dark and perfect sky / a hand is risen firm under its crackling globe of flame” casting its light over “old portraits, flayed men, skeletons of slaves” revealing “the profuse creative / promises of the mind” shining amidst the darkness and wreckage of history (CP 181-182). This image helps to affirm Eric Keenaghan’s suggestion that Rukeyser’s “poetic politics are deeply connected to biography—that is to the affective writing or rewriting (graphesis) of life itself (bios)” in a mode that “never merely reveals content or narrates identities” (Keenaghan 258). Instead, Rukeyser “affectively imagines how her subjects related to their historical and political moments” (Keenaghan 261) allowing her readers to glimpse what she once called a “commune of regenerated lives” (CP 47). Amongst all her life-writing projects, Willard Gibbs holds a special place because “the difficulties she experienced with the Gibbs estate in accessing and receiving permission to use archival materials reinforced her determination to rethink what comprises a person’s life story” (Keenaghan 263). Rukeyser is clear that Willard Gibbs is not simply the biography of one man but an account of a life which stands as both an emblem and a parable of the status and nature of imagination in American history.

---

6 As Louise Kertesz has argued, Rukeyser was engaged in the construction of a counter-tradition from her earliest of poems. Since she wrote of “Bruno in Theory of Flight through her exploration of the ‘discarded lives’ of miners in U.S. 1, through history’s loss of Gibbs, the apparent failures of Whitman and Melville, Ives, and Willkie, and Hariot’s life ‘gone down, almost forgotten, among great waves of crushing powers’” (Kertesz 361). This concern “to compose the meanings not only of her immediate present and personal past but of the strengths of our common past as they live in the present and prophesy the future” is one of the distinguishing features of her poetics (Kertesz 166). See Kertesz, The Poetic Vision of Muriel Rukeyser (Baton Rouge: Louisiana State University Press, 1980).

7 In the notebooks Rukeyser was using as she prepared to write Gibbs, she notes that “the physical universe is the hero of our science” (Berg V. 1, 210). By extension, we might say that the imagination is the hero of Gibbs.
Gibbs, then, is a work constructed around a series of what Rukeyser called “unverifiable facts” that allow one to glimpse connections across a range of times, places, subjects, and persons. As she explains, these facts are only ever “partly known” through our imaginative and social encounters, departing from the typical evidentiary standards of historians and typical modes of empirical verification. Unverifiable facts are thus “the signs of recognition in recurrence, in what is immediately recognizable to someone else, in what is recognizable across the world, across race and life story” (Rukeyser, quoted in Keenaghan 265). These fragile and speculative links are rooted in the affective and imaginative dynamics of lived experience. Despite their constitutive role in our practical activities they tend to fall out of historical and biographical accounts. Unverifiable facts are the product of abductive rather than inductive inferences; they are partial, fallible, and singular judgments rooted in a surprising and chance encounter rather than in rule or precedent. As Rukeyser notes that while “it is said that to tell a person’s life is to thin it out—to simplify while seeking to enrich,” anyone who “speaks of Gibbs must come to him willing to fail at thinning” (WG 436).

To take one particularly instructive example of how unverifiable facts play a non-reductive role in Gibbs, we can look to a vital moment in the sixth chapter of the book entitled “Father and Son.” Gibbs’s father, Josiah Gibbs, Sr., was a linguist and theologian at Yale working in the “higher tradition” of German Biblical criticism. For Rukeyser, Josiah Gibbs’s insistence that “language is a cast of the human mind” and his advocacy for a logical and scientific study of language’s capacity to link man and world laid the grounds for Willard Gibbs’s careful and rigorous mathematical work (WG 105). Rukeyser cites a passage from Gibbs, Sr.’s “Language of the Physical World, or Faded Metaphors” that suggests because “Man is a citizen of two worlds, the world of sense […] and the world of intellect,” metaphor plays a
necessary role in our thinking. Gibbs, Sr.’s thinking about metaphor points to the elusiveness of the past. Because “in its passage into use,” metaphor fades away so that we no longer “think sin in its root-meaning as a missing mark” and we “forget that heaven is something heaved over the world” (WG 106).

Immediately after citing these passages, Rukeyser shifts from the distant past to the moment of her own encounter with archival materials, explaining that “a very strange, a very beautiful pattern makes itself clear as one comes across these words on the brown-stained pages—a pattern of father and son. Here, in these preludes, these foreshadowings, are the immense suggestions. (…) Here in the little purple textbook of this pioneer of language are the calls and stirrings that were reflected with vast and different meaning much later by his son” (WG 106). The strange pattern of father and son which emerges as Rukeyser stares down at the mottled and aged pages, celebrating the centrality of metaphor and the dignity of language does not stand so much as a clear causal precedent for Willard Gibbs’s work in physics and chemistry but rather as a suggestive prelude, a sign of “recognition in recurrence” that is only intelligible from the vantage of the present (WG 106). In the first stanza of her poem “Gibbs,” she depicts Gibbs in a faculty meeting at Yale: “It was much later in his life he rose / in the professors’ room / […] in the dead lungs of their meeting, / said. “Mathematics is a language” (Collected Poems [CP] 182). In Willard Gibbs she contextualizes this scene by explaining that Gibbs was often a reserved and quiet member of the Yale community. However, in a faculty meeting which concerned “whether there should be more or less English, more or less classics, more or less mathematics,” he suddenly stood up with “the past behind him, his father’s life, and behind that, the long effort that had been made in many lifetimes”; and he “said, with emphasis, once and for all: ‘Mathematics is a language’” (WG 280). Immersed in archival materials, with a poet’s
sensitivity for unlikely correspondences and echoes, Rukeyser sees in this declaration an unverifiable fact that evidences the way “father and son deal with two facets of one theme: words as symbols, symbols as words, and the system in which they live” (WG 107).

It is crucial to note that while such inferential leaps may appear to be merely literary modes of thinking rooted in metaphor and analogy, the historian of science Gerald Holton has argued that “in the work of the active scientist there are not merely occasions for using metaphor, but necessities for doing so, as when trying to remove an unbearable gap or monstrous fault” (Holton 236). Central to the very process of scientific thinking is “an epistemological necessity that favors the search and use of metaphors” a necessity that is the result of “the limitation of induction” so that “where logic fails, analogic continues” with a bridge “no longer of steel but of gossamer” (Holton 236). As Rukeyser well understood, while these bridges often break, serving only as temporary solutions, they sometimes do carry the inquirer “across the gulf,” becoming the precarious condition of possibility for advancing knowledge (Holton 236).

Attending to unverifiable facts and seemingly contingent aspects of a thinker’s life story can thus be seen as one of the strongest ways for indicating the dynamic and subtle role imagination plays in the long dialogical process of discovery and re-invention in both science and art. It is unsurprising, therefore, that Willard Gibbs is a genre-defying work packed densely with documentary nuggets, scraps of verse, fascinating forays into local natural history, political commentary, aphorisms, and private correspondence that highlights the abductive analogical leaps of imagination and the surprising correspondences and echoes of the past in our experience of the present.

Presumption and the Problems of Poetry and Science
When commenting on the relationship between the poet and the scientist in the opening chapter of *Willard Gibbs*, Rukeyser writes that “to the poet, his own nature is his chief instrument, his device in terms of which all other unities are measurable […while] to the physical scientist, his own nature is apart, he deals with a world of law in which there is no understanding” (*WG* 11). While “to a specialist in scientific knowledge, the poet is likely to seem far off and irresponsible,” she insists that “the world of the poet, however, is the scientist’s world. Their claim on systems is the same claim” (*WG* 11). Poet and scientist share a systematically related world, but “it is the poet’s claim to ask these questions about a great scientist: What was his work and life? What kind of love produced them? What was his impact on the world?” (*WG* 11). Fully aware of the controversial nature of such a claim, she freely admits that this kind of claim by the poet “is presumption”: Though “according to the specialists, these questions may be asked by anyone,” they “are to be answered by the specialists alone” (*WG* 11). Yet, it was precisely because no specialist had been willing to answer these questions about Gibbs’s life that Rukeyser came to write *Willards Gibbs*. It was only by travelling along a “long road of presumption” that she came to Gibbs. As a poet, a woman, and a Jewish leftist without any formal scientific training, presumption was her only viable path in light of the skepticism and hostility of the specialists (*WG* 12).

Presumption shouldn’t, however, be confused with a disregard for the importance of disciplinary expertise. The “passion” driving her presumption concerned her need to know and understand “the web” of processes in which her contemporaries lived and suffered (*WG* 12). Given the profound role science and technology were playing in all arenas of life, Rukeyser needed to “know the processes and machines of process: plane, dynamo, and dam” and “to see and declare the full disaster that the people have brought on themselves by letting these
processes slip out of the control of the people” (WG 12). In addition to the profound technical
and social problems posed to American democracy by a growing divide between specialists and
non-specialists, she noted that “the Nazi armies are based on the reality of a growing chemical
empire” (WG 428). She also argued that “the war […] will ultimately be decided by air power—
since this is a struggle for the air over the earth, the new continent which has been discovered,
invaded, and disputed in this century” (WG 428). From the “the light alloy of the plane” to the
chemical “industry which is daily becoming vaster, more important to American economy and
more clearly a battle-front of the world,” Rukeyser saw “Gibbs’s steady look” reflected amongst
these “processes of history” (WG 428). Yet, Gibbs’s simultaneous influence and anonymity
makes the story of his “background and emergence […] a parable of human freedom and a free
attitude toward the gifts which the imagination makes” (WG 428). It is only by seeing Gibbs in
the context of American cultural history that we can understand why his life is a parable
concerning human freedom and its ties to imagination. Doing so requires we bear in mind that
the “past of democracy has been a double stream, furiously twining in marriage and war” which
has produced a “double and breaking tradition” which gives lie to claims for the full autonomy of
either art or science (WG 5).

If Americans are a people “tending toward democracy at the level of hope,” the
“economy of the nation” and the “empire of business within the republic, both include in their
basic premise the concept of perpetual warfare” (LP 61). Thus, while Gibbs’s axiom-breaking
work can be seen as a part of “the deepest of American traditions” stretching back to the early
“heretics,” “king-killers,” and “tabu-breakers” who fought for freedom, his isolation and others’
neglect of his importance to the history of science, simultaneously betrays a national hostility to
the seemingly abstract and impractical nature of the imagination (WG 5, 10). If with the outbreak
of world war Gibbs’s work had finally come to be recognized as practically and economically useful by specialists, his reception also pointed to a historical pattern of waste and carelessness plaguing American culture. Rukeyser explains that “this carelessness is complicated and specialized. It is a main symptom of the disease of our schools, which let the kinds of knowledge fall away from each other [...] All our training plays into this; our arts do; and our government. It is a disease of organization; it makes more waste and war” (WG 12; original emphasis).

Healing these ruptures required a careful and reparative reconstruction of the entanglements of different kinds of knowledge with one another and a reaffirmation of American democratic aspirations in light of their historical failings.

What distinguished Rukeyser’s approach in her project from a more orthodox scientific biography was her insistence that Gibbs be seen as belonging to “the stream of that great tradition from which free people are at liberty to choose their own ancestors” (WG 428). If the war had shown him to be “an ancestor and a contemporary,” the very “penalties he bore” and the “narrowness” that stunted his reception were still operative in Rukeyser’s time (WG 428). This situation demanded a genuinely new choice of ancestors. In light of such narrowness, Rukeyser situated Gibbs in relation to the “two roots” through which the energy of the imagination is produced and transmitted: “the infinite anonymous bodies of the dead, and the unique few who, out of great wealth of spirit, were able to make their own gifts” (WG 12). The recognition of Gibbs as a fully historical and social being and the discovery of the “sources of energy” that that fact might “enable us to find the strength for the leaps that must be made” in the future entailed keeping both ‘roots’ in view even if one had to presumptively break with academic and cultural conventions (WG 12).
For Rukeyser this means that Gibbs’s life—like John Brown’s was for W.E.B. Du Bois—not only “refuses to end with his death” but also goes “back in time” to the “early phrases” of “Epicurus and Lucretius, the poets of the sum of things” (WG 9-10). Lucretius is, in fact, a recurrent presence throughout Gibbs, and his poetic materialism sponsors some of Rukeyser’s deepest methodological and theoretical commitments. For example, in her talk of the infinite bodies of the dead, we hear echoes of book two of De Rerum Natura where Lucretius writes “as bodies pass away / from one thing they diminish by leaving, they then increase/ another to which they go” (Lucretius 51). Underlying her conception of the ancestral and continuous energy of the imagination “in an endless / renewal” throughout history, we find Lucretius’s description of the way “generations of living creatures are born/ and die, but the race goes on as the runners pass the torch / of life, one to the next, different and yet the same,” rather than Emerson’s idealist account of the intellect (Lucretius 51; emphasis added).  

Rukeyser knew that “in the war years” her focus on the imagination would be met with profound skepticism because “faith in the gifts of imagination is most likely to be suspended when death rips open the body and the brain” (WG 128). But just as when “in moments of deep crisis” a living “organism rallies all its resources, evoking and controlling” dormant and forgotten “energies,” a society in crisis calls up its members “marshaling production” in an attempt to prevent disintegration (WG 385). Yet, the “final instruments” that society uses are dependent on “imagination in its most abstract form—not necessarily the inventing mind, but the discovery that may lead to a multiplicity of invention” (WG 385). Preferring process over

---

8 Rukeyser’s choice of the word presumption itself recalls the famed lines in De Rerum where Lucretius asked in his tribute to Epicurus “who can presume to praise the merits of that great/ thinker/who won for us such treasures and bequeathed them to” future generations (Lucretius 189). Like Lucretius, Rukeyser presumes to produce a work that in praising Gibbs might support the wonderous and far-reaching profusion of his ideas into the future (Lucretius 189).
product, Rukeyser argues “we are double so long as there is a gap between the two creations as they work for society”: the risk of such doubleness is that our “effectiveness as a society is split” (WG 385). While “the waste of war is very immediate,” what we are likely to miss is the fact that war is an index of “the waste of peace, the waste of history—and, above all, the waste of a pioneer nation, eager to overcome its obstacles at any cost” (WG 385).

Peter Middleton, the critic who has most seriously considered the unlikely fusion of poetry, politics, and science we find in *Gibbs*, has placed Rukeyser amidst a number of other important twentieth-century American poets—Marianne Moore, Williams, Wallace Stevens, and Charles Olson—who “actively explore[ed] the affinities and dissonances between poetry and the sciences” (Middleton 96). In Middleton’s telling, Rukeyser and Olson distinguished themselves from these other poets as the ones most seriously interested in the discourse of mid-century physics. Olson’s famed field poetics and Rukeyser’s embrace of the energy concept are, as Middleton rightly argues, obvious instances of the animating entanglements of the poetic and scientific in mid-century American literary culture. Yet, when Middleton suggests that Rukeyser “found most helpful the work of social scientists who had worked through the implications of borrowing concepts from physics,” his own key conceptual theme—physics envy—misleads him (Middleton 116). Across her career, Rukeyser explored a number of sciences, a fact that indicates she was not principally motivated to defend poetry or compete with nuclear physics but rather to discover the webs of connection that made up the fabric of her historical moment.⁹ Despite these shortcomings, Middleton is right that Rukeyser’s understanding of scientific

---

models and the methods of inquiry shared by artists and scientists grew from her study of “Gibbs and his influence” (Middleton 127).

Where I part most with Middleton is over his insistence that the Harvard biochemist Lawrence J. Henderson was “the main reason for Rukeyser’s whole interest in Gibbs” (Middleton 130).10 Middleton argues, “Rukeyser’s biography of Gibbs was inspired by Henderson’s idea that Gibbs provided the intellectual foundations for a generalized scientific method” (Middleton 135). He goes on to note that “in writing about Gibbs, she believed she was writing not just about an important American physicist but also about the possibility of a new kind of progressive social science” (Middleton 135). In attempting to secure disciplinary respect for the human sciences at Harvard in the opening decades of the twentieth century, Henderson had advocated for a fusion of Gibbs’s work with that of the Italian sociologist Vilfred Pareto.11 But in the very chapters of the Gibbs biography where both Lawrence and Pareto appear, Rukeyser is clear that since the time of Emerson and Henry Adams, attempts to construct analogies between physics and the social sciences had often been disastrous. She notes:

Mussolini derived fascism, literally acting according to Pareto in the early years at Rome. And Pareto, an old man, found himself unable either to repudiate or accept this rigged-minded use of the fiction which he had laid down, making no allowance for the human being and railing against human political liberty at every step […..] The analogy had been handled mechanically; the hatreds were set in

---

10 In private correspondence, Middleton has admitted that it is “misleading to say that Henderson directly influenced her direction of travel.” I thank Peter for his correspondence and willingness to discuss his work with me. Searle, James, “A Question About Your Physics Envy,” received by Peter Middleton 10 February 2020.

11 For more on the importance of Pareto and Henderson to the formation of the Human and Social Sciences in America, see Joel Isaac’s Working Knowledge: Making the Human Sciences from Parsons to Kuhn (Cambridge: Harvard University Press, 2012).
motion, and their momentum was a ‘straight line to infinity’—unless it could be
stopped by greater force. (*WG* 419)

Emphasizing the political and ethical risks that arose from Pareto’s “fiction” and the mechanical
use of Gibbs in Lawrence’s work, Rukeyser notes the ways in which the exclusion of the
complexity of human life from the models central to physical theory had given rise to the most
dangerous political movement in her time. As we will see, *Gibbs* traces the dangerous temptation
to analogically link the physical and socio-political back to the very emergence of liberal-
democratic nation states in the early years of the Enlightenment.

By missing the consistency with which Rukeyser both celebrates the power of analogy
and cautions against its dangers, Middleton ends up painting Rukeyser as the very kind of
mechanical analogist she so often derides. Middleton argues, for instance, that Rukeyser fails to
understand Gibbs’s “insistence on formalism in his analysis” and when she compares his models
of phase space with poems and doesn’t distinguish between “specific epistemic metaphors [or]
make room for uncertainty and disagreement among the elements of the poem” (Middleton 139,
141). Yet, central to her celebration of Gibbs was the way he embraced formal ideas over
“physical model[s]” and stayed “within the bounds of his own analogies,” while others, in
contrast, carelessly went “out of bounds” (*WG* 416). Gibbs helped Rukeyser to see that “an
analogy has a life of its own, and the seductive glitter of analogy has destroyed many scientists,
many historians, many human beings who have caught the resemblance between seemingly
unrelated forms without keeping awareness of the differences” (*WG* 203). Rukeyser’s challenge,
then, was twofold: to acknowledge the fact that novelty emerges from the rearrangement of the
old, and to recognize that intellectual progress is often the result of seeing one problem in terms
of another, while keeping a “foreboding” awareness of distinctions and limits that when ignored lead to crisis, disaster and a tradition of perpetual epistemic warfare.

In seeing the presence of “Gibbs’s ramifying thought” in a wide array of fields at the turn of the century as evidence that “our time depends, not on single points of knowledge, but on clusters and combinations,” Rukeyser’s thinking about analogy and the essentially relational and combinatory nature of modern knowledge was informed in large part by her research into the emergence of physics as a unified field of inquiry in the nineteenth century (WG 3). Historian of science Robert Purrington argues that “the use of analogy as a methodological tool” was used by scientists across the nineteenth century to enact “the unification of similar or even superficially desperate fields” (Purrington 28). Thus, analogy played a key role in groundbreaking investigations into heat, light, electricity, magnetism and the broader concept of energy. For the community of scientists to which Gibbs belonged, the status of analogical reasoning was a central concern. One of the most vital lessons figures like he and James Clerk Maxwell taught Rukeyser was the necessity and importance of avoiding global claims concerning the ontological status of models and theories birthed from analogy. As I show in greater detail below, while Rukeyser emphasizes the centrality of analogical thinking in both science and art, she refuses to conflate the two. Instead, she works to show how both index a common dependence on the abductive leaps of the imagination as they move through the anonymous bodies of the dead and the unique few tradition chooses to remember.

12 In our own times, scholars focused on the development and spread of neoliberalism have shown just how consequential and dangerous analogies have been. Philip Mirowski, for instance, has focused on the growing analogical interplay between economics and physics in modernity highlighting in particular the importance of the rise of the energy concept in nineteenth century physics to both neoclassical and marginalist economic thinking. While for at least forty years studies of the relations between science and culture have focused on the metaphorical and analogical overlaps between the discourses of natural science and the arts, few have matched Rukeyser both in the depth of her engagements with science and in her awareness of the profound dangers of playing fast and loose with these analogies.
In 1939—the same year Rukeyser’s poem “Gibbs” first appeared in print—the Fifth International Congress for the Unity of Science was held at Harvard University. Originally organized by Otto Neurath’s International Institute for the Unity of Science, the congress brought together philosophers and scientists from across Europe and North America to discuss and develop the prospects for the scientific worldview. In anticipation of the first American meeting, the philosopher Charles Morris suggested that what would make the fifth conference novel was an extended discussion of “the extension of the unity of science program to the socio-humanistic” concerns that had yet to be seriously considered by the Vienna Circle (Morris 26). Morris admitted that with the exception of Charles Sanders Peirce, American philosophers had not rivaled the “logical analysis of the natural sciences” conducted by the likes of Carnap and Schlick; but he stressed that “the reverse situation prevails when it comes to the scientific treatment of socio-humanistic subject matters” (Morris 26-27). He explained that “the whole temper of the [United States] is against sharp separation […] of the natural sciences and the ‘mind’ sciences” (Morris 27). Informed by a democratic cultural aspiration that rejected the “sharp social separation of ‘the workers’ and ‘the cultured’” found in Europe, American philosophy since the days of Emerson had yoked a naturalistic interest in science with a deep concern with “human values” and had been “preparing the ground for the integration of the socio-humanistic studies with the wider corpus of scientific knowledge and procedure” for nearly a century (Morris 27-28).

Amidst the Great Depression and in the shadow of the newly emerging war, Morris argued that “an exact understanding of the nature of mind, value, art, and moral behavior” was not only
vital as “an incentive in furthering creative cultural forces” but also, more radically, could free art and ethics “from the subservience to science which a scientifically minded age has seemed, wrongly, to impose” (Morris 28). These statements can help us to see that now-familiar critiques of scientism animated many within the unity of science movement before midcentury. Perhaps more importantly, they clarify that far from a chilly and isolate affair, the unity of science movement was, as Peter Gailson has argued, an international cultural movement motivated not only by a faith in “pure science” and a current of “hope and optimism” concerning the “fruits of modernity” but also by a fundamental opposition to a rapidly spreading “tide of fanaticism” (Gailson 1). The American and European unifiers thus shared “a hope that an international scientific worldview could curb the divisive racial and nationalistic worldviews,” in order to offer a counterpoint to the irrationality of the free market and conservative appeals to mystical and vitalist metaphysics (Gailson 6).

As a poet on the left deeply interested in science, philosophy, and politics, Rukeyser no doubt knew of the debates around the unity of science movement that populated the pages of many leftist publications. Willard Gibbs reflects the influence of two notable American participants in the unity of science movement who linked science and art with a pluralistic conception of democracy: the philosopher John Dewey and the Harvard historian of science George Sarton. From Dewey, Rukeyser saw how an expansive conception of method could offer a more inclusive image of the unity of science. Sarton’s attempt to humanize the history of science showed her that any account of a scientist’s work must account for the animating force of broader cultural and social factors. Dewey was an early and controversial participant in the Unity of Science movement. In 1938, he contributed two entries to Neurath’s *International Encyclopedia of Unified Science*, the “Theory of Valuation” and “Unity of Science as a Social Problem.” Putting
the concepts of science and unity under critical scrutiny, he argued that ‘science’ was not to be mistaken for “a body of subject matter” but should be understood as an “attitude and method” (LWD 271). Similarly, he suggested ‘unity’ was not simply a question of correlating scientific results but a “cultural” and ultimately social question (LWD 271, 274). Like Rukeyser after him, Dewey worked to show that “scientific method is not confined to those who are called scientists,” and he stressed that specialized science is an extension or “elaboration, often a highly technical one, of everyday operations” (LWD 271-272). For Dewey this means that “the home, the school, the shop, the bedside and hospital, present such problems as truly as does the laboratory” and usually in “a more direct and urgent fashion” (LWD 273).

The connections between Dewey’s approach to the unity of science and Rukeyser’s work are clarified by a contemporaneous preface Dewey wrote for D.L. Watson’s Scientists are Human (1938), a key source in Rukeyser’s Gibbs. In his preface, Dewey urged the need for seeing science’s connections with “feeling, with emotions, desires, and impulses that are at once deeply personal and deeply communal” (LWD 369-370; emphasis added). In a pointed remark aimed at Carnap, he explains that a mere “framework of conceptions becomes a restriction of scientific inquiry unless it unites intimately and thoroughly with that vital sensitivity of impulse and response […] which finds its effective expression in the work of the creative artist” (Dewey 371). In short, Dewey implied that rendering poetry as a set of unverifiable pseudo-statements

---

13 In reframing the “Scientific attitude” as “a quality that is manifested in any walk of life,” Dewey articulated its nature in markedly social and political terms, implying in characteristic fashion that science and democracy shared a methodological and experimental ethos: “on its negative side, it is freedom from control by routine, prejudice, dogma, unexamined tradition, [or] sheer self-interest. Positively, it is the will to inquire, to examine, to discriminate, to draw conclusions only on the basis of evidence after taking pains to gather all available evidence […] It is, in turn, the experimental attitude which recognizes that while ideas are necessary to deal with facts, yet they are the working hypotheses to be tested by the consequences they produce. Above all it is the attitude which is rooted in the problems that are set and questions that are raised by the conditions of actuality” (LWD 273).
threatened to doom the scientific worldview to fall into the very reactionary attitudes it arose to combat.

Echoing Dewey’s emphasis on the continuities between artistic and scientific thought, George Sarton, the other principal influence for Rukeyser’s view about the unity of science movement, claimed “there are no natural sciences as opposed to humanities; every branch of science or learning is just as natural or humane as you make it” (Sarton 54). As he would argue in *The History of Science and the New Humanism* (1937) to “show the deep human interest of science” might provide much needed ethical guidance in an industrial era (Sarton 54).

Throughout her career, Rukeyser learned much from Sarton. Eventually, she even began a brief romantic relationship with his daughter, the poet May Sarton. But in the 1930s, it was George Sarton’s new humanism—so unlike the reactionary and conservative new humanism of Paul Elmer More and Irving Babbitt that inspired T.S. Eliot—which impacted her most. Sarton eschewed an individualistic history of scientific geniuses because his own tireless historical and archival research had shown him that “the function of great men is essentially synthetic: they put together elements borrowed from everywhere and complete the building prepared by many others” (Sarton 174). In *Gibbs*, Rukeyser follows Sarton in tracing the intergenerational aspirations and international influences that prepared the way for Gibbs’s markedly synthetic and combinatory achievements. Sarton’s approach was intended to demonstrate that science was “international and inter-racial” and the “strongest bond of union between the people of the earth” because its history showed “the unconscious and continuous collaboration of all peoples in a task independent of themselves” (Sarton 179-180). Like Dewey, Sarton saw that to explain such remarkable continuities demanded we focus on “the method which made them possible; for the
method, which is the womb out of which issue all the discoveries past, present, and future” (Sarton 120).

Rukeyser is most visibly aligned with Dewey and Sarton in her assessment of the “deep error that so many great writers have made in their dealings with scientific thought” (WG 81). She explains:

the error that is the weakest link in the marvelous chain of which science and imagination form the alloy […] is the error of a rigid analogy, of using the discoveries of science instead of the methods themselves in dealing with other material […] The whole framework of one kind of thought cannot be brought over into another kind of thought without a terrible distortion and loss […] This fallacy is one of misplaced method and produces grotesques when it is harmless. At its largest and most harmful, it may warp the history of the world. (WG 81)

Here, Rukeyser points to the dangers of a rigid kind of analogical thinking that ignores the rich specificities of different epistemic frameworks, while calling attention to the centrality of imagination and method in the continuous development of human inquiry. In order to avoid the fallacy of misplaced method, while retaining an awareness of the marvelous chain of imagination and science, she argues that we can only see that “there is some specific method behind” genuinely axiom-breaking or imaginative forms of understanding “if we cut it down […] again and again to the narrowest area, we are at the place where scientist and poet share the world, […] although many others join in the sharing” and in so doing “reach an analogy with the creative process” itself (WG 82).

By searching out the deep but narrow continuities between different kinds of thinking, Gibbs is able to educe an adequate analogy between poetic and scientific methods that reveals a
common dependence on the imagination’s creative process. Anticipating the work of figures like Michael Polanyi and Thomas Kuhn, Rukeyser argues that method is best understood as a dynamic embodied and imaginative process irreducible to mere rule following that operates by opening a path of transit for a thinker to enter into a creative interaction with a body of hitherto unrelated facts. Citing D.L. Watson, Rukeyser notes that science is a rich site for glimpsing the abductive, creative, and combinatory force of imagination because science “is not only the discovery of facts, but always the finding of novel and appropriate combinations of existing knowledge to ends with human significance” (WG 82). This “process of combining depends on experimentation” and “does not call for a knowledge of types alone, but for a search among deviations” (WG 82). And yet, as we have already seen, “the reception of work in science in this country” shows a blindness to deviations that indicates the difficulties bound up in “the American attitude toward all creative effort” (WG 74).

For many people, the creative efforts of the imagination were commonly equated with the imaginary and thus were disregarded. But there was another tradition that idealized imagination as a kind of transcendent power floating above materiality and history. Rukeyser was fond of quoting a passage from Charles Baudelaire, if only to contest it. Baudelaire suggests “the imagination is the most scientific of the faculties, because it alone understands the universal analogy” (WG 81; original emphasis). The French poet here commits an understandable but deeply dangerous mistake that Rukeyser also finds in the work of thinkers like Emerson, Pareto, and Woodrow Wilson: the positing of some ultimate and universal analogy.14 Rukeyser agrees that the imagination is related to analogy because it is above all else a mode of attending to and

---

14 In *The Life of Poetry*, Rukeyser warns of the risks of “thinking in terms of static mechanics” and notes that Emerson’s famed definition of language as akin to “fossil poetry” not only limits the mind but “directs it to rigid consequences” that stand in sharp opposition to seeing language “as it is, as we use it—as a process, in which motion and relationships are always present” (*LP* 166-167).
articulating *relations*—and she also accepts that imagination is integral to scientific reflection—but she rejects any static view which might isolate or fix the processual nature of imagination. Rukeyser’s point is that no single discovery could ever correspond to or exhaust the meanings of imagination because it only takes an intelligible shape in a consideration of the commonalities between different situated practices of thinking at particular historical turning-points. “The imaginative act, in all its delicacy, in all its explosiveness” works by realizing worldly “energies, and the continuity behind them—the continuity of force, and of the human spirit alive in many lives” (*WG* 82). Consequently, its nature and function are most visible in the interruptive and “dramatic points which disturb all balance, which flash and are gone as balance is made again” (*WG* 83).

By focusing on these “dramatic points” in American history, *Willard Gibbs* moves beyond the ahistorical and idealistic methodism of Morris, Dewey, and Sarton to shine a light on the historical and social predicaments facing the Unity of Science movement in America.15 While she shared the internationalist ethos of the unifiers, Rukeyser explained “there is no need to speak of country in science, except where the applications are made for the sake of the state, and conflict between states uses these general gifts to destroy human liberties. There would be no reason to speak of recognition if there were no problem of communication. But there is that problem” (*WG* 372). So long as one neglects the fact that “creative life in this country has been completely absorbed in conquest” and plagued by a short-sighted valorization of invention and applied science driven by militaristic and industrial development, attempts to unify human knowledge and realize a truly cosmopolitan world will be undermined (*WG* 369). As she

---

15 For the most exhaustive and insightful treatment of the modernist obsession with method, see Paul Forman’s “The Primacy of Science in Modernity, of Technology in Postmodernity, and of Ideology in the History of Technology,” *History and Technology* 23.1-2 (2007) 1-152.
explains, “the challenge of the American mind has been recognized for so long as a simple
challenge of invention that the split between two kinds of imagination is likely to be overlooked”
(WG 383). Though Americans have shown a “mechanical belief” in the applied imagination
bolstered by a “wish to win a war,” they have lacked a “constructive faith” in the pure
imagination which has laid the very grounds for their prized inventions (WG 129).

Pointing to the need for Americans to come to greater awareness of the “social nature of
mechanical invention,” Rukeyser argues that “the nature of the act of perception, the act of the
individual imagination which precedes invention and expression, is essentially different, and
misleading in its place in history” (WG 129). In one deeply telling analogy, she notes that “if one
traces the history of any years merely through the series of points of the great perceptive acts of
that time, one plots a course that is as omissive as a film reconstructed from the close-ups alone.
The pressures are missing, the backgrounds, the forces themselves. But it is possible to draw
from such a chart certain conclusions as to the nature of progress which are not visible if one
considers the larger view” (WG 129). It is Rukeyser’s capacity to link the close-up with the
larger view, thus showing both the role of the pure imagination in history and its appropriation to
unforeseen ends, that saves her from writing a Whiggish tale of progress blind to violence,
suffering, and inequality. Because she sees individual acts of perception and imagination as
emerging from a dynamic and volatile background shot through with pressures and forces that
determine, limit, and subvert the gifts and wishes of particular agents, Rukeyser can
acknowledge the reality of progress while cautioning against the dangerous Emersonian
assumption of its inevitability.

Combining Occasions and the Forms of History
As I have already intimated, *Willard Gibbs* is structured by surprising historical correspondences that emerge through Rukeyser’s exploration of familial relations, moments of crisis and change, shared allusions, and terms and categories that, taken collectively, evidence a kind of unconscious collaboration across time and space that reveals a neglected tradition rooted in the continuities between democracy, poetry and science. Though a seemingly digressive, uneven, and unfocused text, *Gibbs* can be recognized as a deeply unified work if we attend to the kinds of historiographical errors and challenges it grapples with as it attempts to clarify the distinctive role of the imagination when history is understood as a dynamic and interconnected series of lives. In a passage central to understanding the seemingly idiosyncratic leaps *Gibbs* makes, Rukeyser argues:

> the lines of families, like those of the culture of nations mark the recurrence of energies, the lives of these daughters and sons curving response to their age in startling answers to their ancestors. Theses rises have been compared to the ‘faults’ in geologic records; they are more like the many-based lines of those statues dictated by Gibbs’s formulas, the statues of form itself, which may by analogy apply to any natural form. The analogy is as sensitive here as if itself were another form of life, delicate, vulnerable, and precious. (*WG* 403)

At work here is a particular conception of the historical continuity and recurrence of the energies Rukeyser associates with the imagination. Importantly, these lines of relation, if we imagine them plotted in geometric space, display a curvature that indexes or exemplifies a *dialogical* and dynamic process operative across time. Rather than using a geological analogy that might imply a kind of a fixed and linear process of accretion and sedimentation, she turns to a complex thermodynamic analogy that makes explicit reference to the plaster model or “statue” of the
thermodynamic properties of water James Clerk Maxwell sent to Gibbs. (See figure 3 below.) While this passage exemplifies the capacity of analogy to link seemingly unrelated entities like families, nations, cultures, geometric formulas, and physical models, it also cautions against losing sight of the “delicacy” of analogy and the way it takes on a life of its own as it grows and develops through history.

Fig. 2. Maxwell’s model of Gibbs’s Thermodynamic Surface from: “Maxwell's Thermodynamic Surface, Commentary Book Figures 1,2.” Wikipedia Commons, Wikipedia, 21 Apr. 2021, commons.wikimedia.org/wiki/File:Maxwell%27s_thermodynamic_surface,_commentary_book_figures_1,2.jpg.

Though we might be tempted to see Rukeyser as endorsing the very analogy between history and the laws of thermodynamics first drawn by Henry Adams, that is not her primary concern. Instead, she is pointing out how attempts to understand historical processes entail drawing analogies between the natural world and the development of human cultures that have a tendency to ossify into a fatal fixity. What Maxwell’s model of Gibbs’s thermodynamic surface
offers Rukeyser, then, is a way of conceptualizing the continuity of ideas and questions as they recur, overlap, and change phases in the passage of generations. The advantage presented by this more dynamic picture is that it foregrounds *transformation* and *chance*, thereby allowing us to see how “the clues are laid down by one generation which forgets and dies, until the traces are picked up unconsciously by their children and grandchildren” (*WG* 404). Put differently, the model helps us to “see triumph” amongst the imaginations of dead “men and women who in full consciousness knew they had failed” in their own moment of living but whose aspirations live on undergoing a kind of changing of phase (*WG* 405). Rukeyser’s idiosyncratic vision of the tendencies of history breaks with an idealist or Hegelian notion of the teleological progress of history by developing a unique conception of history indebted to the work of Gibbs, Whitman, and Lucretius that bears a striking resemblance to Du Bois’s intergenerational conception of freedom. This explicitly speculative view has the advantage of showing how “generation after generation sometimes seeks expression for one truth in modality after modality, as if a small race had an utterance to make and tried to make it until it found its forms” (*WG* 108-109). Rukeyser points to the way textual and material forms that emerge from the imagination’s spontaneous leaps support a process of expression, reception, and analogical appropriation that carves lines into the surface of history itself. Though it may be easy to miss, she plainly acknowledges there can be no easy or mechanical application of Gibbs’s scientific work to cultural or historical processes because of “Gibbs’s neglect of consciousness” in his scientific work (*WG* 417). In light of these limits, she turns to the resources of literary history.

Before moving on, however, we should consider briefly the complex and open-ended conclusion of the book because it identifies the sorts of analogical appropriations Rukeyser sought to avoid. The penultimate chapter of *Gibbs*—entitled “The Tendencies of History,” after
the work of Henry Adams—traces the politically and ethically dangerous importation of Gibbsian insights into social science and planning showing how “in a real and terrible sense, the world has become a Gibbs laboratory, although many steps in this development are blurred by re-discovery” (WG 424). Adams had sought to carry Gibbs’s work out of the bounds of chemistry and physics and into the field of history. Rukeyser explains that Adams’s *The Rule of Phase Applied to History* (1909) “makes the analogy of the attractive forces, such as Thought, which in history play the same part as pressure does in a physical system, Acceleration, according to this way of reasoning, would be the same as temperature, while Volume would remain the same” (WG 409). Unlike Rukeyser, he committed himself to the idea that “the history of the thought of man would follow the analogy of water, passing from phase to phase” (WG 409). In Adams’s accelerationist version of stadial history, the development of thought is assessed in phases divided by critical points.

But because Adams “never [laid] claim to a technical understanding of Gibbs’s work,” he “goes about to fix his points with the daring of a fortune-teller or an inspired analogist” like Emerson (WG 407, 411).16 Despite these limitations, Adams is central to Rukeyser’s story because he exemplifies a pattern of enthusiastic analogizing that was in fact determining the course of modern history. As we have already seen, she was particularly alarmed by the work of Vilfredo Pareto, which she read as an extension of Adams’s attempts to write a scientific history. Pareto “reached the concept of a society as a system in heterogenous equilibrium,” and he attempted to “determine measurable components, like economic and moral and intellectual prosperity, military and political power, and various kinds of utility” (WG 418). Because there was “no vocabulary for these measurable qualities,” Pareto coined “the unwieldy word

16 Rukeyser approvingly cites a letter William James wrote to Adams which clearly asserted that “the second law […] had nothing to do with history” (WG 414).
‘ophelimity’ for the useful and desirable in economic life” and pursued “the paradox of an attempt to keep a liberal economic policy, and at the same time to wreck every move toward political freedom” (WG 418). Assessing this pattern of reception is vital for Rukeyser because of the “easy step” that led from Pareto’s “conception of the elite without personal freedom to the compulsive force of fascism” (WG 424). This is why she points to the presence of Gibbs’s breakthroughs in the German chemical and pharmaceutical conglomerate IG Farben which would use slave labor to produce Zyklon B for the Nazis.

Rukeyser warns of the risks of attempting to construct “a machine-perfect system” by collapsing the distinctions between the human and natural sciences. She cautions that “the endless chain of new causalities following on the work of the discoverer is a complicated postlude to his responsibility” (WG 417, 382). Because no thinker can be held completely responsible for the uses to which their work is put, she swerves away from the wholesale and uncritical rejection of instrumental reason made familiar by Theodor Adorno and Max Horkheimer. She focuses instead on the cultural infrastructures and traditions that determine the reception of science in modernity. After pointing to these dangerous and disastrous appropriations, she writes “the tendencies of history are directed by the acceptance and rejection of the imagination. Economic pressures and the will of the people, aroused to resistance or producing in the full vividness of conscious life— they make these tendencies, which may go to war, or flow toward creative belief and the wish for a living order” (WG 426).

If the then dominant reception of Gibbs’s imaginative work had been shaped by war and hatred, Rukeyser’s historical retelling of the background and development of his imaginative breakthroughs shows how his work might flow in a markedly different direction. Citing a remark from the economist Irving Fisher—one of Gibbs’s most influential pupils—that “in the social
science, when the relations are so involved that language becomes less precise and complete than mathematical expression,” Rukeyser explains that “this is a challenge to poets and makers of language [...] the unwieldy word of Pareto exists only because nobody has made a better one” (WG 420-421). Her awareness of the need for forms of expression attuned to the animating historical force of imagination in the construction of any scientific system leads her to an unlikely source. She points to the fact that “in 1751, Horace Walpole proposed another unwieldy word [...] serendipity” (WG 421). According to Rukeyser serendipity is “a possibility word, a word for luck” that relates to “the luck of finding new proofs or relations which were not looked for; it is a word for induced sensitization” (WG 421). Serendipity is one name for the elusive quality of the spontaneous imaginative leaps evident in both Gibbs’s scientific work and Rukeyser’s own compositional process. Because it references “a luck that is a luck of use, a deftness in using good fortune [...and] one’s own prepared awareness,” serendipity “is the luck of the discoverer, and those who find new applications have it” (WG 421).

Against any determinist reading of historical development, then, Rukeyser asserts that “the knotted myth of the voyages of Gibbs’s ideas is a myth of this quality” (WG 421). Through her ingenious untangling of this myth, she hopes to bring about a broader “induced sensitization” that might give Gibbs’s ideas a chance at another, more generous, careful, and creative use in the future (WG 421). Rukeyser charts the mythic voyage of Gibbs’s ideas in the opening chapters by projecting a bird’s eye view of the movement of two vessels at sea roughly a century earlier.

We have to stand far off and see the world turning, its sands, its green, its mountains, its little colored towns, further and further off until the thoughts of people are a blur, the world is a blur of a hundred years ago [...] and there are two ships visible on the curve of its blue oceans. Two ships unconscious of each other,
sailing different seas and carrying vastly different cargoes. But closely interlocked for us now. (WG 13)

As her concluding sentence makes clear, it is only from a subsequent present that we might see how the movement of these ships, once unconnected by conscious awareness of one another, have become interlocked expressive figures for the drift and historical development of modernity and the meeting-places of science, politics, and imagination. From this initial formative move, Rukeyser unfolds a remarkable parable of the meanings of imagination in American history. The first ship “was the Java, a three master, sailing from Rotterdam to Surabaya (…carrying) Robert Mayer,” arguably the first of a number of thinkers who simultaneously discovered the law of the conservation of energy; and “the other ship was the Amistad” carrying “fifty-three kidnapped Africans,” whose ‘mutiny’ is today remembered as a pivotal event in the struggle against the American slave trade (WG 14, 15-16). On first encountering this juxtaposition, a reader would likely be puzzled as to their connection with one another and with the rigorous mathematical work of Willard Gibbs. But as the reader moves through the first three chapters, remarkable connections rapidly emerge and intersect. Thus, these ships become, in Eben Wood’s words, “floating signifiers” within “modernization’s epic, developmental narrative” (Wood 208).

Mayer’s discovery of the conservation of energy on board the Java “in the roadstead off Surabaya” embodies the serendipitous, combinatory nature of the leaping flashes of the imagination (WG 14). En route to the Dutch East Indies, the sailors on the ship fell sick which forced Mayer to serve as a physician. When bleeding the sailors, he was struck by the bright red color of the blood which he had earlier been taught to assume would have been rich in carbon and black in color under such warm and damp conditions. From this unexpected observation, he would come to assert the interconvertibility of motion, work, and heat. Thus, he tied together the
chemical processes of the body with the steam engine, linking the fields of physiology and physics. What interests Rukeyser most is the way Mayer makes an axiom-breaking leap by remembering “sailors’ oracles, the proverbs about the hot stormy sea that can never be as cold as calm water […] the proofs in Lavoisier of conservation in the relation between work and heat […] and] the old lines [from Lucretius]: For nothing can ever change the sum of things; there is no hiding place, nothing outside” (WG 14). Here, we encounter a vital instance of the meeting-place where the tacit and commonplace knowledge of the anonymous bodies of the dead, the earlier work of Lavoisier, and the ancient tradition of atomism expressed in the poetry of Lucretius, overlap and combine. Perhaps most interestingly, there is an apparent rhyme between the ancient poet’s claim that there is nothing outside and Rukeyser’s own unverifiable linking of Mayer’s work with the Amistad.

Rukeyser’s handling of the Amistad is intended to show how the axiom-breaking spirit of the imagination operates not only in scientific discovery but also in the human pursuit of liberty and freedom by creating ‘combining occasions’ that alter the course of history. From two vessels which are products of the extractive industrial and colonial violence of capitalist modernization, she uncovers a barely detectable derivation, a saving remnant, or counter-theme that speaks to the imagination’s capacity to enact unlikely swerves in the development of history. In her account of the trial that followed the Amistad mutiny, the relevance of these events to Gibbs’s life and work is immediately clarified. Tracing the progress of the Africans’ legal struggles all the way to the Supreme Court, she focuses on the key roles played by Josiah Willard Gibbs, Sr. and the august John Quincy Adams in securing the freedom of the mutineers. Gibbs’s father was enlisted as a translator for the Africans. According to Rukeyser’s Gibbs, his involvement was crucial because the abolitionists’ “money and conviction” meant little without the powerful link
of “communication” (WG 34). Commenting on Gibbs, Sr.’s interactions with the imprisoned Africans, Rukeyser tells us that his:

tradition was one of withdrawal, of a canalized passion given mainly to scholarship, of a remoteness among which this visit to the jail was a thunderclap. But this was a combining occasion, one of those events that bring a life into focus, summoning qualities that until such a moment seem remote from each other, alien and useless. It was the first and only moment in Josiah Gibbs’s career that could call into play his religious belief in the value of the human being, his skill in language and the reconstruction, as from fossils, of a grammar from the broken phrases set down in travel books, in the letters of missionaries, or on such a visit as he just made—and the wish to affirm truth as he saw it. (WG 34)

Not only does Gibbs, Sr.’s participation in the trial establish a direct generational link to the work of his son, but it also evidences the same kind of serendipitous meeting of seemingly unrelated factors that Rukeyser finds in Mayer’s work on the Java. In the singular occasion of the Amistad trail, Josiah Gibbs’s place in history is transformed and secured, just as the unity of his life is realized.

From Gibbs, Sr., Rukeyser turns to John Quincy Adams, who would successfully argue on behalf of the Africans before the Supreme Court in 1841. The abolitionists working on behalf of the captured Africans selected Adams because they knew “they needed a counsel whose argument would be brilliant and unquestioned in its honesty; they needed a defense that would set this case before history as a pivotal point in the climb towards freedom. They needed, not a lawyer, but an idealistic philosopher” (WG 40). For Rukeyser, Adams is a key figure for understanding the ties between science and politics in American history because, in addition to
fighting on behalf of the Africans, he “was the President who had committed political suicide for the sake of science [and...] was one of the great peaks in democratic civilization, standing for law and human dignity, for science and faith” (WG 40). Adams thus stands as an ancestor who bolsters Rukeyser’s own motivating interests in making intelligible the meeting-place because of the way he “identified learning and freedom, science and government, and imagination with all of these,” clearly recognizing “the relation of science to the growth of the nation and liberty” (WG 67, 68).

The fourth chapter of Willard Gibbs, entitled “Science and the Imagination,” recounts Adams’s 1843 trip to Cincinnati after the conclusion of the Amistad case to deliver a speech celebrating the laying of the cornerstone of the first American astronomical observatory. The speech serves as a pathway for Rukeyser to highlight the co-presence of science and imagination in the initial articulations of a liberal-democratic worldview across the eighteenth century and to trace its subsequent deformations and contradictions throughout American history. In Adams’s speech, Rukeyser finds an articulation of “the connections between government and the laws of astronomical science” that lays bare the importance of meeting-places in the formation of the United States (WG 72). Noting that “this country rests more than any other on scientific achievements and the application of science to other fields,” she explains that “some of our scientists have recognized this; some statemen; some poets” (WG 74). In affirming that both democracy and science rest “on natural faculties, and on the multiplying and sharpening of those faculties by education, which thrives on liberty,” Adams serves as a precedent for Rukeyser’s own work (WG 73). Yet, Adams, like Rukeyser, was sensitive to the difficulties facing a democratic culture requiring a commitment both to free communication and ceaseless education. She describes him as noting that “the people of this country do not sufficiently estimate the
importance of patronizing and promoting science as a principle of political action; and the slave oligarchy systemically struggle to suppress all public patronage or countenance to the progress of mind” (*WG* 73-74). Turning from Adams’s reflections to her own present, she explains that “the American genius has been the spirit of foreboding, of foreshadowing and combining. The foreboding casts its eye backwards, it can deal with the future because it is aware of the past, it is indeed the faculty of which Mr. Adams spoke, ‘to trace the causes of things,’ and he was quoting Lucretius” (*WG* 74). This allusion serves not only to join Adams, Mayer, and Rukeyser in a Lucretian stream but also instances the meeting or *consociare* of the political, scientific and poetic established by the imagination.17

Attaining this “foreboding” mode of historical awareness is crucial for glimpsing the meeting-place of poetry and science without falling into an idealist or teleological picture which assumes that melioration or progress is historically inevitable. For Rukeyser the best American thinkers worked with a foreboding spirit. Because they lived in a world populated by “other essentially tragic qualities of waste and conquest,” they had to struggle to “capture the clues and in their knowledge see combining grace, the virtue of form” (*WG* 74). That is to say, a mere agonized consciousness of the tragic and violent nature of human history amounts to nothing without the creative attempt to combine and re-form one’s own tradition so as to move it in a novel direction. It is because “thought” in America has so often been “formless, so often a chaos without shape” that it “has known a sunken tradition of one of the deepest desires: the wish to meet formlessness, evil, dissolution, and to find their place in form. Our greatest works as well as our greatest vulgarities have started here” (*WG* 74). The examples of Josiah Gibbs, Sr. and John

---

17 As Gerard Passannante notes, “in the context of *De rerum natura*, Lucretius uses the word *consociare* (to join or make alliance) to describe the material concourse of atoms generating or not generating conglomerate matter in space” (Passannante 138). See Passannante, *Lucretian Renaissance: Philology and the Afterlife of Tradition* (Chicago: University of Chicago Press, 2011).
Quincy Adams evidence how the creative attempt to develop new forms entails both personal and worldly transformations that “change a continuity” (*WG* 82). For Rukeyser, “these changes make history, these points at which the rules break down. We are concerned with them. We build our churches and our Constitutions on them, and it is here we must take care, and reaffirm our wishes” (*WG* 82-83).

Care and reaffirmation join with foreboding as necessary epistemic virtues for democratic subjects who might finally escape from a paradoxical and split tradition gripped by a static and unimaginative understanding of form. Central to attaining this mode of historical awareness was the need to recover an awareness that “the ideas behind [America’s] growth came from oppression and the and the reaction of grief and anger which imagination brought to tyranny” and from “science and a new political theory which rose in interlocking structures” (*WG* 76). While pointing to the imbrication of imagination, politics, and Newtonian science in the era of the French and American revolutions, she explains:

The Americans thought of the great Englishmen as law-givers, and the Declaration and Constitution are their Leviticus. And they were law-givers; the real danger was there. They were interested in structure and pure law, its analysis; what they handed down could be used for good or evil, as the specialists were good or evil. If they would take the methods, keep the creative flow, all would be well; if they accepted, and let the theories harden into form, there was all the danger. If they would be Levities, take this new science over and have its ‘legislation of the cosmos’ reflected in the legislation of the states, harden and become holy, they would run into the fatal danger that all such thinking by hard analogy must meet. (*WG* 77-78)
Rukeyser avoids a transcendent reification of the remarkable continuities between a revisionary Protestantism, modern science, and the systematic political thinking of Montesquieu that gave rise to a liberal-democratic order, while simultaneously affirming its combinatory spirit and creative methodological flow. This allows her to highlight a crucial distinction between two senses of form: one frozen and static, the other dynamic and open-ended. Because the creative social desire to constitute lasting forms that might foster unity in a world of dissolution is always haunted by a vulgar and mechanical fixity, she argues that what is demanded is a pluralistic and evolutionary sense of tradition rooted in an understanding of the dynamism and creative power of form. We must accept, then, that “the great expressions of our past have driven relentless through sense and torment into system; even if the system much touch order with its left hand and dissolution with its right” (WG 351). The fatal analogy threatening the democratic experiment—its mistaken assumption about the meanings of form—was the idea that it would be possible to “build a machine to be […] such a system of governors, safety-valves and balanced mechanisms that the people could safely be confined in it, and the positions of the interacting classes and interests would remain forever constant” (WG 79). Inspired by the fact that Newtonian science had shown “it was possible to calculate the most obscure and over-powering forces,” the founding fathers attempted to ensure “that their highest ruling instruments would be calculable” (WG 79; original emphasis).

But this aspiration to a form that would be as mechanical and predictive as a machine is undermined by the false assumption that “the world [is] completed” and fails to acknowledge that it “is constantly being torn away” by “wars and suppression on every level” (WG 351). Once we recognize that “the life of the world is in its living people, in those who express that life and the dynamic equilibrium which is its home,” the very ideas of form, tradition, and ancestry
undergo a remarkable change ($WG$ 351). Because our world is something “that must constantly be made,” no historic achievement, text or constitution can stand outside of the transformative generational cycles of life and death that establish a *dynamic* equilibrium between “ancestors” and “descendants” ($WG$ 351). In moments “when the world is hidden and torn away from itself,” Rukeyser argues “the secret great become in a real sense contemporaries”: the “responsibility” of the living is to “receive” the expressions of the dead so as to mend and maintain a flowing and living equilibrium rather than a frozen and lifeless one ($WG$ 351). Put differently, we must accept the inevitable and often antagonistic interplay between order and dissolution, engaging in a reparative project of recovery and re-discovery that keeps alive the great expressions and aspirations of our ancestors though an evolutionary process of imaginative re-affirmation. In America, this requires reckoning with “the most complicated crime[s] of waste” encompassing the eradication of “tribes,” the enslavement of human beings, and the theft of land in the name of human liberty” ($WG$ 352).

In a Whitmanian spirit, Rukeyser argues that even while “the goal [that] had been named” in the Enlightenment was immediately “betrayed,” it “would be named again, re-discovered, and re-affirmed” as was evidenced in the work of Gibbs, Sr. and John Quincy Adams ($WG$ 352). While the case of Gibbs made plain that these re-affirmations and re-discoveries had largely been forgotten in a tradition split apart by specialization, war, ignorance, and a hostility to the imagination, Rukeyser’s life-writing projects worked to rescue those figures who captured and combined the wishes, aspirations, and clues of freedom in the maelstrom of waste and violence. Through the production of genre stretching forms that might serve as meeting-places for her readers to experience and receive the serendipitous, incalculable, and combinatory energies of the imagination, Rukeyser fostered a transformative exchange which would give rise
to another sense of ancestry and historical tradition. As we will see in the following section, her aspiration can be traced all the way back to the long and complex re-discovery of Lucretius’s *De Rerum Natura* which, in the words of Gerard Passannante, countered “the idea of a solid, fixed text” or tradition offering instead an understanding of “a poem in perpetual motion” and a “tradition in the process of being made and unmade and made in time again” (Passannante 8).

Like Lucretius and his heirs, Gibbs draws on “the temporality of atomism” posing “a radical challenge to any reader reflecting on antiquity and the ‘stuff’ of tradition” by calling attention to “the multiple and evolutionary forms of literary and intellectual history, and the future of the past in the pages of the printed book” (Passannante 8). By tracing the surprising linkages established by shared terms, common problems, and a number of ‘unverifiable’ facts between Lucretian atomism, the work of Gibbs and Maxwell, and the writings of Whitman and Melville, Willard Gibbs seeks to create a new future for the past that would support the emergence of a new meeting-place in the future.

**The Rare Union of Poetry and Science**

While Gibbs’s work largely suffered from neglect and his reception was characterized by a belated rediscovery in a cultural moment consumed by the idea of science as invention, Rukeyser turns to the rare and remarkable relationship between Gibbs and James Clerk Maxwell to call attention to an alternate path of reception that might clarify the importance of the serendipitous leaps of the imagination. As she explains, “Gibbs could give Maxwell what he most loved: strong, finely focused principles, capable of being developed in a thousand ways. And Maxwell had already begun to give Gibbs what he needed: a bridge to his audience, who would not listen. One of the most tragic wrongs of waste in the history of science was the breaking off of their contact” (*WG* 251). Gibbs’s relationship with Maxwell captures in miniature
the importance of the dialectic of expression and reception so central to Rukeyser’s understanding of the historically transformative power of creative exchange made possible by both scientific and aesthetic forms. Maxwell’s model of water returns here as indication of the power of form to forge connections and sustain a kind of imaginative and affective contact across time and space. Rukeyser explains that “Gibbs had stopped at the bare idea and left undone that step which might have bridged the gap between himself and his audience. Maxwell added the last personal expression, which must have touched and delighted Gibbs more than any other gift” (WG 202). Far from reading Maxwell’s model as simply a physical counterpart to a mathematical theory, Rukeyser sees it as bound up in a socio-historical, affective, and pedagogical matrix. In addition to being a token of acknowledgment and appreciation, the model of water is a symbol that captures the vital entanglements of life, imagination, and form. In The Life of Poetry Rukeyser explains that “the audience, in receiving the work of art, acknowledges not only its form, but their own experience and the experience of the artist. Both artist and audience create, and both do work on themselves in creating” (LP 50). A similarly creative mode of reception holds in the world of science.

While Maxwell was remembered by contemporaries like Albert Einstein and Henri Poincaré as “a master of physical thought, and the application of mathematics to physics,” Rukeyser argues that history has lost sight of his “additional power, that made it possible for him to pursue his work to its social end, and set it before its audience” (WG 209). She finds evidence of this power “in the verses he wrote, in his lectures to workingmen, as well as in the actual conception of work,” which in his eyes was “not finished until it reache[d] its far audience” (WG 209). Maxwell was a bridge builder analogous to Lucretius and Rukeyser herself who sought to foster a wider and more vivid reception of the subtle, abstract, and counterintuitive insights of a
great thinker. Pointing to Maxwell’s “ability to use analogies, like models, and discard them as no engineer could bear to,” she notes that “he insisted on the equal value of both kinds of imagination, saying ‘scientific truth should be presented in different forms and should be regarded as equally scientific whether it appears in the robust form and vivid colouring of a physical illustration or in the tenuity and paleness of a symbolic expression’” (WG 212). In his recognition of the equal value of the poetic and scientific imagination, Maxwell affirmed the need for a plurality of forms for securing the most generous reception of science in modernity.

As Daniel Brown notes, Maxwell focused on “the nature and authority of analogy, as a means of both grasping physical phenomena and making audacious connections between them that can generate new knowledge,” displaying the combinatory and dynamic vision of method Rukeyser so valued (Brown 56). As a consequence, “poetry, the art that is defined by formal and semantic parallelisms, [was] accordingly integral” to Maxwell’s “exploration of analogy and its epistemological possibilities” (Brown 56). Maxwell’s graceful, contingent, and poetic handling of analogies was, therefore, an animating background for Gibbs’s most lasting and vital breakthroughs in the creation of the field of statistical mechanics.

As we have already briefly seen, Gibbs’s statistical mechanics treated the observed thermodynamic properties of systems by statistically analyzing what he called ‘ensembles.’ Ensembles were idealizations comprising a number of virtual copies of a given system each representing a possible state that allowed for a probability distribution for the state of the system. Gibbs’s approach, as P.M. Harman notes, helped Maxwell to show that “the second law of

---
18 There is a much longer and deeper story in the case of Maxwell. Maxwell’s relationship with Hamilton placed him in a Coleridgean lineage which I cannot explore at any length here. I thank Devin Short of the University of Washington for sharing an in-progress paper entitled “To give and make ask: The Use of Analogy from Coleridge to Maxwell,” which greatly clarified my own understanding of the scope of the meeting-places Rukeyser was exploring.
thermodynamics was a *statistical law* describing the properties of a system of an immense number of molecules and did not describe the behavior of an individual molecule within that system” (Harman 140; original emphasis). Furthermore, Maxwell and Boltzmann’s work on the kinetic theory of gases lent atomism much needed empirical support and directly engaged the problem of irreversibility or ‘time’s arrow’ that had emerged in the wake of Rudolf Clausius’ introduction of entropy. While Clausius had opened a path for treating the properties of gases as resulting from the movement of particles he failed to recognize, as Maxwell did in imagining his demon, that a ‘dynamic’ account of individual molecules would require impossibly perfect data concerning the motions of each and every molecule. While the suggestion that the second law was statistical or probabilistic troubled many scientists who pointed to a lack of any experimental evidence that reversibility was in fact possible, Gibbs, Maxwell, and Boltzmann contributed to a growing interest in chance and probability that would prove fundamental in development of twentieth century science.

Of particular importance for the case of Gibbs, the kinetic theory of gases served as a bridge between chemical atomic theory and the molecular or atomic account of matter. Though the “energetics” program of Wilhelm Ostwald sought to enlist Gibbs’s chemical work to argue against any mechanical or atomistic concepts in chemistry in favor of a monistic vision of energy as the sole real entity in nature, Ostwald failed to recognize that Gibbs had in fact made it possible to bring thermodynamics into the “ontology of the mechanical view of nature” (Harman 148). In his 1902 *Elementary Principles of Statistical Mechanics*, Gibbs “emphasized the distinction between the formation of hypotheses about molecular actions and the constitution of material bodies, and the statement of the laws of thermodynamics” and proceeded to describe his “treatment of the foundations of thermodynamics, in terms of a statistical theory of molecular
motions, as the attempt to formulate thermodynamic analogies” (Harman 148). While it is true
that Gibbs was quite careful in appealing to molecular or atomistic hypotheses concerning the
constitution of matter, he frequently appealed to molecular behavior in his early papers. In
*Elementary Principles of Statistical Mechanics* (1902) he suggested that statistical mechanics
could supply the rational foundations of thermodynamics. What Gibbs was able to provide was
“a microscopic basis for thermodynamics” that lent “proud support to the atomic theory of
matter” and “played a crucial role in the creation of quantum theory” in the hands of Einstein and
Max Planck (Purrington 147).

In Rukeyser’s telling, Gibbs’s *Elementary Principles* was a book about “possibility and
blending, about the tendency of the universe,” and as such, it gestured to a conception of unity
quite similar to the one Rukeyser was working to articulate (*WG* 335). She explains:

> the uniformity presented here is not the final sameness we contemplate with
dread, the likeness of every particle with every other—that heat-death which is
the end of horror and the last shipwreck—but it is that blending which outdoes
our senses. If we were not gross, and limited, our infinite eyes could see the
distinctions among grains, seeing each particle as single and original; variety is
there so long as our perceptions match it. Variety remains if our perceptions
become more accurate as the random mixing goes on. It is the limitlessly
perceptive sense we long for; the keen eye which will not be fooled by a trick of
the world. In this sense, mathematics throws a sop to our weakness, providing
sharpness for our blindness, that we cannot see; our clumsiness that we cannot
intervene. (*WG* 335-336)
This rich passage opens with a firm rejection of a wholly deterministic understanding of the consequences of the second law, sweeping away the moral panic related to the idea of the inevitable heat-death of the universe to emphasize another conception of uniformity evident in Gibbsian ensembles. Echoing Gibbs’s and Maxwell’s separate recognition of the impossibility of a phenomenological account of the bewilderingly complex behavior microscopic entities, Rukeyser emphasizes that a kind of provisional mathematical idealization is demanded by the inherently limited and perspectival nature of human perception. Therefore, Gibbs’s ensembles clarified the nature of the problem and how to deal with it: “not to follow a particular system through its voyage, but to determine how the whole number of systems will be distributed at any time, if we know the distribution for some one time. It is as a picture of the massing of systems along a curve of probability—the gatherings of atoms, of constellations” (WG 337; original emphasis). Through Gibbs and Maxwell, Rukeyser traces the way the mechanistic analogies underwriting early conceptions of liberal states and their aspirations to calculability crumble in the face of the limits of human perception and the essentially probabilistic forms of abstraction that supplement them.

We can begin to grasp how the notion of a probabilistic gathering or blending of distinct systems—akin to the constellation formed by the Java and the Amistad—might name Rukeyser’s own approach in *Gibbs* by attending to the serendipitous linkages that come into view as she explores the tragically brief relationship between Maxwell and Gibbs. Despite the fact that Maxwell was the earliest champion of Gibbs’s methods, he was not able to compel his peers to undertake the dive into Gibbs’s abstract and mathematical papers. Nonetheless, Maxwell’s reception and response to Gibbs stands as a neglected alternative to the appropriations of Adams and Pareto. Maxwell’s profoundly imaginative response was evident to Rukeyser. In her
biography of Gibbs, she describes one of Maxwell’s poems as “his molecular demon, his flight of brickbats about Saturn, his verses.” She goes on to quote the poem directly

We honor our fathers and mothers, grandfathers and grandmother

Too;

But how shall we honor the vista of ancestors now in our view?

First, then, let us honor the atom, so lively, so wise, and so small;

The atomists next let us praise, Epicurus, Lucretius, and all…” (WG 249)

If Maxwell, like Adams and Pareto after him, was driven to historical reflection in light of developments in thermodynamics, his method of thinking through provisional thought experiments, heuristic analogies, physical models, and lines of verse, led him to a reassessment of the meanings of ancestry and tradition that did not fall prey to determinism or the construction of some ultimate and final model. This is particularly clear in Maxwell’s unlikely celebration of Lucretius as both poet and scientist, ancestor, and contemporary.

As I have already indicated, the importance of Lucretius to debates surrounding the second law of thermodynamics in the nineteenth century was not lost on Rukeyser and she uncovers a vital precedent for her own attempts to overcome the critical split between poetry and science, as she traces the voyage of Gibbs’s work in Maxwell’s thought. In a series of debates between John Tyndall and Maxwell concerning the moral and social implications of scientific atomism “the Lucretian creation story” was seized “as a speculative precursor to (and classical pedigree for) their respective physics […] during the late 1860s and early 1870s” (Brown 167). In his debates with Tyndall, “Maxwell was drawn to Lucretius’s scientific speculations through his work on the kinetic theory of gases” and turned to “the clinamen to entrench a principle of free will at the most radical level of physical reality” (Brown 168, 170). Against a “classical
Laplacean mechanics” Maxwell posited the “baroque dynamics” of the Lucretian clinamen “in which tiny events can have disproportionate repercussions, and stability is the resultant of elaborate instances of instability, systemic regularity the consequence of reverberant irregularity: ‘The constancy and uniformity of the properties of the gaseous medium is,’ Maxwell observes, ‘the direct result of the inconceivable irregularity of the motion of agitation of its molecules’” (Brown 260). Through Lucretius, Maxwell discovered the possibility of an analogy sensitive to irregularity, a mode of identity between poetry and science in which the range of diversity and difference was not lost.

Maxwell’s poem thus retains a neglected or lost possibility of another reception of the relations between the poetic and scientific imagination. Maxwell stands as a remarkable outlier from the vantage of Gibbs’s own entanglements in the split tradition of America. Inspired by the probabilistic insights of the theory of gasses and statistical mechanics, Rukeyser implies that despite the rarity of a Maxwell or the marginality of a Gibbs, the work of these figure might come, in time, to have disproportionate and unlikely repercussions in the dynamic equilibrium established in the unfolding of history, in a manner akin to Lucretius’ role in the emergence of modern physics nearly four centuries after his re-discovery. Turning her attention to the failed reception of Gibbs in the nineteenth century with an eye to the possible entanglements of poetry and science in the America, Rukeyser gathers traces and fragments—atomistic bits of textual and imaginative matter—to construct a counter-tradition that might be imaginatively received and creatively responded to by her peers. Rukeyser argues that just as in Maxwell’s England in America “the symbols and myths of poetry and painting had their parallels in the symbols of science; the analogies are dangerous, again, but they are most dangerous when they are most usable” and that “the danger has kept too many people away from these barriers. The meanings
themselves cross the barriers which convention had put up” (WG 365). While the dangerous importation of science into the spheres of history, economics, and sociology was unfolding around her, Rukeyser pointed to the neglected possibilities of what might occur from tracing the parallels between poetry and science.

Against the waste and violence that had emerged in a monistic pursuit of an ultimately calculable and fixed body of knowledge that would allow us to build a statically unified society Rukeyser argues the following in *The Life of Poetry*:

> we need a background that will let us find ourselves and our poems, let us move in discovery. The tension between the parts of such a society is health; the tension between the individual and the whole society is health. This state arrives when freedom is a moving goal, when we go beyond the forms to an organic structure which we can in conscience claim and use. Then the multiplicities sing, each in his own voice. Then we understand there is not meaning, but meanings; not liberty, but liberties. And multiplicity is available to all. Possibility joins the categorical imperative. Suffering and joy are fused in growth; and growth is the universal. A society in motion, with many overlapping groups, in their dance. And above all, a society in which peace is not lack of war, but a drive toward unity.

(*LP* 211)

Recall that the momentous rise of specialization that had let the kinds of knowledge fall away from one another was characterized in the opening pages of *Gibbs* as a kind of social illness or disease. The background formed by schools and other social institutions had in Rukeyser’s own time not merely marginalized the arts but actually had set into motion a kind of perpetual epistemic warfare that sought to do away with the generative tensions by arriving at some
synthetic and final theory of everything. In contrast, Rukeyser argued that tensions are to be embraced when they are tethered to a shared pursuit of freedom and a revised understanding of unity that can encompass both reconciliation and antagonism. As I have already indicated, this view of unity has a poetic heritage as is evident in Rukeyser’s appeal to the figures of song and dance in the passage just cited. More radically, her suggestion that growth is the true universal that fuses suffering and joy checks any absolute appeal to some final conception of meaning or freedom; and it does so by centering the dialectical process of life and death that lends the imagination its curious and multiplicitous continuity through time.

As we have seen, to discover and inhabit a meeting-place is to accept the limits of our received image of both scientific and humanistic knowledge and to acknowledge the centrality of the imagination’s generation of serendipitous and unverifiable facts that alter the course of our lives. No doctrine or dogma, no abstracted body of facts or framework of logical relations and analogies can replace or capture a lived encounter with the meeting-place. The challenge then is one of faith, not of epistemic certainty. In times of war and crisis—in short, in that period we have come to call modernity—our fear of death and error, our habituated and learned hatred of change and transformation, and our resistance to poetry subvert the growth of a future intimated in the expressions of those rare ancestors forgotten by history.
Works Cited:


Jewett, Andrew. *Science, Democracy, and the American University: From the Civil War to the


-. The Transcendentalists. Athens: The University of Georgia Press, 2007


Stengers, Isabelle. *Cosmopolitics* (Minneapolis: University of Minnesota Press, 2010-11).


White, Eric. "Evolutions and Improvisations: Method and Materiality in Kora in Hell."


