



Michael Boulter. *Bloomsbury Scientists: Science and Art in the Wake of Darwin.* London: UCL Press, 2018. 198 pp. \$65.00, cloth, ISBN 978-1-78735-006-9.

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At first glance, this book appears to be a biography of biologist Edwin Ray Lankester, regarded by the author as an ill-tempered pioneer, alongside a select collection of biographies of his contemporaries. These figures contributed to the gloriously complicated history of ideas about evolution in the period between the 1880s and the 1930s. Over and above this, Michael Boulter's book is impressive because of its focus on the development of the social circles of these intellectuals, both in and outside late nineteenth-century London and from both elite and humble backgrounds. The book provides a creative perspective suitable for truthfully presenting historical complexity, even though it does not make arguments in a conventional way. That is, instead of providing core arguments in the chapters and centering the content on the arguments, the book opens up possibilities for interpretation of complexity.

The author's own background as a professor of paleobiology perhaps explains aspects of the deep sympathy he shares with the specialist circles he is writing a history of. Although Boulter avoids including personal emotional responses in the main body of the book, the introduction and the postscript show his additional and more personal intention to reflect on the current state of life sciences in light of their history and, importantly, to acknowledge early utopian attempts to

achieve a better life for human beings by understanding their struggling relationship with the environment. Such an implicitly affectionate style of writing results in a pleasant reading experience, for the style helps the reader appreciate the book as a dialogue between nineteenth-century pioneers and today's specialists, as well as between the revolutionary minds in this history and normal scientists who work toward similar goals with far more sophisticated tools.

This is not to say that the book takes a linear and progressive approach to this history. Instead, Boulter's "biography-collecting" way of writing shows the dynamics between and within the social circles of the intellectuals. The book sheds light on the relationships between the different and sometimes contradictory agendas, theories, and concerns of those figures. The dynamics of the social circles intertwined with the developments and frustrations of biological theories, where some ideas were once abandoned and then revisited and valued, and some were once praised and then questioned. I emphasize that Boulter's writing style presents the heterogeneity of the history of science. Not everyone was working toward the same goal, and some people sought to reach the same goal via conflicting approaches. Moreover, some researchers might have changed their

mind at some point based on either new evidence or a persistent lack of evidence.

The book selects fascinating details about the lives of these historical figures and the locations that served as the stage for their encounters, interactions, and disagreements. The author's focus on the relationships between places and social circles, such as the Oxbridge and London Bloomsbury circles, vividly depicts their differences and associates their characteristics with landscapes that the reader can still access today. This directs the reader to visualize those people interacting with real-world environments, making parts of London into museum galleries. The paragraphs on Mary Stopes's University College London (UCL) life before she became a pioneering scientist provides an example. The author illustrates her academic and leisure life in the lab located above the Slade School of Art, UCL, where she and her colleagues enjoyed a skylight. The book is very effective at presenting physical environments as the places where these figures cultivated their ideas and actions.

Chapter 1 has the intriguing title of "Two Funerals"—one was Charles Darwin's and the other was Karl Marx's—and it brings up the central topic of the history of pursuing the ultimate scientific answer to human well-being in response to the overwhelming social problems since the Industrial Revolution and modernization. In addition, by introducing the people who appeared and interacted at these two funerals, this opening chapter portrays two distinct groups of thinkers: the Oxbridge-educated conservative group and an authority-rejecting group. This distinction is then used to trigger tensions throughout the book. Boulter weaves related stories by narrating how Lankester navigated this distinction, both physically and psychologically, and was both a witness of and an actor in the emergence of the new breed of social change-seekers in Bloomsbury.

Chapter 2 follows with the story of his friendship with Marx based on their shared interest in

tackling problems that threatened human survival. This chapter presents Lankester's UCL life as a rising star. Three important background concepts can be extracted from this chapter. Throughout the book, these concepts connect the histories of all kinds of transitions: the transition from gentlemen scientists to professional scientists, from mere literary education to an education containing science and biology, and from limited educational opportunities to education targeting the public and even the popularization of science. As these concepts are crucial for the overall strength of the book, I detail them before introducing the remaining chapters.

The first concept is Lankester's faith in the capability of science to solve not only biological problems, such as evolution, degradation, and adaptation, but also social ones, such as poverty and war. This faith was shared by other researchers and artists, as the remaining chapters then show. This belief emerged from Darwin's legacy and faced back-and-forth challenges due to the incomplete explanatory power of Darwin's theories. The second concept is the growing tension between the gentlemen scientists and the new generation of professional scientists. Lankester surely belonged to the latter, and the match between his "atheist" personality, UCL's liberal values, and the local culture of Bloomsbury is nicely delineated in chapter 2. The local culture of Bloomsbury took a campaigning approach to social reformation in a neighborhood that awaited thorough improvement, a neighborhood described by the author as repelling the middle class in the last decades of the nineteenth century. The social reformers' focus on broadening education, specifically science education, for the public seemed to widen that gap between them and the Oxbridge-educated circle. Here, the reader sees that a yet-to-mature social circle was emerging within Bloomsbury, underpinned by ambitions of social reformation, liberal education, and, ultimately, human development.

The third concept extracted from chapter 2 is the diversity of both the Bloomsbury circle and all the scientists living in the last years of the Victorian era. The book title is explicit about the network between the scientists and non-scientists, yet the central chapters explore the inner contradictions between the scientists' research programs and the different scientific beliefs adopted by the artists. This book avoids simplified characterization and misleading homogenous narratives by documenting these internal contradictions. An example of the former is the eventual splits among Lankester's structural approach, Matthew Arnold's literature approach, and Karl Pearson's measurement approach. Although some of the details might be confusing to readers unfamiliar with the history of biology, pointing out such diversity is salient to historical writing.

Chapters 3 to 6 document the formation and maturation of the Bloomsbury group. Two points are worth extracting in particular. One is the late nineteenth-century trend of the professionalization of science. The other is, interestingly, the vague boundaries between science, literature, and art amid the wave of professionalization. This point is supported by concrete examples of scientists' literary works and artists' implementation of scientific ideas in their creations. This is because, as the author points out, "both science and art were preoccupied with the same set of questions about human evolution" (p. 100).

Both points embody the abovementioned background concepts of the era. First, while the new professionals' emphasis was generally on solving problems of degradation, their bewilderment enhanced by the lack of evidence for Darwin's theories led to their diverse and sometimes opposing approaches to the health and well-being of humankind. Chapter 5 describes the inevitable entanglement between science and politics by stating that the young professionals "were taking on one of the biggest challenges in human history" and confirms the cultural importance of evo-

lutionary theory (p. 72). The latter is discussed from chapter 3. Both scientists and popular science writers had a considerable impact on the history of public attitudes toward evolution. Second, the gap between the traditional groups and the reform seekers continued to grow. Boulter's narrating style again helps show the complexity of the story: the outdated attitudes that were unreceptive to new technologies and education schemes did not only exist in Oxbridge but also in London. Lankester was still frustrated during his appointment at the British Museum, an experience not very different from what he had encountered at Oxford. This sharpening distinction underlined the separation between the Bloomsbury pioneers and people who would not "relax their Victorian yoke" (p. 100).

Chapters 7 and 8 provide different perspectives on the same period before the First World War and can be cross-referenced. The eugenics movement was an embodiment of the close relationship and the eventual collaboration between science and politics. It transpires, however, that the movement was built on a fragile basis in terms of both the robustness of the science and the mechanism of channeling scientific data into political measures. Despite Lankester's desperate efforts to protest the movement by clarifying the difference between nature and nurture, he was frustrated by other enthusiastic and ambitious scientists (such as Karl Pearson and Francis Galton) and politicians who would soon put breeding control into social practice and legislation concerning the "feeble-minded." Meanwhile, the author argues clearly in chapter 7 that the victims of the eugenics movement lacked the resources they needed to spread their influence. Although chapter 7 includes some delightful moments, such as scientist Ronald Fisher's attempt to reconcile geneticists and biostatisticians, it generally produces a disappointing historical lesson that contemporary readers should consider a warning. Ironically

ly, such misuse of science can be legitimized by “good” intentions.

Chapter 8 mainly concerns the increasing intimacy between art and science. For example, the development of postimpressionism and Virginia Woolf’s thoughts and writing over her lifetime both exemplified this intimacy. It was a time when novel scientific ideas were deemed to inform humankind of not only their connection with nature but also the ways they should live and interact with others. While the stories are sufficient to support this point, Boulter emphasizes that modernist high culture “was being informed by science” (p. 126). These stories can be related to both the rise of the Camden Town artist group described in chapter 6 and the formation of the Bohemian character of Bloomsbury mentioned in this chapter. The latter interestingly touches on aspects of regional history.

The war did not need much assistance from biology; physics and chemistry were drawn on much more directly. Nevertheless, the war did provide biology some opportunities, in particular a new generation of biologists engaging in data collection. Chapter 9 documents some wartime facts about these developments alongside the movement of motivated scientists and artists to the forefront. Meanwhile, Fisher continually suggested new methods for reconciling the above-mentioned two approaches to explaining evolution. The rivalry between the two groups, namely, the Cambridge geneticists and the London biostatisticians, represents the persisting separation between the Oxbridge tradition and the emergent new profession of biology. The Huxley brothers come into the spotlight in the second half of this chapter. One is biologist Julian Huxley, who would eventually write the groundbreaking *Evolution: The Modern Synthesis* (1942). The other is writer Aldous Huxley, who reflected his thoughts and concerns about science and humanity in his novels, including *Brave New World* (1932). The author views them as representations of “the two cul-

tures” at the time and beautifully describes Julian’s holistic approach as like an artist’s brush.

After the war, these purported two cultures became one in the sense that the reestablished networks between scientists and artists facilitated their collaborative actions. The problems of human life and society continued to haunt them. Biology became fragmented, where disagreements among the researchers continued yet occurred over different topics. In addition, the relationship between science and the occult needed to be explained and solved. Chapter 10 draws a picture of this postwar situation of biology in parallel with stories of artists being confused about what sort of future science would lead the society to. However, the author does not draw the overall situation as an utterly depressing picture. Instead, as he has done for the entire volume, he uses these diverse aspects of this history to remind us of the special characteristics of the period. There were very different concepts of science, art, and professions from what we have today. This is because the figures presented were pioneers that worked on the foundation for many knowledge fields that proliferated and are still proliferating.

In addition to the above ideas, this book makes some noteworthy points on gender history. While Boulter does not dedicate a chapter to this topic, he explicitly makes statements on the increased visibility of female scientists and the pioneers’ campaign for increasing educational opportunities for women. The abovementioned Stopes’s achievement is a good example of early female scientists stepping across sexist barriers. The book provides details of the multiplication of the roles women played in various arenas. Apart from being mothers, wives, and lovers, they gradually became respected researchers and artists. Throughout the chapters, the history of women’s reaction to the struggle between home life and professional pursuit is seamlessly woven into the histories of the other transitions.

As a valuable piece of work, the book nevertheless sets aside at least two key elements, which I consider motivations for future study. The first gap is both positive and negative and mainly regards the unconventional style of writing. I have maintained the positive side yet need to suggest that the great amount of detail could have been more accessible to international audiences without background knowledge of the British history of science. Given the significant influence that these figures had on world history, situating their contributions in an international context might have enhanced the accessibility. Second, the book might leave some readers curious about the relationship between “people” and “place” by mentioning a few intriguing regional changes. The stories of the artists and the changing structures of social classes leave much space for a deeper analysis of the neighborhoods. Connecting the rise of professional scientists and local histories could be a promising direction for future study based on the details the book has provided.

In conclusion, I recommend *Bloomsbury Sciences: Science and Art in the Wake of Darwin* to audiences, in whatever disciplines, who are interested in good storytelling regarding either scientists as lively characters or modern science as an endeavor closely tied to the society. Readers wondering about the split between science and the humanities will be fascinated by the fact that modern science in its early stages worked hand in hand with fine art and literature. Furthermore, I recommend the book to practitioners of the formal and informal education of science history. The book’s non-heroic, decentralized narratives are useful for teaching and explaining history accurately.

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