

(Re)Creating Science in Nineteenth-Century Britain

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Edited by

Amanda Mordavsky Caleb



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All the papers included here are original publications, with the exception of Owen Anderson’s “Charles Lyell, Uniformitarianism, and Interpretive Principles,” which appeared in *Zygon* 42:2 (June 2007), 451-64, and for which we have full permission to reproduce.

INTRODUCTION

AMANDA MORDAVSKY CALEB

In a given investigation the truth must, sooner or later, come to the light. Either the investigation will have to be abandoned altogether, because it is found to be beyond the province of the human understanding, or the problem will eventually be solved. In either event, long-continued doubt and uncertainty can not hang over the result. (Brackett 1879, 166)

William Brackett's sentiments demonstrate the spirit of nineteenth-century scientific investigations. That a problem existed was motivation enough for scientists to pursue answers, and as science and scientists grew in stature throughout the century, both became a means "to mediate the conflicts generated by changing conceptions of the sources and bases of the social order" (Schweber 1981, 2). The most familiar of these changing social orders was the conflict between evolution and religion—which spawned various middle-ground resolutions, including spiritualism and occultism—but we should keep in mind as well that political and cultural conflicts also arose throughout the nineteenth century for which science became a mediator. For instance, Herbert Spencer's application of Darwin's theories of evolution in society allowed for the creation of Social Darwinism, a means of addressing the class differentiation in Britain, albeit in a controversial manner.

As mediators for conflict, scientists also became the source of discord, as seen in Friedrich Accum's controversial self-exile from Britain, Isaac Baker Brown's contentious gynecological procedures, and the vivisection debate of the 1870s and 80s, as discussed in this book. The last of these demonstrates how scientists had embraced the power of being mediators; in 1875 when the Royal Commission asked Robert Lowe and Sir William Gull to discuss the possibility of laboratory regulations by the government, their responses suggested their view of scientists as being superior to the public. Gull advised any regulations were "for the ignorant, and not for the best people in the country," whilst Lowe suggested any inspections of laboratories would be "to the last degree an insult to an educated and scientific body of men" (Harrison 1973, 791). Although scientists were prepared to interfere with social conflicts, they were not willing to allow the same intrusion to occur within their own research facilities.

This segregation of science from the public was reinforced in the professionalization of the sciences in the 1870s, which led to a level of distrust of science by the general public. In his exploration of the sciences' professionalization and public reactions to it, Martin Willis (2006, 10-11) has concluded that "[e]ven as science became organized, regulated, and therefore 'trustworthy,' its image was also a partially opposite one of untrustworthiness and moral insensibility." This untrustworthiness is evident in some of the controversies discussed in this book, both scientifically historical and in the literature of the mid- to late-nineteenth century.

This is not to suggest, however, that science was always mistrusted or negatively represented in nineteenth-century Britain. Critics have often pointed to the popularization of science through public lecturers, widely-distributed pamphlets, journal articles, and literature, which would suggest an open relationship between science and the public (Fayter 1997; Lightman 1997; Fichman 2002). However, as Frank M. Turner has noted (1980; 1997), there was a distinct difference between popular science, whose research was openly distributed to the masses, and elite science, which was seen as being housed behind closed doors. Turner's distinction here is the same as Willis's demarcation between the sciences practiced by amateurs and by professionals (Willis 2006, 208-9), or, in other words, the accessible sciences versus the remote ones. Thus, the natural sciences—such as botany and entomology—could be practiced by amateurs because of the easy access to subjects, whereas the physical sciences—such as chemistry—remained more aloof because of the difficulties in obtaining materials.

The point in discussing the various modern-day interpretations of science in nineteenth-century Britain is to suggest the difficulties in constructing a single understanding of how science developed, how it was received by the public, and how it chose to perceive itself (Cahan 2003, 14). The categorization of scientific development in nineteenth-century Britain is problematic, as each individual branch developed at its own pace, often dependent upon advances in other branches of science. Thus, it becomes difficult to provide a single history of all nineteenth-century sciences when, for instance, eugenics was dependent on biology and evolutionary theories.

(Re)Creating Science in Nineteenth-Century Britain is about addressing these issues in order to recreate our own image of nineteenth-century science in Britain. Rather than provide a single narrative for scientific developments of this period, this book relies on multiple narratives which shape individual branches of science and look to address the issue of nineteenth-century science as a whole. This volume is divided into sections for ease of access as well as a means to understand related branches of science in their respective cultural climates. Within these subdivisions, the interdisciplinarity of this book is

evident; thus, although each section is defined by a specific science or sciences, each essay within these sections seeks to redefine how we understand that specific science within its cultural climate, which includes the artistic, the historic, the literary, and the political. This is not to suggest, however, that the sciences do not overlap, for it is difficult to separate each branch of science into its unique sphere in this period. However, in organizing the book in this fashion—rather than by individual disciplinary approaches to science—the aim is to reconfigure the relationship between science and other disciplines by placing the emphasis on these other disciplines. Thus, the discussion is not how various disciplines *interpret* science but rather how specific sciences *interact* with these disciplines, thereby adopting C.P. Snow's call for dialogue between the sciences and the humanities, which has become increasingly popular amongst interdisciplinary scholars (Levine 1987; 1988; Beer 1996; 2000; Willis 2006).

As this book embraces an interdisciplinary approach in its understanding of science, it is worth considering the advantages of interdisciplinary studies, which includes its propensity to “propel us to the edge of our own competence and makes necessary new skills and new readings” (Beer 1992, 4). Beer embraces this challenge, suggesting that the hardship of adopting a fundamentally different approach to interpreting disciplines outside our comfort zones reaps its own rewards. Beyond this self-gratification, interdisciplinary approaches to nineteenth-century science are vital because the scientists from this period developed their ideas within interdisciplinary environments. We sometimes forget that David Ferrier earned his MA in classics and philosophy before he began any of his neurological studies, or that Charles Lutwidge Dodgson (Lewis Carroll) was a mathematics lecturer at Oxford for ten years before he wrote *Alice in Wonderland* in 1865 (McDonald 2004, 2:679-80; Abeles 2004, 2:599-600). Yet it was in this interaction between the sciences and the humanities in which both developed from each other. Thus, in Charles Darwin's works we can see a literary element—potentially inherited from his grandfather—as Gillian Beer has discussed (2000), and in *Alice in Wonderland* we can see the logical and mathematical problems posed to Alice.

Our continual separation of the sciences from the humanities can be traced to the late nineteenth-century debates between Matthew Arnold and T. H. Huxley from 1881-83: whilst Huxley recognized science as a cultural entity, Arnold refuted this idea, implying that science was inferior to culture, specifically literature (Huxley 1883; Arnold 1882; Roos 1977; Cordle 1999, 16). Initial attempts to address and resolve this separation by C. P. Snow in the early 1960s were met with opposition by R. F. Leavis; mirroring the Arnold-Huxley debate of eighty years earlier, Snow suggested that a dialogue needed to be developed between science and literature, as both were cultural members, but

Leavis denied science any humanitarian ties (Cordle 1999, 12-17). The topic of interdisciplinary studies, particularly between the sciences and the humanities, seemed to be on hold for twenty years. A return to this debate in the 1980s and -90s led Barbara T. Gates (1998, 485) to conclude that science is a cultural discourse, competing with other cultural discourses, such as literature and art. In identifying science as a cultural discourse, Gates reinforced both the need for a dialogue between the sciences and the humanities, and science's role as a member of a culture rather than outside it.¹

This recognition of a need for a dialogue between science and the humanities has been addressed in several critical works. In recent years, a number of notable volumes have appeared which align nineteenth-century science with the humanities, including Bernard Lightman's *Victorian Science in Context* (1997), David Cahan's *From Natural Philosophy to the Sciences: Writing the History of Nineteenth-Century Science* (2003), and most recently David Clifford et al's *Repositioning Victorian Sciences: Shifting Centres in Nineteenth-Century Scientific Thinking* (2006). Cahan's volume traces the historical development of specific branches of science, but lacks a true interdisciplinary zealotry. In contrast, Lightman's and Clifford et al's works emphasize an interdisciplinary approach to understanding Victorian science in its social and cultural context. This volume is not intended to supplant these works, but rather to suggest a need to recreate our understanding of nineteenth-century science in Britain in regards to its need to constantly create and recreate itself in order to adapt to the social, political, and cultural climates of the period. The essays included in this volume seek to establish a picture of nineteenth-century science not as a static entity but rather a dynamic force within its culture.

This volume by no means covers all the major scientific changes and recreations throughout the century; rather, it is a sampling of both major and minor issues which shaped the scientific culture as a whole and have affected our own view of the history of nineteenth-century science in Britain. The essays included here challenge conventional views of science from this period and suggest alternative readings with regards to the specific cultural climate of the period, which was also creating and recreating itself. The progression of this book mirrors the changes in the scientific culture of the nineteenth century, reflecting the rising and falling and rising again of the public faith in science and science's faith in itself.

The book begins with John Holmes's discussion of the X-Club and its contributions and indebtedness to Romanticism, a popular topic with regards to an individual member but seldom is the entire group considered together. In this overview of their interaction with Romanticism, we see a dialogue between science and literature which ultimately shaped both disciplines. The next two

essays move from this broader understanding of science and literature to specific controversies in nineteenth-century science. James Sumner and Owen Anderson consider the contributions of Friedrich Accum and Charles Lyell respectively, in relation to the scientific and public spheres of nineteenth-century Britain. Sumner argues for a re-evaluation of Accum's flight from Britain, suggesting that it in fact reinforced his notion of "pure" chemistry. Equally, Anderson invites a re-examination of Lyell's theory of uniformitarianism, suggesting that its conflict was not between science and religion but rather between interpretive principles and empirical findings.

Ruth Jenkins takes up this argument of nineteenth-century conflict with her discussion of nature writing and the role of women, suggesting how Mary Kingsley and Nina Mazuchelli had to resolve the conflict between the different levels of discourse embedded within their writing (gender, science, profession). Similarly, James Mussell discusses the conflicts that arose in nature periodicals, specifically the discord between what was included and what readers of popular periodicals expected to be included, and how editors needed to resolve this friction between the scientific and the popular.

The last two essays in this first section consider the recreation of scientific theories in the nineteenth century, the popular representation of science in art and literature, and the subsequent conflicts, specifically with regard to mankind's relationship with animals. Kate Hebblethwaite discusses cell theory development in the nineteenth century, which propounded that all living things were connected through their basic cell make-up; this led to artistic and literary representations of the cell or the blob as an invisible threat to contemporary understandings of life. Simon Marsden engages with the more controversial scientific theory and practice of vivisection; using both pro- and anti-vivisection arguments, he suggests that H. G. Wells's *The Island of Doctor Moreau* (1896) contextualizes this debate in a popular manner whilst simultaneously questioning the human-animal relationship and its identity.

The subsequent sections break away from a narrow understanding of science, instead including those that we only loosely (if at all) consider sciences today, but were certainly a part of the scientific development in nineteenth-century Britain. Beginning with the medical debates of the period, Claire Brock discusses the treatment of female doctors from the 1860s to the 1880s, suggesting that these women were not on the periphery of the medical profession but because of the continually changing perceptions of them by male doctors, actually became central to the medical profession. Similarly, Andrew Mangham and Greta Depledge re-examine the Victorian perception of sexual stereotypes through contemporary reactions to gynecology, not only in the medical community but in the literary world as well, demonstrating an

ambivalence to the practice whilst confirming (and questioning) sexual roles and labels

From the medical we move to two arguably new sciences of the nineteenth century: psychology and sociology. In the first essay, Michelle Faubert recounts Thomas Bakewell's use of moral management in his poetry, which can be seen as a precursor to Freud's talk-therapy, and was a means of introducing the psychologist to the reading public, as well as demonstrating the interdisciplinary development of psychology through both the scientific and the literary. In a similar approach Herbert Klein outlines the development of sociology and psychology in the nineteenth century, suggesting that the mind and social structures can be and were seen as mechanized entities, thereby anticipating the posthuman theories of the late twentieth century.

From the social sciences we move to the mathematical, which again reconstructs our understanding of scientific development in the period. Continuing from Klein's discussion of the posthuman, Andrea Austin argues for a reconsideration of Augusta Ada Lovelace Byron's contributions to Artificial Intelligence and computer programming, suggesting that she played a much more significant role in both areas; she subsequently argues for the separation of the individual from the product. Amirouche Moktefi traces the debate regarding the replacement of Euclidean geometry, demonstrating the attempts by contemporary mathematicians to create and recreate mathematical approaches to geometry, only to turn back to Euclid. Josipa G. Petrunić touches upon this debate with her discussion of William K. Clifford's recreation of evolutionary theories in their application to brain development and subsequently one's ability to understand new scientific and mathematic theories, thereby justifying his proposed changes to geometry.

In the penultimate section, Miriam Rainbird and I consider the emergence of racial theory as it developed from the mid- to late-nineteenth century. Rainbird discusses the racial and social tensions between Great Britain and Ireland, suggesting that the use of science to simianize the Irish and present them as degenerates was reflected in British art, and which subsequently affected Irish art to the point of its rejection of science. Moving from this view of the "other", I offer a re-reading of Robert Louis Stevenson's "Olalla" (1885) and *Strange Case of Dr Jekyll and Mr Hyde* (1886) with regards to Galton's eugenics, suggesting that the relationship between literature and eugenics should be explored more fully, and that in this specific instance, Stevenson's fiction suggests a simultaneous public ambivalence and concern regarding eugenics and the decline of the Empire.

In the final section, Katie Wales and Susan Johnston Graf consider the pseudo-sciences of the later nineteenth century: spiritualism and occultism respectfully. In the first essay, Wales traces the linguistic background of

spiritualism from the mid-nineteenth-century to the present day, suggesting that in its application of scientific terminology, scientific investigators molded spiritualism into a pseudo-science, resulting in an incorporation of spiritualism and technology. Moving to another pseudo-science, Graf traces the development of nineteenth-century occultism, suggesting that occultists adopted a scientific approach whilst simultaneously rejecting scientific materialism in favor of a spirituality which promised human progression.

Finally, in the Afterword Jonathan Hodge and Gregory Radick take on the daunting task of discussing the common threads of these chapters from a historiographic point of view. They not only provide a means of understanding how these chapters fit together but also offer topics which need further discussion because of recent revisionism in the study of the history of science, particularly in our understanding of contemporary science and the Industrial Revolution. In discussing the difficulties of such a large project as an interdisciplinary study of science in nineteenth-century Britain, Hodge and Radick consider how such a project as this provides some answers regarding specific scientific, cultural, literary, artistic, and religious developments, but ultimately, when viewed in its intended entirety, *(Re)Creating Science in Nineteenth-Century Britain* challenges the reader to revise the “big picture” of science in nineteenth-century Britain.

This, after all, is the purpose of such a volume as this sets out to be. The topic of nineteenth-century science in Britain is vast, and as Hodge and Radick point out, difficult to discuss and understand without reference to the developments from previous centuries and other cultures. To suggest that nineteenth-century science in Britain could stand as an entity separate from other countries and time periods is certainly a miscalculation, and this volume does not purport to do such a thing. Ultimately, however, we have to start somewhere, with some specific period to consider and reflect upon, specifically on how the scientists, writers, artists, and the public understood their century. We need a defined arena to discuss the history of science, and even within this hundred year period, eighteen essays barely scratch the surface regarding the development of scientific thought and its cultural relationship to other disciplines. However, they all suggest the need for more study, for a closer analysis of science and culture, and for a recreation of the history of the history of science.

Notes

¹ Although Gates was advocating an open dialogue between the sciences and the humanities, there was a recognition in the 1990s of the difficulties in bridging an ever-widening gap between these two disciplines. In 1996, physicist Alan Sokal published an article entitled “Transgressing the Boundaries: Toward a Transformative Hermeneutics

of Quantum Gravity”, accepted at face value by *Social Text*, despite its self-contradictory argument. The purpose of this experiment—in which Sokal adopts postmodern terminology in his false consideration of the relationship between postmodernism and the sciences, specifically physics—was to expose the “intellectual arrogance of Theory—meaning postmodernist *literary* theory” but also to “make a small contribution toward a dialogue on the Left between humanists and natural scientists—‘two cultures’ which [...] are probably farther apart in mentality than at any time in the past 50 years” (Sokal 1996a, 63; 1996b, 93). For more on Sokal’s experiment and the “science wars”, see Sokal and Bricmont 1998 and Cordle 1999.

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PART I:
NATURAL SCIENCES

CHAPTER ONE

THE X CLUB:
ROMANTICISM AND VICTORIAN SCIENCE

JOHN HOLMES

On November 3, 1864 eight men gathered at St George's Hotel, near the Royal Institution, in London's Piccadilly, where they decided to form a monthly dining club. At their second meeting, on December 8, they elected a ninth member. Thereafter the club's books remained closed. These nine men called themselves the X Club. Between them, they would dominate the Victorian scientific establishment for the next twenty years. The imprint of two of these nine men, T. H. Huxley and Herbert Spencer can still be seen stamped on Western culture today: Huxley's in the triumph of Darwinian evolution, which he unhesitatingly and unflinchingly promoted, over rival biological paradigms; and Spencer's in the widespread presumption that Free Trade is the natural competitive exercise of human beings and in the casual teleological assumptions which sustain popular misapprehensions of evolutionary theory. Three more of the nine—the chemist Edward Frankland, the botanist Joseph Hooker, and the physicist John Tyndall—are prominent figures in the history of science. The other four were, as Robert Browning would have had it, people of importance in their day. They were George Busk, retired naval surgeon and microbiologist; Thomas Archer Hirst, mathematician; Sir John Lubbock, anthropologist and Liberal politician (whose most tangible legacy is the Bank Holiday); and—the ninth member—William Spottiswoode, mathematician and Queen's Printer.

A measure of the X Club's influence, individually and collectively, is the tally of scientific institutions which they headed from the mid-1860s to the mid-1880s. Individual members controlled the Royal Institution, where Tyndall was Superintendent from 1867 to 1887, with Spottiswoode as Treasurer to 1873; Kew Gardens, where Hooker was Director from 1865 to 1885; and the Royal Naval College at Greenwich, where Hirst was Director from 1873 to 1883. Their influence was substantial within London University, where Lubbock was Vice-Chancellor from 1872 to 1880, and which he represented as a Liberal MP thereafter; and at the Royal School of Mines, where Huxley and Frankland held

Professorships until 1885. Among the learned Societies, individual Xs did turns as the Presidents of the Royal College of Surgeons, the Linnaean Society, the Geological Society, the Ethnological Society, the Anthropological Institute, the Chemical Society and the Institute of Chemistry. Five of the nine would take a turn as the President of the British Association for the Advancement of Science—Hooker in 1868, Huxley in 1870, Tyndall in 1874, when he delivered his famous *Belfast Address*, Spottiswoode in 1878 and Lubbock in 1881—while Hirst was the Association's Secretary from 1866 to 1870 and Spottiswoode its Treasurer from 1861 to 1874. Most prestigious of all, between Hooker, Spottiswoode and Huxley, the Xs held the Presidency of the Royal Society from 1873 to 1885, with the ubiquitous Spottiswoode again as Treasurer from 1871 to 1878, Huxley as Secretary (Biology) from 1872 to 1881, and all bar Spencer (who alone of the Xs was not FRS) holding a Vice-Presidency at one time or another (Barton 1990; 1998; 2004; Desmond 1998, 327-32, 520-21, 573-74; Frankland 1902, 148-63; Jensen 1970; 1971-72; 1981; MacLeod 1970; Russell 1996, 317-41).

This catalogue of positions is an indication of the prominence of the X Club's members within Victorian scientific circles. The existence of the X Club itself is an indication that these nine men felt themselves to share a common outlook and complementary objectives. These objectives included asserting the importance of science within English national culture; ensuring therefore that science was identified as a core component of any educational curriculum; and guaranteeing that that science should be independent of theology and the demands of revealed religion. The members of the X Club were thus both prominent scientists in their own right and political lobbyists on behalf of secular science, both within and beyond Victorian England's main scientific institutions. At the same time, they were prominent and often prolific authors whose writings articulated and embodied a shared philosophy of science. In this essay I will explore that philosophy and draw out its significance for our understanding of Victorian science and its place within nineteenth-century culture.

This is not of itself new territory. Individual members of the X Club have been discussed in major studies such as Frank Turner's *Between Science and Religion* (1974) and Bernard Lightman's *The Origins of Agnosticism* (1987). To date, however, the discussion has tended to focus on the Club's three most accomplished self-publicists—Spencer, Huxley, and Tyndall—at the expense of the X Club as a whole. It has also tended to frame itself within the familiar narrative of the Victorian clash between science and religion, adopting the terms of that narrative—set in no small part by Huxley and Tyndall themselves—even when seeking to discredit it (Barton 1987; Desmond 1998, 327-32; Kim 1996; Lightman 1987, 146-76; Russell 1996, 333-38).

I want instead to look at the X Club as a group, examining both their rhetoric and their scientific philosophy in the alternative context of the transition from Romanticism to post-Romanticism, and the apparent opposition between Romanticism and the realist/empiricist project of describing the world as it is. This opposition has been partly dismantled by historians of science in the Romantic period. Their work has implications for our understanding of science within Victorian culture. As Andrew Cunningham and Nicholas Jardine have remarked:

We may well suspect that both the stereotype of the Romantic sciences as speculative, fantastic, mystical and ill-disciplined, and their alleged defeat by the empirical natural sciences, are polemical constructs rather than the fruits of unbiased historical research. (Cunningham and Jardine 1990, 7-8)

The “self-image of the new ‘men of science’,” they suggest, was in fact “largely constituted by Romantic themes.” Indeed, Patricia O’Neill (1997, 105-6) specifically identifies Huxley and Tyndall as typical of the persistence of Romanticism within Victorian science, in the imaginative appeal of their writing, their emphasis on “the individual quest for the secrets of nature,” and their “appreciation of the imaginative aspects of scientific reasoning.” Where we might have expected to find the X Club firmly allied to the secular realism of George Eliot and the post-Romantic worldview of Alfred Tennyson, I will argue that these alternative suggestions are a better guide to interpreting their lives and writings, and that their outlook is indeed markedly Romantic, temperamentally and philosophically, in their view of science, and in the role they accord to the scientist himself.

Revisiting “Romanticism”: a structural definition

First, however, I need to clarify what I mean by the contentious term “Romanticism.” During the 1980s and 1990s, beginning with Marilyn Butler’s pioneering book *Romantics, Rebels and Revolutionaries*, the critical consensus as to what “Romanticism” meant fell apart. By her own account (1981, 184, 187), Butler’s project was “to highlight differences rather than common ground” between various late eighteenth- and early nineteenth-century writers habitually classified as Romantics. “The impression left,” she correctly observes, “is hardly of a closely coherent body of feeling.” Butler’s purpose was at least partly pedagogical. The best reason, she suggests, for abandoning preconceived notions of Romanticism “is not the point of principle—that they may be untrue—but the point of pragmatism—that they interfere with so much good reading.” That her mission of freeing up the reading of Romantic-era literature from the constraints imposed by the term “Romanticism” has been largely

accomplished is well illustrated by two recent text books on the subject. Aidan Day opens his book *Romanticism*, included in Routledge's *New Critical Idiom* series, with unambiguous definitions of Romanticism taken from *The Oxford Companion to English Literature*, M. H. Abrams's *A Glossary of Literary Terms*, and elsewhere. But, following Butler, Day (1996, 5-6) warns his readers that "such attempts to summarize Romanticism inevitably end up over-systematizing or simplifying the phenomenon," creating an artificial impression of coherence which tends to obscure contradictory impulses within the work of different writers identified as Romantic, or of the same writers at different times, or even within the supposedly coherent definitions themselves. In his *Companion to Romanticism*, one of the *Blackwell Companions to Literature and Culture*, Duncan Wu (1998, ix) puts such "drastic questioning of the concept of Romanticism itself" to good use by assembling a team of contributors from across the critical spectrum to inform his readers' understanding of the topic. Charged with the task of outlining the history of Romanticism as a concept, Wu's first contributor, Seamus Perry calls for the jettisoning of the term altogether, arguing that:

to hold that Scott and Blake are both "Romantic" may be a perfectly good use of language; but [...] to understand from this the existence of some underlying sameness ("Romanticism"), is to fall victim to something very like a pun, or an optical illusion. (Perry 1998, 4)

The work done by Butler and subsequent critics such as Day and Perry has been invaluable, both in opening up new perspectives on the received canon of Romantic-era writers and in clearing a path for their contemporaries, particularly women, whose work had been neglected under the old critical dispensation. It is salutary, too, to be reminded, as both Day and Perry insist, that the term "Romantic" is itself an artifact of literary criticism with its own history of fluctuating meanings (Day 1996, 79-125; Perry 1998). But to admit these points is not necessarily to concede that the concept "Romanticism" has become redundant. It is clear that, as Day repeatedly stresses, we can no longer define Romanticism in simple opposition to the Enlightenment, as many of the values habitually identified with it, including humanitarianism, political idealism, and an appreciation of the aesthetic pleasures of landscape, were themselves Enlightenment values. It is clear, too, that not all texts that have been identified as Romantic share either these values or any others. This need not mean, however, that we must accept Perry's verdict that "Romanticism" has no meaning, nor follow Day in redefining it as either an extension of the Enlightenment by another name or the retreat into navel-gazing and political quiescence found in the later writings of those poets we used to think of as the first-generation Romantics (Day 1996, 181-82). If we are not to accept their

arguments, however, we need to find a more robust and succinct definition of Romanticism which is nonetheless serviceable within our new understanding of what is perhaps most neutrally characterized as late Georgian culture.

The expansion of the canon of writers available to be read and studied from the late eighteenth- and early nineteenth-centuries has been a very positive development. At the same time, as the label “Romantic” is retained for the period as a whole, and applied to this new extended canon of texts and writers, it loses its associations with a more specific cultural movement within that period. The process by which “Romanticism” loses meaning is therefore something of a self-fulfilling prophecy. This is illustrated by the inclusion of a chapter on *Pride and Prejudice* in Wu’s companion. In this chapter, Beth Lau (1998, 219) argues that Austen’s novel should be read alongside works by other major writers of the period, including those conventionally identified as Romantic as “one that participates in the concerns and developments of its age.” Again, Butler (1975; 1981) is a key pioneer of this approach, both to Austen in her own right and in using her as a wedge to drive between supposedly Romantic writers. The move from a position where Austen’s status as the leading writer of the period *outside* the Romantic movement is used to complicate our understanding of that movement, to one in which a text book on Romanticism requires a discussion of her *within* it, is an illustration of how far the new-found meaninglessness of the term “Romanticism” is a result of the attempt to substitute it for a broader description of late Georgian culture as a whole. If we are going to establish a meaningful definition of Romanticism the first point that we have to concede is that it cannot and should not encompass all aspects of the culture of its age.

Lau’s approach to Austen in her article, as distinct from its mere presence within Wu’s *Companion*, reflects a countervailing critical need to retain a more specific definition of Romanticism. As her argument develops, it becomes clear that Lau’s case is not merely that Austen should be repositioned at the centre of late Georgian culture but that she is, in her own right, a Romantic writer. Lau (1998, 221) makes this case by drawing comparisons between Austen and the familiar canon of male Romantic poets, aligning her with them in her commitment to individualism, in turn drawing them closer to her by emphasizing their explorations of the need to balance such individualism with social responsibility, and claiming for Austen her own inverted form of Romantic radicalism by arguing that “[f]or women of the Romantic period, rational behaviour was more revolutionary than emotionalism.” Whether or not one finds Lau’s argument persuasive, her approach illustrates that, for the term “Romanticism” to have any meaning at all, it needs a criterion, a primary point of reference, which can only be supplied by the canon of writers to whom it has traditionally been applied. But it also illustrates the problems of such an approach as it stands. If the sole criterion for something to be deemed

characteristic of Romanticism is that it appears in the writing of Wordsworth or Byron, the definition is already so loose that the disintegration of meaning inevitably follows once again.

Perry (1998, 4) suggests that it is “misconceived to pore over all the things we know, somehow instinctively, to *be* ‘Romantic’, trying to tease out the unifying element they have in common.” I would argue instead that, as long as we do not insist on identifying things that we do not “know” to be Romantic as Romantic because they appear in an essay by Shelley or a poem by Blake, we can discern a “unifying element” in our idea of “Romanticism” which gives the term back its meaning and the movement its consistency. This element is transcendence. By this I mean an essentially structural mode of thought which draws a line between the everyday and a realm of value, experience and understanding that lies beyond it, and then seeks to cross that line. Many philosophies share this structure—Platonism, Buddhism, Christianity, to name some of the most familiar. What, then, is distinctive about Romantic transcendence? Crucially that, within Romanticism, the transcendent experience is pursued by the individual on his or her own terms and not within the received framework of Christian theology or any other pre-existing transcendental system. Romantic writers assimilate and make use of other such systems and their authors: Plato, for instance, or Dante, or Swedenborg. But insofar as they are Romantic, they are so on their own terms, rather than as converts or disciples. They may access transcendent states through nature, myth, art, narcotics, idealist philosophy, revolutionary, or sometimes reactionary politics, even through the cultivation of insanity, but always through the free exercise and expression of their own imaginations. Equally, when Romantic writers subordinate their individual imaginations to received orthodoxies, as Coleridge does in his more theological writings, or when they turn their backs on the transcendent and address political practicalities, as Shelley does in *A Philosophical View of Reform*, for the time being they step outside the orbit of Romanticism.

Romanticism is therefore the imaginative and autonomous pursuit of transcendence by the individual. Before testing this definition, there are four more features of specifically Romantic transcendence that are worth drawing attention to. The first is a point of clarification. The Romantic pursuit of transcendence is not the same as the contemporary program of transcendental philosophy which began in earnest with the work of Immanuel Kant in Königsberg. More precisely, while some Romantic writers draw on transcendental philosophy, and some transcendental philosophers may properly be thought of as Romantic, there is an important distinction that needs to be drawn between them. In his comprehensive survey of continental philosophy from 1750 onwards, Robert Solomon (1988, 31) is careful to stress that “the

adjective ‘transcendental’ should be distinguished from ‘transcendent’.” As with Perry’s insistence on the historically-specific use of “Romantic,” Solomon’s rule is hard to police, but it does nonetheless keep us in mind of the distinction. Where “transcendent” refers generally to that which is or reaches beyond the familiar bounds of experience, the philosophical term “transcendental” refers more precisely to arguments which are beyond the range of logic, mathematics or empirical enquiry. Transcendental philosophy in the tradition of Kant seeks to establish a metaphysics, a system of knowledge or understanding that accounts for and underpins our capacity for knowledge and understanding of the physical universe (Blackburn 1996, 380; Gower 2005; Scruton 1997, 29, 50-52; Solomon 1988, 31). As Solomon points out (1988, 31), that which is “transcendental” in this sense is intrinsically universal rather than personal. It is a necessary precondition of thought and not a condition to which one can aspire. It can only be known through reason, not reached through imagination. By definition, there can be no transcendent experiences in transcendental philosophy meant in this strict sense.

The second feature of Romantic transcendence that is worth drawing attention to is its boundlessness. In some philosophical traditions the individual transcends experience to a realm that is itself nonetheless defined or circumscribed, for example the vision of Heaven as the city of God. The tendency of Romanticism is rather to imagine the transcendent realm as itself boundless. A corollary of the free play of the individual’s imagination, the result is that Romanticism puts forward no single version of the transcendent and sets no limit to the range of transcendent experiences that may be imagined. A further corollary of this is that Romanticism is robustly resistant to systematization. A Romantic theology would, on these terms, be self-contradictory. Philosophical and political systems may be the product of Romanticism, but once they become systems, and in particular once they claim the right to impose themselves on others, they cease to be Romantic in themselves. In its emphasis on the individual, then, Romanticism is intrinsically liberal.

Thirdly, M. H. Abrams (1971, 13, 65) argues that a further distinguishing feature of Romanticism is that it operates within a secular worldview. The individualism of Romanticism does not necessarily equate to secularism, but it is conducive to it, and the modes of transcendence which Romantic writers posit and attain often seem more consistent with secularism than those of—and than with—other more systematic transcendental philosophies.

Finally, it is worth remarking that, for all that Romanticism is structured by transcendence, it is not unambiguous in its attitude to it. Transcendence within Romantic writing may take place at one remove, the poet clutching at the traces of an experience or understanding that he cannot access for himself but that is

nonetheless recorded and somehow realized through his poetry. Shelley's skylark, Wordsworth's infancy in his "Ode: Intimations of Immortality," and the song of the Abyssinian maid in Coleridge's "Kubla Khan" all follow this pattern. What is more, transcendence within Romanticism is by no means a guaranteed good. Shelley's "Lift not the painted veil" and Mary Shelley's *Frankenstein* are examples of a dark strain in which Romanticism looks its own transcendent impulses in the face and shudders. The fearful implications of transcendence exposed in these texts underlie many others, "Kubla Khan" again being typical.

The definition of "Romanticism" as an integrated fusion of individualism and transcendence draws back together most if not all of the writings of the leading Romantics. Butler is right to insist that the idea of Romanticism should not be allowed to become an exclusive mode of interpretation at the expense of readings which emphasize the differences between Romantic-era texts. Perry (1998, 4), too, is right to point out that "Romanticism" is a critical category applied after the fact to a group of writers who did not know they were Romantic. But this should not obscure the fact that Wordsworth and Coleridge were consciously participating in a common intertextual project in which younger writers including Shelley, Keats, Byron (in *Childe Harold*, if not in his lyrics or *Don Juan*), Carlyle (in *Sartor Resartus*), Emerson, and Emily Brontë equally consciously joined. Accepting, too, that Romanticism is a critical afterthought, not a self-proclaimed label, precisely permits us to identify other writers and artists who were not consciously part of this collective project with it. Blake clearly fits this pattern, whether imagining a state of childhood innocence or escorting his readers into a perplexing version of Hell, whether elaborating his own public mythology or painting the ghost of a flea as seen by him alone. Turner's oeuvre, too, seems profoundly Romantic in this sense, from mythic landscapes such as "Dido Building Carthage" and "The Bay of Baiae" to his mature sunrises and violent seascapes and the symbolic contrasts of black and light in late works such as "The Fighting 'Temeraire,'" "Peace—Burial at Sea," and "Rain, Steam, and Speed." (As a contrast, Constable's minutely observed studies of rural life are not obviously Romantic.) Tracing the line of Romanticism back to Germany, we can see the same pattern in Beethoven's mature symphonies and quartets, above all in the "Grosse Fuge" (op. 133), where his music tears apart the formal limits of the classical quartet in an extraordinary projection of the Romantic imagination, and in Schelling's Absolute, Schopenhauer's Will, and Nietzsche's Dionysian, all diverse imaginative and thus imaginable extrapolations from transcendental philosophy (Nietzsche 2000; Solomon 1988, 54, 75-85). And, for all that Wu's *Companion* includes only an article on Romantic *responses* to science (Wylie 1988; emphasis added), we can see it in science itself: in the astronomer William

Herschel's epitaph (Panek 2000, 119), "He broke through the barriers of the heavens," for example; or in Goethe's "anarchic" ideal of natural science as "personal knowledge, not gained at second hand but based upon flashes of insight or disclosures" (Knight 1990, 17); or in the science of transcendental anatomy which Goethe pioneered along Kantian lines but which in the hands of Lorenz Oken transmogrified into a Romantic pursuit of archetypal forms as objective realities constitutive of nature, all expressed in a compendium of symbolist aphorisms (Knight 1990, 16; Rehbock 1990, 146-47; Richards 1990, 131-33).

From here, we can begin to reconstruct the familiar narrative of cultural and intellectual history in the nineteenth century, which charted a shift from Romantic idealism to Victorian pragmatism. We can see that there is indeed something distinctively post- or anti-Romantic about utilitarian philosophy, about gradualist Whig history and Parliamentary Reform, about the realist novel. We can see why it is legitimate to call Tennyson, unable to see behind the veil and only able to cross the bar when he dies, or Robert Browning, who casts the transcendental egoists Porphyria's Lover and Johannes Agricola into the madhouse, or Matthew Arnold (1965, 125), marooned by "The unplumbed, salt, estranging sea," post-Romantic poets. With the recognition that Romanticism tends to be secular and is expressly individualistic, we can see why the ebbing away of Romanticism might correlate with a resurgence of Christianity and the Church, again providing a basis for defining the later poems of Felicia Hemans, or the early poems of Elizabeth Barrett, or Browning's *Pauline*, as ultimately post-Romantic for all that they identify rhetorically with their Romantic predecessors. We can see as well why that faith would become once again far more central to the Victorians than it had been to many of the Romantics, and why in turn religious doubt would affect them far more profoundly. And we can see why it might make sense to follow Graham Hough (1949) in designating the Pre-Raphaelites, Yeats, and Lawrence the last Romantics.

However, the structural definition of Romanticism enables us to see that this old narrative is misleading, above all because it consigns Romanticism to the margins of Victorian culture. As recent criticism of the Romantics and the so-called Romantic period has demonstrated, Romanticism was not the only feature of the cultural landscape of late Georgian England. Similarly, the Victorian cultural landscape was not straightforwardly post-Romantic. This realization has again been typical of recent literary criticism, which has paid more regard than earlier twentieth-century criticism did to the sensation novel and romance on the one hand, and aestheticism and symbolist poetry on the other. At the same time the image of Victorian Romanticism presented through recent studies of these forms and movements remains largely counter-cultural. By drawing attention to their popularity and/or moral ambivalence, and to the cultural moment of the *fin*