Chapter 2

On Ways of Knowing

In 1958, Sir Charles Snow (known best as C. P. Snow) delivered the Rede Lecture at Cambridge University. He entitled this famous talk, “The Two Cultures and the Scientific Revolution,” in which he described how scientists and the literary community were so divided they could hardly speak to each other (Snow 1959). Their shared goals, interests, and methods had radically separated and when coupled to the vast discrepancies in resources, the sciences flourished while the humanities began a slow decline.1 Because he was a physical chemist and published novelist, he seemed well-positioned to make such a pronouncement. He also offered a prescriptive remedy by arguing for scientific literacy, a view that was then contested as a disguised form of subordinating the arts and humanities to the sciences and thus displacing the liberal intent of education.

What became known as the “Two Culture Controversy” began with a rebuttal lecture presented by the literary critic, F. R. Leavis, who pointedly wrote, not directly about the issues raised by Snow’s lecture, but about Snow’s standing as a spokesperson for science. Leavis’s essay, “Two Cultures? The Significance of C. P. Snow,” begins with what was called a “cruel” and “gratuitous” dismissal of Snow as a novelist, which was but the segue into dismissing Sir Charles as an intellectual: “...not only is he not a genius; he is intellectually as

1 Snow’s description has held over the ensuing decades. Recent reports show the persistence of declining student enrollments and shrinking professional positions for faculty in the humanities, despite wide-spread public consensus about the importance of the humanities in American life (American Academy of Arts and Sciences 2016; 2019).
undistinguished as it is possible to be” (Leavis 2013, 54). However, Leavis observed that Snow stands as “a portent,” “mastermind and a sage” for the public, and it is this authority that is the point of the attack, whose intent is to challenge the hegemony of science on culture-writ-large. Thus, as Leavis opined, the significance of Snow is not the man himself, but rather what he expresses, namely, the “cultural conditions” of the times. More specifically, the economic and social power of the sciences in modern society not only impacts academics (Whelen 2009) but has wide social and political ramifications as well (Reisch 2005; Ortolano 2011).

Science pitted against the humanities became a contentious issue that went far deeper than just the power politics within universities or a sociological clash between academic disciplines. Leavis pointed to the wider cultural influences of a struggle that would define legitimate ways of knowing and discredit others. A harbinger of the culture wars of the future, this debate captures the maturation of a division in the academy dating to the mid-nineteenth century. Until then, science was regarded as a branch of philosophy, but with specialization and academic segregation, science established itself as a distinct intellectual activity, one based on empirical investigation. Several social sciences (sociology, psychology, economics) developed in parallel as the empirical study of humans and their institutions expanded the spectrum of inquiry (Smith 1997, 65–75).

In 1840, William Whewell highlighted the distinctions wrought by professionalization of the empirical disciplines with a new name for the practitioners, “scientist” (Whewell 1840, cxiii). The semantics are telling: The term designated an individual engaged in an endeavor separated from the rest of philosophy, i.e., one whose profession is to practice science. Prior to this new terminology, “natural philosopher” reflected a continuity of the sciences and other branches of philosophy. For instance, Charles Darwin referred to himself as a “natural philosopher,” which for him meant that the line separating science from broader philosophical questions could not be definitively drawn. Whewell thus defined a profession that dissected nature to hopefully put it

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2 The divergence of the sciences from the literary and visual arts is captured by the etymology of scientist and artist. Each term first appeared in English about the same time. “Artist” was coined from the French, artiste, in 1823, and again, a specialization of those who practiced the creative arts required differentiation. And with each designation, the arts and sciences formally separated.

3 Note, “science” derives from scientia, knowledge of the world, and sciens, “knowing,” originally meant “to separate one thing from another, to distinguish.”
back together, but now for human enrichment. However, with this practical aspect “scientist,” carried a pejorative connotation of someone more interested in applying knowledge than in discovery for its own sake, a veiled indictment suggesting for-profit motivations and possible corruption of sanctified knowledge for knowledge’s sake. This compromised image of a searcher for truth clearly corrupted the earlier designation of “philosopher,” namely, one who sought “wisdom” as a noble pursuit for its own sake. Only towards the end of the nineteenth century did the word scientist assume more benign meanings.

Sanctimonious asides seem hardly fair. After all, material benefits were always at play in science’s quest for resources. Francis Bacon (1561–1626), in his early pitch for monarchial support of research, had promised bountiful benefits for the military and general economic prosperity. Human industry was part of the contract. And beyond a socio-economic investment, scientific philosophy provided humanism, born in the Renaissance, with a method of thought that would replace revelation with a new critical rationality. Empiricism and the logic applied to observation became a new way of resisting skepticism in a mysterious universe. Technical success aside, modernity is the Age of Science. That revolution in thinking had profound effects impossible to measure. Indeed, science has been called “the engine of modernity” (Center for Science and Society, Columbia University 2017).

By the mid-nineteenth century, the seamless transition of gentlemen registering on both sides of the intellectual ledger (e.g., Isaac Newton studying both mystical texts and celestial mechanics) had unraveled. Within a generation of Napoleon’s Waterloo, the shared goals, interests, and methods of academicians had irreparably separated and by the beginning of the twentieth century, major rifts were formalized with the division of the human and natural sciences along the axis of explanation (erklären), exemplified by the natural sciences, and understanding (verstehen), interpretive methods, broadly construed (Bambach 1995). I wanted to better understand how that division emerged and whether bridges could be built to re-link these two fundamental ways of knowing. With this problem identified, my studies of science commenced.

4 Modernity has various cultural and intellectual designations (Berman 1982) but generally refers to several epochs of thought: the seventeenth-century Age of Reason; the eighteenth-century Enlightenment; the long nineteenth century (1790–1914). Here, I partition “early modern” beginning with Galileo and Descartes (ca. 1630); Enlightenment originating with Spinoza (ca. 1670), but not in full flower until fifty years later; Romanticism, originating with Rousseau (ca. 1750), flourishes by 1790 and extends into the mid-nineteenth century. Post-modernism emerges in art and literature during the 1920s and finds its full throttle after World War II.
The Unity of Reason Problem

At the end of the eighteenth century, Goethe explicitly addressed the “Unity of Reason” problem in seeking the common root of different kinds of intelligences, namely, those distinctive ways of thinking and judging applied to science and the arts (Fink 1991). Kant had formally presented the issue in different terms. For him, two kinds of Reason characterize human knowing, what he called “pure (or theoretical) reason” addresses the natural world while “practical reason” mediates the moral universe. The two differ in their respective cognitive functions, but the question as to whether they arise from a common root and divide or originate in different domains became philosophically interesting. The challenge of how reason might be regarded as unified does not first appear with Kant’s schema, but grows from modernity’s conundrum of determining how humans can be both part of the natural world of cause and effect, and at the same time, exercise free will and thus assume moral responsibility. The autonomy of both theoretical and practical reason serves as the bedrock of Kant’s entire philosophy, a system that provides for freedom in both the apprehension of the natural world and the discernment of moral action in the social universe.

The nineteenth century was marked by responses to this fundamental division, where one tradition, identified with Hegel, followed the rationalist-speculative orientation that believed in the unity of reason (namely, a single source of theoretical and practical reason), while a second empiricist-psychological avenue of inquiry disputed such a unity and stressed the fundamental divide (Beiser 2014, 13–16; Neiman 1994). The idealist efforts failed and in parallel with the rise of science in the late nineteenth century, the empiricist (or naturalist) tradition prevailed as the scientific disciplines, following their own agendas, multiplied. Then those interested in the defining the role of philosophy in this partitioned relationship sought to understand the underlying logic of scientific pursuits and with such insight draw epistemological lessons from their colleagues’ efforts.

After World War II, sensitized to the dangers of unmonitored scientific applications, Snow continued the discussion, now firmly placed within the

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5 How Kant regarded “pure” and “practical” reason as unified has been deliberated in three basic formulations (Neuhouser 1993, 12): 1) They are compatible with each other, that is, insofar as the principles of one do not conflict with those of the other; 2) both can be derived as components of a unitary and complete system of philosophy, which has as its starting point a single first principle; 3) they possess an identical underlying “structure,” or constitute what is in essence a single activity of the subject.
social and political contexts of the academy. Ostensibly, the Two Culture Controversy centered on educational goals and ideals, but the root of the debate was about the influence of science and technology on culture-at-large. Dissension among the enlightened accelerated during the 1960s. Mastery of nature was not enough; science fell under the scrupulous eyes of critics who revealed the warts under the make-up. Science, fairly or not, was indicted for diverse ills and attacked as the purveyor of destructive technologies. The objectivity of its positivist philosophy had been discredited by Nazi racial science and Lysenko’s Soviet genetics to reveal how easily science might be employed for ideological agendas. Techno-science had placed a hegemonic hold on Knowledge, but dire consequences of seemingly beneficial applications (e.g., insecticides and nuclear fall-out) grabbed headlines and cries mounted for greater citizen supervision (Carson 1962; Fradkin 1989). Arraigned for efforts to discredit the humanities and all they beheld, contemporary Big Science (the term for huge projects funded by government or corporate financing) was impeached for its close relations with the corporate body at the expense of the disenfranchised. And most venally, the laboratory was charged as a willing tool of the military-industrial complex.

I had stumbled upon a problem with a long history. Advocacy for the unification of knowledge dates to the mid-eighteenth century (e.g., Diderot and the Encyclopédistes), but it was renewed with particular rigor among Viennese philosophers of science in the 1920s and ’30s, who continued their efforts as emigres in the United States after World War II (see Preface). They were encouraged by James Conant, then President of Harvard University, who had commissioned his faculty to devise a new program, *General Education in a Free Society* (1945), which was an attempt to unify, or at least bridge, fields of knowledge that had been splintered between the sciences and the humanities. But as the

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6 Reviewed in Tauber 2009a, chapter 5.
7 For German racial science see Ehrenreich 2007; Weiss-Wendt and Yeomans 2013. The German antecedents reach into American eugenics and racism (Kuhl 1994; Whitman 2017). The case of Soviet’s embrace of Lysenko genetics is another well-examined example of how political determinants have influenced the practice of scientific research and its conclusions (Joravský 2010; Graham 2016).
8 At various times, scientists themselves have assumed the mantle of moral advocacy (e.g., Liss 2005). A notable recent example was the debate concerning genetic engineering and its regulatory policy (Wright 1994).
9 For a personal recount of Harvard during the 1940s, see Holton 1995a. Of note, Thomas Kuhn’s *The Structure of Scientific Revolutions* was published in a series dedicated to such unification. Edited by Otto Neurath, *Foundations of the Unity of Science, Toward an International Encyclopedia of Unified Science* published a series of monographs from 1938 through 1970 that
Snow affair had so clearly demonstrated, the two academic communities were so divided they could barely converse with each other. Snow had bet on the stronger horse by championing the sciences at the expense of the humanities (based on the material benefits of that choice). Indeed, science and its technological harvest proved triumphant in the following decades.

The contending positions reflected a rigorous debate about the role of science in society and, more generally, the dominance of one kind of knowledge over another. The controversy began with the clash of fundamental values between the entrenched Enlightenment and The Romantic Revolt (1780–1830) and had moved from an intellectual debate to an enactment of a world view. Indeed, the humanists’ alarm extended well beyond resources and authority. For them, positivist aspirations (if not imperialistic dominance) had contorted the very foundations of knowledge. Positivists were dictating “the real” at the expense of other ways of knowing. Given my personal conflicts, I wanted to better understand this debate in which the objective and subjective were pitted against each other. Indeed, this apparent opposition seemed to reside at the core of my own dilemmas. So, I followed the philosophical path that led back to the likely origins of my own confusions, whose journey I later called, “scholarship as self-knowledge.”

I began with the Age of Reason, whose Enlightenment was based on three principles emanating from the basic precept that knowledge is a virtue: all genuine questions can be answered; answers must be compatible with each other; and answers are derived through correct reason, as opposed to revelation or authority. “Correct” reason, of course, conformed to the mathematization of nature and the logic of objective analysis. Romanticism’s rejection resided in dethroning these principles and replacing them with other precepts. Reason was a kind of confinement to be supplemented by creativity and imagination; personal authenticity and emotionalism celebrated the subjective at the expense of the analytic; the sanctity of the inexpressible and its transmission through art captured the deepest human realities; the protest against universality elevated individualism and self-assertion; and perhaps most central, the primacy of one’s own subjectivity that displaced objectivity as the final arbiter of reality. Here, the conflict of the sciences contra subjectivity originated, because, according to the Romantics, physics cut “reality into some kind of

sought the basic, unifying principles of the natural and social sciences. Contributors included a who’s who of mid-twentieth century philosophy of science, including Niels Bohr, Rudolf Carnap, Bertrand Russell, John Dewey, and Charles Morris.
mathematically symmetrical pieces, whereas reality is a living whole” (Berlin 1999, 58). Ergo, science could not deal with what was truly important and, furthermore, distorted (even nullified) the authenticity of personal experience.

Later, when I surveyed this intellectual landscape, I appreciated that the massive cultural shifts associated with postmodernism had their roots in these Romantic ideas: 1) per Nietzsche’s proclamation, humans define themselves through self-chosen values and goals; 2) and because there is no pre-existing structure to which adaptation is required, perpetual self-creation expresses the dynamism of nature and the unpredictability of human activities; 3) knowledge and its telos, certainty, is sacrificed and replaced with the human reality depicted by art and myth; and 4) instead of the unification of knowledge, disunity characterizes the world and our understanding of it. Each of these grand ideas, vibrant in their ill-definition, would serve as waystations of my own intellectual journey, one that lay far in the future.¹⁰

**The Collegiate Thesis**

Because I chaffed at the ambiguities of hermeneutics in art criticism, historical analyses, and literary exegesis, I turned to the sciences as a more ready conduit to a realm of certitude. And accompanying the decision to go to medical school, a recalibration of goals commenced. Yet, conflict remained. While I wanted to prepare for a career in science, my interests in the humanities did not abate, because my first love, *poesis*, called and I would not abandon Her. Finding a balance proved a formidable challenge as I attempted to attend to both mistresses. I found a recourse of sorts in pondering the relationship between different ways of knowing—the objectivity characterizing science versus the interpretive faculties of the arts, history, and letters. Utterly innocent of the controversies that would up-turn theories of literature, art, and language, my assumptions of a stark contrast between the two domains of study proved naïve. After all, a revolution was underway that discarded positivist tenets in science studies (discussed in chapter 8). Whereas I thought of the scientific enterprise as the gath-

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¹⁰ Below I describe how romantic tenets pertinent to biology influenced my later critique of immunology and how my examination of positivism was framed by the Romantics of the mid-nineteenth century. Those studies then influenced, for a time, my own ego ideal based on naïve expectations of self-knowledge and freedom. At least part of that program was derived from how Thoreau understood autonomy, which then drove me to study Kant’s formulation. One of the ironies of this chapter of intellectual history is that Kant, despite his abhorrence for Romanticism, contributed to its genesis (Berlin 1999, 80–87.)
ering of the facts for the logical composition of theories, it became evident during the 1960s that interpretation and other subjective elements played crucial roles in scientific thinking. In short, the borders demarcating objectivity were increasingly blurred as interpretation assumed new authority. 11

Cognitive considerations about analysis or creativity might have served my purposes as I sought common ground for the two academic domains. I was already well-aware of the mosaic of cognitive faculties with which humans operate, how differently people think, the range of reason that passes for "rational," the play of the emotions, the workings of experience, the effects of unconscious bias and desire. Finding common ground on factoring such subjective aspects in the analysis of a text or an experiment could have addressed the science/humanities division that so preoccupied me. However, I did not take that route. In fact, I had no idea there even was such a road to follow. I had enrolled in an aesthetics of science seminar, but the instructor, a chemistry professor, lacked philosophical expertise and the course was a superficial, "look at this; look at that" kind of survey—"Science reveals Nature’s Beauty." 12 So instead of adopting a cognitive approach to uncover the infra-structure of scientific interpretation, I used a developmental tactic that sought to track the emergence of scientific thinking from what I considered less sophisticated forms of thinking.

At the time, I thought of myth as a magical way of thinking that represented a station on the way to objective thought. This was the view of diverse scholars of the early twentieth century, who regarded myth as a primitive form of religion or a magical system of explanation. Accordingly, Sir James Frazer (The Golden Bough), Freud (Totem and Taboo), Ernst Cassirer (Language and Myth), and Emile Durkheim (Elementary Forms of Religious Life) developed a developmental view of myth in the hierarchy of knowledge. While I also searched for that root of science’s origin, I was looking for more, namely, a universal schematic of the mind. Studying the primitive, whether in anthropology or

11 Radically altered philosophies of science (i.e., ideas of how scientists interpreted data and constructed their theoretical models) corresponded to parallel re-evaluations of the underlying principles of hermeneutics in the humanities. Derrida’s seismic deconstruction critiques had just reached America’s shores in 1968 as I proceeded with my own investigations ignorant of his arrival (Derrida 1974; 1978a; 2011; Culler 1982; Norris 1982; Caputa 1996; Dirk and Lawlor 2014; Cisney 2014).

12 Early on in my immersion in philosophy, I organized a colloquium on the same topic in the Boston Colloquium for the Philosophy of Science (1992), and at that symposium, David Kohn (1996) gave a brilliant paper on Darwin's indebtedness to an aesthetic sensibility in the genesis of the Origin of Species, a conclusion affirmed and expanded by Robert Richards (2001, 514 ff.). The proceedings of that meeting were later published, whose title, The Elusive Synthesis, clearly expressed my own perspective on the aesthetic in science (Tauber 1996b).
psychology tapped into an evolutionary paradigm of human development.\textsuperscript{13} Perhaps by examining the mythic domain would reveal an intermediate stage of human thought and the dynamics that govern it.

The logic for such a schema had credibility: Philosophy emerged from the early Ionic thinkers who were still imbued with a mythic consciousness. Plato himself invented myths to make his didactic points and the long antecedents leading to the eruption of scientific thinking in the Renaissance certainly drew from philosophical roots. In other words, the trajectory of myth à philosophy à science suggested that looking at myth might offer some insight into the deeper disciplinary connections I envisioned. From there, I could potentially better situate science and rational thought, more generally. With this vague idea, I devised a course of study in the form of a senior thesis about myth.

\textbf{On Myth}

If better focused and maybe less ambitious, I would have narrowed the scope of my research. Indeed, if I knew more that would have been possible, but the wildly broad agenda I had set myself simply reveals my naïveté. I had taken a course in classics, read Homer and the tragedians, and possessed a superficial knowledge of the most famous Greek and Roman myths. However, myth as a topic of study was confined to the Department of Anthropology, and Mr. Carter didn’t much care for such material. He was a kinship kind of guy, whereas I was more interested in anthropology as the study of the mind. I thought the primitive offered a way of examining the mental shorn of the more complex appendages of civilization that obscured the basic structures of the psyche. Nevertheless, I enrolled in several of his courses to study pre-literate kinship relationships, religious observance, and economic practices of the Aus-

\textsuperscript{13} Interestingly, I did not explore the possibilities of studying the visual arts in this regard. When going to museums, I consistently visited the African and Oceanic artefacts, and I appreciated how they inspired Picasso, the Fauves, Gauguin, and the Dresden Brücke. These were among my favorite artists, but I failed to include them in considering myth. Twentieth century artists depicted primitivism ethnographically and thus differed from the primitivism of nineteenth century romanticism, which presented the idealized pastoral of mountain, field and stream, replete with cows and fair maidens. Then the use of “primitive” fanned in different directions as artists across diverse traditions sought to rediscover more primal ways of life. That effort was largely ideological, namely, to offer a counter-narrative to Western industrialization and the emergence of mass society. Then in the next turn, early twentieth-century artists used primitivism to focus on capturing a human primal state (e.g., Henri Rousseau) or abstracting reality (e.g., Picasso, Kandinsky). See Rubin 1989; Price 1989; Hiller 1991; Rhodes 1994; Flan 2003.
tralian aborigines, the Congolese, Polynesian, Eskimo and North American Indians. While absorbed by a glimpse into the primitive, I found little to apply to the more expansive project I vaguely envisioned, so I went my own way and ventured into the myth studies literature.

The wide swath of reading that followed—Homer Smith (Man and his Gods), Mircea Eliade (Myth of the Eternal Return), Joseph Campbell (The Hero with a Thousand Faces), James Frazer (Golden Bough [abridged]), Jessie Weston (From Ritual to Romance), and Robert Graves (White Goddess)—refracted the field across several disciplines but offered no obvious pathway for my inquiry, which, in a word, was to find a bridge that would link the disparate ways of knowing upon which my career choices were divided. Following the scholars, my basic premise held that myth represented a step in the developmental pathway to science. Just as archeology had shown the progression from hunting to pastoral and agricultural phases, so too did “mental anthropologists,” comparing various pre-literate cultures, presumably discern the sequential steps in the history of human thought.

Frazer was such a figure and his Golden Bough (a treatise on the putative evolution of magic to religion) most clearly presented such an argument. However, in my innocence, I did not fully appreciate how his armchair anthropology reflected the biases of his cultural period (Victorian), nor why his scholarly conjectures have been largely rejected (Fraser 1994, ix–xliii). What I knew was that modern literature had been influenced by Frazer’s seminal work, e.g., T.S. Eliot’s (The Waste Land) and William Butler Yeats, and that Freud’s Totem and Taboo built upon the platform Frazer provided (Vickery 1973). That genre dominated my extra-curricular readings, but eventually I sought a more analytical approach that found traction in Cassirer’s Philosophy of Symbolic Forms (1953–1957).

I don’t recall how Symbolic Forms crossed my path, but it captivated me when I discerned a fully developed philosophy consistent with my own presumptions about the evolution of the mind instantiated in discernable stages of thought. The first volume of Symbolic Forms is devoted to language, the second to myth, and the third to science. I found the attempt to show the evolution of thinking from the primitive to contemporary physics exhilarating. What appealed to me? Probably the underlying description of a mind with multiple faculties ordered by a hierarchical scheme. And to the extent that I was struggling to orient myself to an understanding of different kinds of cognition—science and poetry most prominently—Cassirer provided a solution: myth finds its own resting place in the hierarchy of the mind. That theme, in terms of sym-
bolization, fit in nicely with my high school reading of Suzanne Langer’s *Philosophy in a New Key*. She had portrayed symbols functioning with a universality amenable to philosophical analysis that conformed to myth as a kind of language. Cassirer also held this position. Note, while Cassirer and Langer regarded myth as a window into the mind, neither considered mythical thinking as integral to the modern psyche, at least not explicitly. They were philosophers and given my later philosophical interests their introductions might have been more carefully mined.

In hindsight, I am bewildered why I didn’t just focus on Cassirer’s work, whose erudition and insight deserved my scrutiny if I was truly pledged to a developmental approach. Another obvious focus would have been an examination of philosophy’s emergence in ancient Greece. Two points of view would have to be adjudicated: Did philosophy originate as an autonomous exercise of critical thinking out of a religious and mythical culture, or was philosophy in its earliest inception a form of myth that matured into a secularized form of discourse? Scholarship suggests that rather than an acute inflection in thinking as a direct reaction to myth, early philosophy borrowed heavily from the mythic culture as it formed its own agenda.14 Plato extensively used myth as allegory to dramatize philosophical arguments and to make didactic points (Stewart 1960; Brisson 1998; Partenie 2004; Tofighian 2016). And Plato is only the best studied example of how ancient Greek thinkers appropriated myths. Interpretations range from the use of myth as a strategy to manipulate popular belief and authority (Morgan 2000) to the adaptation (not rejection) of myth to a new form of rational thought (Hatab 1990; Brisson 2004).15 Simply stated, the rel-

14 Accordingly, the earliest attempt to characterize nature by Thales (water was the primary substance and supported the earth) represented a turning point in Western thought. Thales’ novelty is attributed to a description of nature as ordered and that order was intrinsic to natural cause, not divine. The challenge then for the beginnings of philosophy was to rationally posit the basis of this order. A long tradition argued this novelty thesis from Aristotle and Cicero to Hegel and a host of nineteenth century German and British classicists, which is most clearly seen in Anaximander’s fragments appearing 40 years after Thales (Sassi 2018). The “continuity” thesis (philosophy evolved from religion) presented by Cornford argues that the key notion of differentiation developed by Anaximander may be traced to several Egyptian and Mesopotamian mythic sources (Cornford 1952; Vlastos 1993). I am clearly no expert, but it seems to me that Cornford failed to appreciate how Anaximander placed a natural order upon mythic explanations and thus differentiated a religious consciousness with a secularized one. Whether continuous or a disruption in thought, it seems well-established that Eastern and Egyptian myths impacted the Greeks. For representative commentary about this orientalist influence see Vernant 1982; Burkert 1992; Penglase 1994; West 1997.

15 For overviews of the transition of mythological thinking to philosophy, see various essays by Jean-Pierre Vernant, especially in “The Formation of Positivist Thought” (2006, 371–97)
tionship of myth and later systematic analysis followed convoluted pathways that I could have profitably explored. I did not. Whether this choice arose from sheer ignorance of the question or possibly because I became discouraged with the developmental approach, I cannot say. If the latter, I would have been in good company.

Not all theorists of mythology understood myth as a primitive philosophy of science or a way station to scientific reasoning. For instance, Bronislaw Malinowski (the most prominent of the generation of anthropologists following Frazer) argued that myth served the functional utility of ordering social hierarchies, organizing economies, and setting standards and enforcing morality (Malinowski 1954). C. S. Lewis presented myth as concretizing the reality to which the myth refers, by which he meant that myth conveys spiritual truths (including modern Christianity). By mid-twentieth century, myth had been turned inwards, and Lewis’s general point of view was supported by Rudolf Bultmann, who characterized myth as the reflection of the psyche that effectively uses the language of the world to translate inner subjectivity into the public domain (Bultmann 1984). In this sense, myth is an expression of psychological dynamics, famously explored by psychoanalysts like Freud and Carl Jung, but also by anthropologists (e.g., Claude Levi-Strauss), albeit from a very different point of view. On their view, myth is a portal into the mind, since we live, knowingly or not, through (and by) our own myths. This aspect of myth ultimately captured my full attention.

By the late 1960s, Freudianism began its ebb in the intellectual firmament, and Levi-Strauss’s structural approach to myth and kinship filled the pages of the New York Review of Books, where I first read about his influential theory. He posited that myth mediates the ways culture intersects with nature, both in


16 “What flows into you from the myth is not truth but reality (truth is always about something, but reality is that about which truth is), and, therefore, every myth becomes the father of innumerable truths on the abstract level… It is not, like truth, abstract; nor is it, like direct experience, bound to the particular” (Lewis 1970, 58).

17 The most popular advocates for the continued relevance of myths in the contemporary setting include Mircea Eliade (Myth and Reality; The Myth of the Eternal Return), Joseph Campbell (The Power of Myth; Myths to Live By), and Mary Midgley (The Myths We Live By). For review of scholarly theories of myth, see Scarborough 1994; Meletinsky 1998; Doty 2000. Michael Witzel (2012) makes the case that the world’s mythologies have a continuous genealogy traced back to human origins in Africa. This is an extraordinary study of human history and the persistence of a few central existential responses.
terms of social organization and on a personal existential basis. But more, in Levi-Strauss’s analysis, myth reflects the dynamics of thinking itself. In this sense, anthropology as the study of the mind jumped over the English Channel, continuing in the tradition of The Golden Bough. Levi-Strauss’s The Savage Mind (1966) and Structural Anthropology (1963), despite their fashionable appeal, left me with an uncomfortable feeling that his divergent ordering schema was too neat and, yes, structural. I suspected that he offered a formalized portrait of his own mind at the expense of his subject’s.

I veered into psychoanalytic literature, not yet convinced that its methods and conclusions had been debunked. I carried an early indoctrination. Not infrequently when my leash apparently needed shortening, my mother, the clinical psychologist, would drop-off succinct diagnoses, like “defense mechanism!” or “projection!” At the time, psychoanalysis seemed “true,” at least in our household. So, if dissatisfied with Cassirer and Levi-Strauss, I still had not exhausted the vague notion that myth (e.g., Oedipal) provided a conduit into the recesses of the mental. I had read Freud and Jung in high school and knew the basics of their respective psychologies. Each had commanded my interest, and I vacillated between their competing constructions. I was intrigued by Jung’s conception of the collective unconscious, whose universal myth of the Hero and the Mother embedded in the psyche struck me as implausible yet poetically “true.” And while I found that Erich Neumann’s Origins and History of Consciousness offered a grand overview of myth and its enactment in individual psychology, I found no map for that terrain (Neumann 1954). I suppose Jungian psychology, while seductive, didn’t appear “right.” The collective unconscious seemed a useful scaffold for highly speculative views of humankind and history, but not useful in ways that would address my primary concerns.

In contrast, Freud’s Totem and Taboo (1912), Civilization and its Discontents (1930), and Moses and Monotheism (1939) provided me with what I considered a more likely structure for myth’s operation. Freud’s own myth making, coupled to imaginative commentaries—Norman O. Brown’s Life against Death (1959) and Herbert Marcuse’s Eros and Civilization (1955)—presented my adopted approach to myth-as-probe of the inner sanctum. These works both fascinated and repelled me. Fascinated, because something deeply resonant with the times and my inner turmoil rested between the lines; repelled, because the Freudian myths purportedly guiding the psyche seemed either over-intellectualized or just plain fanciful. In any case, I centered my attention on Brown and Marcuse, both of whom had advocated a liberation of the libido (Marcuse 1955; Brown 1959). They advocated a better balance between Apollo and Dio-
nysus (à la Nietzsche), where a mythic consciousness (ill-defined and largely opposed to the reason of science) would find its rightful place in the human psyche. No doubt, my sympathies for their advocacy of Eros only confirmed my good standing in the white male youth culture of 1968. The hormones were in full storm and temperament could not be denied.

I concluded that Freud offered the most comprehensive approach, but my reaction to his theory was ambivalent: On the one hand, I appreciated the use of myth to illustrate psychic dynamics, but, on the other hand, I was uneasy with his dogmatic, mechanical portrayal of the psyche, especially in consideration of the many competing models of psychoanalytic dynamics. Indeed, the entire psychoanalytic enterprise seemed suspect to me when a unified theory appeared so elusive. Clinical efficacy would have legitimated the analytic approach, but I knew psychoanalytic truth claims were highly controversial. On my view, the mythic depiction of the psyche offered powerful metaphors—useful for modeling the psyche, but not necessarily the voice of the lower depths. Yet, a key discovery had been made, namely, the psychic reality of the unconscious, whose character knows no logic, time, nor shared language with the ego. Because of intrinsic inaccessibility, Freud invoked myth to capture its workings.

In short, Freud’s project came close to my thematic concerns, but I could not legitimate his project, at least not as a science. Even Freud admitted that psychoanalysis is only “the starting point of a new and deeper science of the mind…” (Freud 1925, 47). And, concomitantly, as attested by his detractors, the mythologies invoked by psychoanalysis accompanied by its mechanistic explanations and rationales had controversial support in the context of clinical pathology. I concluded that he was a good mythmaker but hardly qualified as a scientist in good standing. I would pick up the Freudian Knot again 40 years later in philosophical studies of his theory with a different set of questions and a re-designed scaffolding upon which to place his thought. My conclusions were essentially the same that I made in college: I discerned in his applications of myth a misapplied objectification of the subjective. In the attempt to construct a science of mental states, Freud failed both the criteria of good science and the task of preserving the subjective on its own terms.¹⁸

Much would follow in later elaborations, but at this juncture in the late 1960s,

¹⁸ Freud patently failed to fulfill the criteria that would establish psychoanalysis as a “science of the mind,” his own putative ambition, and later crippling critiques had settled the scientific merits of clinical psychoanalysis for me (Grünbaum, 1984; Eysenck 1985; Cioffi 1998; Webster 1995; Macmillan 1997; Crews 2017).
I satisfied myself that I had at least identified a literature to address many of my interests in a vast library for future exploration.

**The Unfinished Thesis, a Prolegomenon**

My thesis reviewed diverse readings and concluded that while the role of myth in the twentieth century had been subordinated to rational discourse (namely, science) mythologies in various formats (psychoanalytic in particular) nevertheless reached into the recesses of the mind in ways inaccessible to scientific analysis. Myth held its own currency as a way of depicting persons and the world in which they live with narratives designed to create coherence and meaning. Although serving a necessary function, because positivist thinking had rendered such “magical thinking” illegitimate, I concluded that myth had lost a prominent place in Western culture. I shudder at my myopia, for I had ignored the persistence of mythic thinking in popular culture, art, and political propaganda. I had too readily dismissed the mythic probably because I was not prepared to allow its realities. Obviously, I had just skimed the surface of a seething cauldron and there the matter rested for many years.

I liken my senior thesis to a roll of camera film that had yet to be developed. No “editor” appeared to help me “print” those photographs. The finished paper, typed with carbon copies(!), seems jejun and fragmentary to me now. Given the expans of the question as I framed it, and my superficial exposition of the issues with which I grappled, it is a wonder that anything intelligible emerged from my labors. At best, I wrote a survey of the various roles myths fulfill as illustrated in the works of Levi-Strauss and Freud. Its lingering appeal in my memory lies solely in its frantic gesture towards a diverse literature I would continue to plumb, and whose insights I would further develop. In short, I suffered from an incalculable ignorance coupled to intense intellectual energies directed at excavating highly complex ideas. These eventually were better formulated and guided my later investigations. The essay pointed to something, but this ‘something’ took decades to coalesce into a reasoned body of thought that followed several related themes. In the meantime, my ostensible goals awaited fulfillment.

I easily could have explored the rich historical example of how the Aryan myth was reawakened and made operative in Nazi ideology. And that story would have found resonance in the deeper Freudian lessons that I had accepted: unconscious forces may escape Reason’s ability to contain them. And in this unleashed scenario, the mythic appears with full authority, as a truth.
much later when I revisited these issues did I find that Theodor Adorno and Max Horkheimer had explicitly described this dynamic exactly in these terms, a discovery delayed until the turn of the millennium.

Shortly after I graduated from college, an English translation of their *Dialectic of Enlightenment* appeared (Horkheimer and Adorno, 1993). They placed myth in opposition to Enlightenment’s Reason as a projection of the psychic forces at work within the individual. Disequilibrium accounted for the crisis of modernity, specifically the distortion of despotic Reason that denied the rightful place of libidinal elements. Because the mythic cannot be totally suppressed, constructive ways of expression must be allowed. (Given the alarm at how the Nazis tapped into the mythic reservoir, no wonder Horkheimer and Adorno were repelled by the disruptive forces unleashed.) So, while the *Dialectic* emphasized the destabilizing character of the mythic (as had been developed by Nietzsche’s celebration of the unleashed rapturous, the a-rational Dionysian), they were even more contemptuous and damning of what they identified as the Enlightenment’s totalitarian pursuit of the rational.\(^\text{19}\) In service to the control of nature and humans not only led to romantic disenchantment, but also to the political despotisms marking the twentieth century. The loss of a self-reflexive perspective and the relentless pursuit of order inevitably ended with both social and psychological imbalances. Horkheimer and Adorno thus sought to redirect Reason’s destructive tendencies to attain a better balance in the collective psyche.

By placing myth within a broadly construed historical context, these philosophers addressed my own agenda of better understanding (and balancing) different ways of knowing. By using the same Freudian schema that I had tentatively introduced in my first studies of myth, their work would have undoubtedly helped to organize my thinking about a medley of issues that re-appeared from their dormancy decades later (Tauber 2013a, 51–71). And beyond that direct influence on adjudicating the role of mythic thinking, I came to appreciate the larger context in which their work was situated, specifically, their deep suspicions of “instrumental reason” and the instantiation of the Kantian ver-

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\(^{19}\) My early reading of Nietzsche had introduced the Apollonian (order)/Dionysian (release) conflict, which undoubtedly directed my own understanding of mythic thinking as an expression of unconscious forces. Indeed, the idea that philosophy was born as a rational response to the mythic organized my later study of the pre-Socratics. In a reversal of the usual interpretations of the Oedipus myth, Jean-Jacques Goux (1993) has cogently argued that the turn from the oracle to find explanation and rational understanding may well be the original case of Greek tragedy—not the march of indifferent fate, but rather the consequences of hubris, namely, a misplaced reliance on human reason.
sion of the ego’s rationality. Their attack had wide ramifications for they were contributing to the dismantling of modern agency. A counter position that would rescue Reason was argued by Cassirer at about the same time.

Twenty years after Cassirer had published his studies of myth as a stage of the development of symbolic forms, he turned from his epistemological concerns to political ones (Cassirer 1944; 1946). As a result of Nazism, Cassirer, like Adorno and Horkheimer, regarded mythic thinking as opposed to the rational (instantiated by science) and similarly, he saw totalitarian regimes using mythic constructions to propel their own agendas. However, instead of a better balance between Myth and Reason argued in the *Dialectic*, Cassirer targeted myth as dangerous (Baeten 1996, 42). Consequently, he promoted Reason to allow what he called, “consciousness” to complete its full maturity (ibid. 83–5). That agenda, in which “human culture taken as a whole may be described as the process of man’s progressive self-liberation” (Cassirer 1944, 228) could not be advanced if the mythic way of thinking was not expunged (Cassirer 1946, chapter 18). Thus, myth not only served as a precursor of scientific thinking, but because of its epistemological limitations, imperiled cultural advancement. This position developed from ideas Cassirer described earlier in *The Philosophy of Symbolic Forms* (1955) in which he maintained that mythic thinking did not differentiate symbols as *symbols* (i.e., symbols were endowed with magical power), whereas critical thinking makes a “sharp distinction between real and possible, between actual and ideal things” (Cassirer 1944, 57).

For me, Cassirer in defending Reason, offered a counterbalance to the *Dialectic’s* critique of Enlightenment ideals and effectively represented the other side of a dispute that will be further displayed in *The Triumph of Uncertainty*. On this account, Cassirer was the last prominent modernist, while on the other side, Adorno joined Heidegger (whom he scorned) in dethroning the Enlightenment Ego, for better and for worse. That controversy swirling around the subject is a dominant theme here, and thus I regard the *Dialectic* not only as a ready reference point for my interests in myth, but the critical introduction to the medley of issues circulating around the modern subject that organized much of my thinking on this topic.

With the benefit of hindsight, the myth project launched me on ways of thinking about science beyond the dominant positivist orientation I had uncritically accepted. I began to appreciate science within a larger, more humane construct. In subtle ways, the laboratory did provide the existential coordinates, self-definition, and moral direction I sought. I found heroes—Pasteur, Darwin, and Einstein—and placed them into the Temple of Science, one that
had great appeal in offering the Real and the True as all myths do. And while a major reevaluation commenced much later, I would continue to believe in the god, *Fact*, with his handmaidens, *Objectivity and Neutrality*, dutifully in attendance. They steadfastly remained in place until the lessons of uncertainty transformed my own tale in ways I could not have predicted. I was an innocent (as most aspiring heroes are) and anticipated when I decided to become a biomedical scientist that I had joined a valiant company. Like the Knights of the Round Table, I too would do battle against the ignorant and the foul. I vowed to enlist in the greatest of human undertakings, to harness Nature not only for knowledge, but for the Good. By bringing Her to my bidding for the betterment of humankind, I would become a champion in the crowning achievement of the Enlightenment. Hopefully anointed, Sir Fred, my own Camelot story would be told as only a mythmaker could recount it.

All too evident, this sophomoric attempt at a grand synthesis was appropriately commented on by my advisor as “the work of a lifetime.” He expressed an uncanny foresight, for in every essential way, his assessment was spot on. That story will emerge as we proceed, but I note here that four decades later I wrote a book, *Science and the Quest for Meaning* (2009a), about the issues I faced in making the transition from my initial interests in literature to science, or more specifically, how the two discourses spoke to each other (see chapter 12). Indeed, that goal never wandered off my sights.

I now see, of the myriad shortcomings, the basic failure of my thesis rested upon a misplaced foundation: The draw of myth was not in understanding its intermediate placement in the edifice of knowledge or in dissecting its subjective meaning by objective analysis, but rather its ability to capture the cries and songs of the soul. This represented a poetic function, expressions of subjective experience—fear, awe, wonder—prompted by the mysteries of nature’s cycles, the life and death throes of human experience. A second neglected aspect concerned the role of myth in establishing identifications within the social world, or what later would grab headlines as “identity politics.” More specifically, myth offered ego-ideals (heroes) and thereby helped delineate social identities and corresponding values. I failed to recognize these legitimate ways of knowing, for the way I had formulated my problem of choosing a career assumed a view of science that precluded a synthesis. By opposing two ways of knowing, I established a seemingly irreparable opposition.

So, when worldly events overtook my deliberations, I left in abeyance the conundrum of finding a bridge between science and literature, fully recognizing that the poetic-mythic world reposed inadequately attended. The subjec-
tive lacuna that might have been filled by art, music, literature, or religious belief hardly sufficed for me. In 1968, I could offer no ‘solution’ or even a ‘conclusion’ to my thesis beyond the probes I had made in several directions. Thus, I left unresolved what seemed conflicted ways of understanding. And because I had to make a career choice, I relied on the simple formulation that set the two worlds of knowledge at odds with each other. Knitting them back together became my life’s labor. As I placed the myth paper in the drawer, I took out the application for medical school. Twenty years later, I renewed my early inquiry with a new perspective.

I did not realize how epistemology drove metaphysics and that the entwining of objective and subjective faculties belied partitioned positivist dictates. This appreciation derived from my basic research experience coupled to my writings in philosophy of science. With a Janus-like view of the humanities and experimental investigations, my original assumptions about supposedly irreconcilable approaches to knowledge eventually found “peaceful coexistence.” And as to personal identity, on the one hand, a professional commitment addressed the wide span of career and social perplexities, and on the other hand, choosing medicine placed the intellectual query on hold, leaving the ill-formed existential matters in limbo. In due course, I acquired different ways to confront these matters and when I re-explored them through philosophy, I found the same questions waiting as I had left them. Indeed, they appeared essentially unchanged from their deep repose after awakening from their hibernation after attaining professional success in medicine. Now, it seems evident that I had bet on a strong stallion (biomedicine), one that had enormous appeal, but a dark mare (philosophy) would eventually gain ground and finish in the lead.

Comment

The Two Culture confrontation formatting these early inquiries continued to direct my later scholarship. Granted, narratives impose an order, and one must be wary of oversimplification. However, it seems to me that my excursion through philosophy’s thickets in search of an intellectual clearing have been driven by a singular motivation. According to this plot, I renewed my enquiry about balancing competing modes of knowing, one centered on certainty and objectivity against the appeals of celebrating the hermeneutical and artistic that draw directly from the personal. To parse diametrically is a common ploy in schematizing intellectual complexity, e.g., myth oscillating with Enlighten-
ment (Horkheimer and Adorno 1993); the psychoanalytic ego competing with id drives (Freud 1923); the raw/cooked structuralist interpretations of myth (Levi-Strauss 1969). I found the same tactic helpful in understanding the sources of my confusions and the rationale for their clarification. Those collegiate attempts at reconciliation failed to establish an integrated position and given my choices (largely emotionally defined) the scales tilted toward science as the instantiation of objectivity.

Although choosing from opposing possibilities—poetry or analytics, humanities or science, philosophy or medicine—helped to navigate the messiness of a life, such dichotomies minimize and thus misrepresent complexity. In any case, as explained, I struggled to come to terms with these issues and eventually a concrete problem formed: how might I integrate my humanistic leanings with a career in science? What kind of work would I engage? What was most meaningful, creative, and worthy of my effort? Posed in terms of opposing ways of thinking allowed me to pack a lot of other stuff into my mental luggage. I could, in a manner of speaking, handle that topic. And more saliently, posing my personal issues within a well-articulated Two Culture debate allowed me to defer peering at the underbelly of my personal conflicts. Because I was ill-equipped to deal with the deeper reaches of the identity enigma, either analytically or emotionally, I followed a strategy that would recur many times: I intellectualized.

That ploy proved inadequate. I failed fully to comprehend that my insecurities—about the world, others, and myself—were not only the result of my ignorance and lack of experience, but also reflected the nature of knowledge itself, whose irresolvable uncertainty both inaugurates the epistemological quest but also accompanies it at every stage of development. And where I originally sought unification of knowledge and diverse ways of thinking placed on a continuum, when I revisited this set of problems, I concluded that such a project had been misconceived. Indeed, disunity characterizes life in our era. Moreover, the division represented a distillation of the deeper identity problem with which I wrestled.

I discovered that the career issue was far more complicated than any dichotomy might fashion. Eventually a reconstructed line of history permitted some insight about why posing the subjective-objective distinction as a rigid bivalence distorted the question at the heart of my own personal uncertainties. One could assign validity to each domain within their respective purviews. Each world of knowledge and experience drew upon different epistemologies. However, beyond that level of discrimination, I was to find layers of overlap
that made rigid binary distinctions problematic. That I saw the matter as partitioned was, of course, part of my quandary. The opposition that had trapped me into either/or options proved to distort a far more complicated relationship of ways of knowing and the identities that followed.

My later scholarship was set in motion by the Two Culture controversy that, more than an intellectual argument and political debate, represented a version of the realignments that were reaching into every corner of Western culture. A New Order had arrived, bringing in its wake radical reassessments of identity. Even though I had not been formally introduced to postmodernity, I did realize that the ballast required to center a coherent, meaningful life had shifted from my childhood expectations and, perhaps in seeking adjustment, lost. After all, seeking stability had been a preoccupation during my youth. How to find balance in a topsy-turvy world—both the outer social and the inner emotional—was hardly a unique effort. And while I have not delved into the insecurities of our immigrant struggles and my parents’ emotional instabilities brought with them from the Holocaust, the uncertainties embedded in these experiences underlie my own story. And maybe because I lived with unstable personal coordinates and boundaries, I became more attuned to similar dynamics in society at large. So, if parallels appear between my inner commotions and the crisis of culture-wide turmoil, I readily admit that subjective appraisals of my most intimate life have obviously influenced my larger worldview and undergirded my who am I? queries.

My dabbling in psychoanalytic theory (ostensibly about myth but in fact an exploration into my personal tumult) eventually emerged in two books devoted to Freud. He served as the foil of my excursion into the personal identity problem and, more particularly, the conundrum of self-knowledge. *Freud, the Reluctant Philosopher* (Tauber 2010) dealt with moral agency and *Requiem for the Ego* (Tauber 2013a) examined how the inner voice of self-consciousness was treated by Freud and his most prominent philosophical critics: Adorno, Heidegger, Wittgenstein, Lacan and his French postmodernist followers. The double entendre of “requiem” refers most immediately to the demise of the Cartesian ego, a conception of identity that had offered a triumph of certainty over skepticism and the authority of one’s own self-knowledge. And more personally, “requiem” alludes to the dismissal of my own who-am-I? quandary that I had originally posed for myself in my youth. Hardly a unique inquiry as one matures, but the fundamental ambiguities obscuring this matter accompanied me well into adulthood. So, hidden beneath the layers of *Requiem’s* philosophical discussions about the language of mental states lay undisclosed origins of
my own odyssey to decipher that enigmatic me.²⁰ And then another question arises: Why did it take so long to put those questions to rest, or even quieted? The obvious answer: Some inquiries require a lifetime to address, and even then, only partially.

Sorting out that problematic took me 45 years! The origins of a “mistaken” formulation—one coincident with the schematization characterizing so much of modernity’s program—in many ways established the later course of my intellectual life. Thus, the questions Requiem addresses had ample time to ripen. Indeed, it is well-matured, like savory cheese or good wine. I admit satisfaction that I finally rested some of the key intellectual problems I had set out to answer as I embarked for the distant shores of adulthood: balancing different epistemologies, sorting out personal values and ideals, and more specifically, mastering a philosophical literature pertinent to issues swirling around personal identity, both as a knower and as a moral agent. That story will be summarized in later chapters, so suffice it to note here that the polarities of science-literature (and, more generally, objective-subjective ways of thinking) schematized a highly complex intellectual conflict embedded in a history that resisted a simple chronology. And those issues were hardly restricted to academia. The disruptive division between the humanists and the scientists reflected broader cultural adjustments, and my own need to find some coherence echoed these larger changes. I suppose that I might have profited from internalizing Einstein’s wisdom: “No problem can be solved from the same level of consciousness that created it.”²¹ He must have been referring to certain kinds of questions, not all, but clearly, I required a broadened and deeper understanding of the problem I had presented myself . . . and that took a long time to develop.

²⁰ Most directly, in Requiem’s chapter 2, I picked up the Freudian scenario as conceived by Horkheimer and Adorno and thus completed the unfinished business of the collegiate thesis.²¹ This quote, like many of Einstein’s bon mots have various renderings, attributes, and generally lack a primary reference (EMRG 2009).