CHAPTER 1

Introduction

*The Triangle Collective*

In his oft-referenced 1959 Cambridge lecture on “The Two Cultures,” British novelist, physicist, and civil servant C.P. Snow famously resurrected an erstwhile lament about a presumed and growing “gulf” between the arts and the sciences in which the sciences are unduly disregarded by the “traditional” intellectual pursuit of the arts. Snow’s scientific evangelism registers a persistent tension in Western cultural history, which we can track from Thomas Henry Huxley and Matthew Arnold’s late-nineteenth-century debates on whether the natural sciences should finally be included alongside literature in college curricula to Bruno Latour’s post-9/11 suggestion that a new form of generative critical “gathering” is needed, one that does not pit scientific pursuits against cultural critique, but treats all constructed objects and ideas with caution and care (Snow 2012; Huxley 1880; Arnold 1882; Latour 2004).

Indeed, this manufactured “two cultures” paradigm is now so fully ingrained in our contemporary era that shocked post-2016 liberals were prepared to march for the abstract concept of science as the incontrovertible panacea to the post-truth era of Trump, an era of dangerous relativism inaugurated, some would argue, by art and theory’s post-structuralist insistence on the relativity of truth and reality. Once the perceived gatekeepers of intellectual endeavor, the humanities meanwhile find themselves on the other side of the “two cultures” coin, labeled as an esoteric and impractical field of knowledge that has also unwittingly sowed the seeds for a war against facts from which only science, technology, engineering, and mathematics (STEM) fields can save us.

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Yet however counterintuitive it may seem in our current moment—which has witnessed the alliance of scientific research and global capital, as well as the facile opposition of useful scientific “know-how” (useful to whom and for what?) against the supposedly rarefied humanities—literature and science have been and continue to be domains of knowledge that are, far from monolithic, perpetually in flux and intertwining. For example, in the vibrant fields of feminist science studies and the history of science and medicine, many scholars have documented the capacious meanings and practices of science and literature in earlier centuries. Initially, “science” referred to knowledge as such. Yet with the rise of empiricist paradigms in the sixteenth and seventeenth centuries (following Francis Bacon’s articulation of the scientific method) up through the technological developments brought by the industrial revolution in the eighteenth and nineteenth centuries, definitions of science began to narrow. And as the modern research university emerged in the late eighteenth and early nineteenth centuries, as academic disciplines began to coagulate—though they had not yet calcified—into distinct research programs, science increasingly specified a particular kind of knowledge, one derived from empirical procedures and tightly focused on the study of the natural world. Nonetheless, science in this earlier moment was not viewed as inherently oppositional to the more imaginative, speculative knowledge that literature represented. More often than not, the two worked together.

Up through the nineteenth century, in other words, science and literature did not even name distinct fields of study. Embryology, for instance, arose around 1800 as a science that sought to explain how living organisms continually change while still being able to organize themselves independently; it gave rise to the concept of rhythm, which became “a new way of imagining that played a critical role in the consolidation of the new science of biology” that cut across aesthetics, poetics, and philosophy (Wellmann 2017, 17). In another notable example, as Amanda Jo Goldstein (2017) argues, Romantic writers such as Blake, Shelley, and Goethe developed a “sweet Science” that deployed classical philosopher Lucretius’s poetic materialism—the idea that tropes have physical substance and physical things are capable of figurative activity—to challenge the reorganization of knowledge spurred by the modern university, which invalidated poetry as a way of knowing the natural and social worlds. While the natural sciences were turning toward the problem of organic life, Romantic writers and thinkers redeployed Lucretian materialism in order to bolster poetry’s claim upon the real. Thus, the gap between the epistemic communities of the natural sciences (biology, geology, astronomy, physics, and chemistry) and “human science” (the humanities and social sciences) widened not simply along a methodological fault line (inductive versus deductive logic) but, Goldstein points out, along a linguistic one as well: prose the dominant medium for describing the natural and social world “as it is,” and poetry the medium for describing the “immaterial reaches of subjectivity,” including...
emotion and memory (Goldstein 2017, 7). Using figuration and verse to remake empirical procedures, these literary experiments sutured scientific and aesthetic knowing.

These particular examples of the cooperation of science and literature illustrate that in many pre-twentieth-century contexts the literary—contingent, figurative, subjective—was widely understood not to supplement empirical knowledge of the world but, rather, to arrive immanently within it. Not yet fully professionalized, science was a capacious mode of inquiry “legitimately claimed by a surprisingly broad range of practitioners and practiced in a number of nonacademic and noninstitutional spaces, from the parlor to the workshop, the church to the park,” Britt Rusert (2017) points out (5). Indeed, as she shows, in the early-nineteenth-century United States a set of “fugitive sciences” emerged that saw free and enslaved African-Americans repurpose ethnology, astronomy, and botany in the name of freedom. Excluded from most if not all institutions of learning, these “amateur” scientists fused empirical procedures with speculative thinking, as their investigations of the natural world became the basis for broader meditations on kinship, being, and the category of the human.

Speculation frequently plays the foil to the practical applications of knowledge codified by Bacon’s scientific method, yet even amid the dominance of the empiricist paradigm from the sixteenth through nineteenth centuries, it remained central to the kind of undertaking science was understood to be. Speculation, in some ways, serves as the hinge upon which literature and science have pivoted for so long: a form of thought that is fundamentally concerned with querying “abstract” notions (of being, of beauty), and a form of thought that unfolds in the subjunctive grammar of potentiality, the future possibilities of the could be or might be. However much it emphasized specialization by the end of the nineteenth century, science “remained a discipline that was not one,” as Nihad Farooq (2016) writes, offering “as much in the way of philosophy, literature, travel narrative, cultural study, and social theory as it did in the way of ‘pure’ science” (11).

The focus of this handbook is the twentieth and twenty-first centuries, even as both the editors and the contributors resist the popular tendency to view earlier scientific practices through an arguably twentieth-century lens of hierarchy and fixity. While phrenology, taxonomy, eugenics, and the general depiction of racially based traits as unyielding markers of inferiority or superiority are all certainly woeful narratives that plagued science in the nineteenth century, the actual science that came to fruition in this period proved quite the opposite: that all organic processes are, in fact, in constant flux, transforming and transformative, adapting, changing, mobile, and most importantly, that human beings are not biologically separable by any kind of discrete racial markers. To this end, we approach science and literature in the twentieth and twenty-first centuries as interactive modes of knowledge that carry forward historical practices of speculation, fugitivity, and amateurism.
However, the distribution of scientific expertise beyond disciplinary modes of knowledge production becomes harder to sustain in the twentieth century. Literature and science remain co-evolving speculative forms even while significant differences arise in their material conditions and methodological identities as they become institutionalized within the university. Nowhere is the division between the humanities and the sciences more obvious than in the study of language in the early twentieth century. As philology split into the distinct paths of literary criticism and linguistics, hermeneutics became the basis of close reading (think F.R. Leavis) and logical positivism dominated the philosophy of language (think Bertrand Russell). One critic, I.A. Richards, actually crossed this chasm, and yet these two sides of his professional career—an interpretive literary critic on the one hand and the co-designer of an artificial language called Basic English on the other—have largely remained isolated from one another. As those in the field of literary studies start to remember the more positivist endeavors of its leading lights, it is possible that literary methods will become more computational (as we see in the rise of quantitative methods in the digital humanities), but it is unlikely that computation will displace hermeneutics as the core of disciplinary identity.

If logical positivism turned the study of language toward computation, then the development of the digital computer turned science ever more firmly, if problematically, toward the language of code. Although DNA was discovered in 1869, it wasn’t until the 1950s, shaped as they were by cybernetics, information theory, and wartime and Cold War cryptography, that sciences such as molecular biology reimagined DNA as the “code of life.” With the growth of computer power, neuroscience and genomic science have increasingly relied on computational methods and processing that require considerable funding for research. Representative here is the Human Genome Project (HGP), which set out to sequence and map the entirety of the human genome, spanning from 1990 to 2003 and representing the efforts of multiple institutions across the globe.

Indeed, during the postwar era of “Big Science,” scientific projects expanded significantly in size and required considerable funding. Much of this work has been conducted in the laboratories of universities and private companies and is beholden to the funding bodies, both public and private, that enable this work. This financial structure, in turn, opens up scientific research to the objectives of the funding organization, whether noble or otherwise, such as the goals of for-profit commercialization (e.g., the extension of the HGP into DNA testing kits or proprietary pharmaceutical formulas) or social control through the continuation of racist and eugenic narratives (again, DNA testing kits)—even as the tests have also sometimes proved useful to others as a way to probe complex questions of cosmopolitan identity in the present and to correct lies and omissions in the historical record. Or consider the case of US university-based robotics and artificial intelligence
research in the mid- to late-twentieth century, much of which was funded by Defense Advanced Research Projects Agency (DARPA), in the name of militarization and strategic defense.

And yet, Snow’s two cultures diagnosis does not hold in the contemporary era any more than it did in the eighteenth and nineteenth centuries, as the practice of science does not stand in isolation from the larger political and cultural milieus its practitioners inhabit. Rather, science, like all forms of knowledge production, is co-evolutionarily constituted by and with these milieus. Katherine Hayles makes this point in her 1990 study of the concept of chaos across postmodern literature, critical theory, and sciences including mathematics, thermodynamics, and epidemiology; she notes that the connections she identifies across these fields emerge because “writers, critics, and scientists, however specialized or esoteric their work, all share certain kinds of everyday experiences” (Hayles 1990, 4). In other words, literature and science are decidedly worlded practices that unfurl and unfold each other.

Working in the shadow of Big Science, scholars in feminist science studies have been essential to undercutting the “two cultures” claims. Donna Haraway’s (1988) feminist objectivity emphasizes that knowing is ever situated, or shaped by the specific position of the one seeking to know, and thus ever partial. Similarly, feminist theorist and theoretical physicist Karen Barad (2007) describes scientific observation as informed by the scientific observer and the techniques and technologies deployed in observation. Thus, science, which is often characterized by authoritative claims of neutrality and disembodied objectivity (indeed, an impossible subject position!), is in fact shaped by specific worldviews, positions, and epistemological assumptions and tools. Science shares this quality with literature, as well as with other cultural practices that seek to know something of the world. To understand science as such is not to prescribe a slippery, untethered relativism, but rather to insist that a rigorous scientific account acknowledges that what we know of the world is shaped by how we come to know it, a methodological claim familiar to many working in the humanities.

It is important to note, of course, the political and intellectual significance of inquiry in the humanities in its work to debunk the “fake news” most often proffered historically by pseudo-scientific narratives—i.e., the “science” of races as separate species; the “science” of hysteria as a “female disease”; the “science” of same-sex desire as pathological; and so forth. The intent of the arts, and of critical theory specifically, as Latour (2004) defends in his own contemporary lament, “was never to get away from facts but closer to them” (231, emphasis in original), by examining and challenging the conditions of certain historical moments that have allowed blatant falsehoods and discriminatory logic to be delivered as facts or truths.

It is, then, not surprising that the emerging field of literature and science coincided with the increasing attention to problems of social inequality, power, and violence and efforts to make scholarship relevant in part by
enabling the possibility of envisioning more just and life-sustaining worlds. Analyses of how literature might inform a more socially just science, as well as how science frames discourses and material practices relating to colonialism, race, sex, labor, and state formation, are at the heart of the field of literature and science, which, in turn, is well-positioned to articulate a critical view of problems including inequality, exploitation, overconsumption, and ecological crisis.

While literature and science has largely remained a subfield of literary studies, many scholars of literature and science have found academic homes in related interdisciplinary fields such as science and technology studies (STS) and health/medical humanities where they position their work explicitly in relation to social justice. Scholars working in STS see social justice as deeply implicated in the questions they raise, from access concerns about where and how people encounter science and technology to how scientific and technological innovations are imagined and funded, for whom the end results are intended, whom they ignore, and who the researchers and research participants are. Research in STS often pushes for increased equity across all of these measures and has resulted in, for example, the inclusion of more women, people of color, disabled people, and older people within research studies. As another example, scholars working in the health humanities have claimed “a shared commitment to social justice” as the unifying value of the field, which is evinced in an emphasis on translational research that seeks to “[involve] outside stakeholders in the research and [transmit] the findings of that research back to the groups or participants being studied” (Klugman and Lamb 2019, 5, 7). In essence, participation in this field requires literary scholars unabashedly to apply their training, bringing methods of critique from the humanities to interrogate questions of identity and power in relation to lived experience. At the same time, such work is often presented by pundits, politicians, and college administrators as undertaken in the “service” of other fields or institutions (such as STEM education, community organizations, or medical schools), a point that has led to the criticism that instead of seeking radical change, “medical humanities seeks to improve the status quo” (Herndl 2005, 595).

Such critiques point to tensions between the justice-oriented goals of scholars in literature and science and the institutional contexts for the integration of the humanities with science, medicine, and technology in the contemporary university. The development of programs of study in these areas at times depends on the growing influence of donor-driven university finance and shrinking public outlays for university education, reflected for example in the proliferation in tuition-generating Masters of Arts programs in the Medical Humanities. Thus the intersection of literature and science is itself a site of contestation for those advocating for a more socially just university, suggesting that scholars in this area still have room to productively aid social justice efforts by contributing knowledge and resources to efforts to expand
marginalized segments of the curriculum (ethnic studies, feminist and queer studies, poverty and labor studies, disability studies, among others); to use the university to reduce inequalities in access to technologies; and to push back against state efforts to reproduce militarism and policing through technology and communications research.

Another way to trace the emphasis on social justice within literature and science is to move away from the academy and toward the field of culture itself, examining literature rather than literary studies or humanistic fields. Indeed, within those literary subfields most explicitly intertwined with science and scientific developments, the long twentieth century has witnessed an emergent and growing engagement with social justice.

Science fiction, for instance, is a literary genre that has since its inception been preoccupied with science, and particularly with scientific futures. Over the course of the long twentieth century, the genre took a number of turns: early developments included the fin de siècle scientific romances of H.G. Wells, Jules Verne, and others, the pulp era of popular magazines such as the Hugo Gernsback-published *Amazing Stories* during the 1920s and 1930s, and the largely techno-utopian fantasies of the “Golden Age” during the 1940s and 1950s. In the 1960s, however, with the emergence of the “New Wave” of science fiction, the genre began to evince not only more diversity among its canonized authors, but also more critical engagements with science and more explicit investments in the social. Whereas the Golden Age tended to endorse narratives of technological progress, New Wave writers explored the ways in which scientific development was sometimes unlinked from and sometimes at odds with social justice, often centering power-based estrangements from the social sciences rather than the imagined feats of engineering.

From the rise of the pointedly techno-dystopian visions of cyberpunk in the 1980s to the current explosive interest in Afrofuturism, science fiction has not only engaged social questions in its representations and imaginations of science, but has indeed attended specifically to highly differentiated access to scientific “progress” and to forms of violence Western science has inflicted on marginalized groups. In this way, science fiction in the late twentieth and early twenty-first centuries is something of a return to the original form from the nineteenth century: arguably, the literary genre has always been defined by its critical interest in how social relations and structures of power interact with technoscience.

Similarly, environmental literature—another literary subfield defined by its engagement with the sciences—follows a trajectory of increasing recognition that science and social justice cannot be disentangled, especially since the 1960s. Just as the preservationist and conservationist movements of the early twentieth century are largely overshadowed in contemporary environmentalism by the environmental and climate justice movements, so too has “nature writing” valorizing a “pristine” wilderness given way to literary works that engage embodiment and social vulnerability in their representations of the
nonhuman. Since the emergence of the modern environmental movement in the 1960s, and especially with the rapid growth of the environmental justice movement following the activism surrounding the dumping of PCBs in Warren County, NC, environmental literature has increasingly engaged global and local contexts of colonialism, racism, masculinism, hetero- and cis-sexism, ableism, and classism. In contemporary environmental literature, including climate fiction (sometimes called cli-fi), power and social difference are not banished to the human realm of the political, but properly identified as central to scientific and other engagements with the nonhuman.

The trends in environmental literature, science fiction, and literary studies in developing critical approaches to race, sex, empire, and militarism were deeply influenced by the geopolitics of the Cold War and the assertion of the New Left and decolonization movements that developed transnational calls for social change in the 1960s. While the Cold War tension and nuclear standoff between the United States and the Soviet Union produced dystopian, speculative narratives and images of potential nuclear catastrophe, the challenge to the twin US and Soviet imperialisms by the Non-Aligned Movement, decolonization movements in Latin America, Africa, and Asia, and movements for racial and gender justice across continents emerged as central concerns among authors responding to the social contests over the militarism of the Vietnam War, forms of racial segregation, and the expansion of capitalist inequalities with the onset of economic globalization. A variety of science fiction and environmentalist authors integrated such concerns into both visions of dystopian violence and imaginings of creative resistance, such as in Octavia E. Butler’s *Xenogenesis* trilogy. In these novels, the post-apocalyptic environment of nuclear disaster produces widespread social violence, which is challenged by the protagonist, Lilith, as she encounters an alien species that upends humans’ organizations of racial and gender difference.

There are, of course, differences in how authors and scholars handled such themes, and certain writers and traditions within these literary subfields recognized the centrality of social justice to scientific culture even before the “turns” toward the social identified above as occurring roughly in the 1960s. Still, these fields help to show that social justice is integral, not just to the study of literature and science in the long twentieth century, but also to cultural production within literary fields defined by their engagements with science.

A brief consideration of these conditions demonstrates how the intersections between literary studies and science influence every level of thought and production at the universities. To offer some context, the editorial collective began the work on this handbook in late Spring 2015. Some of us had studied together directly, while others had connected through geographical proximity in North Carolina. Most of us emerged from English or Literature programs, but many of us had also been trained in science studies and considered our disciplinary home to be in the nascent field of literature and science.
In the preceding years, interdisciplinary collaboration between literary studies and the sciences had flourished, conferences and journal issues convened around the topic, and the Modern Language Association (MLA) job postings began to include faculty positions for scholars working at the intersection of literature and science. The idea of putting together a primer that would help solidify the field was exciting to all of us, as was working as an editorial collective.

Editing a collection together would, we fantasized, be a gesture toward the democratization of knowledge that could allow us to share labor and simultaneously help to advance the field. At the outset, if we considered our political and professional goals as connected to our objects of study, it was perhaps in somewhat theoretical and even utopian terms: could published humanities scholarship reflect the same level of authorial and editorial collaboration as the sciences? Could such a collection—inspired by the ethics of both citizen science and models of co-authorship in the sciences—make accessible the often seemingly abstruse connections between aesthetics and empiricism? But these theoretical questions, as our field teaches us, cannot be separated from our working conditions and situations. Since the Great Recession, and accelerated with the emergence of COVID-19, full-time, tenure-track positions in the humanities have been in decline, replaced by part-time, short-term adjunct positions. Those of us involved in the collective were in a range of positions, from tenured and tenure-track faculty to postdocs and lecturers, working in a range of institutions, although primarily R1s and SLACs.

It took three years from the initial proposal to getting the official go-ahead for the project from the publisher, and another two years to collect, edit, and revise the chapters submitted by scholars whose work we admired and had solicited for inclusion in the volume. In those five years, the university changed, and so did our positions and locations within the institution, as did those of the contributors. By 2020, it was impossible to ignore that our initial political and professional goals were not merely connected to, but more explicitly, constituted part of our object of study. We were a living, breathing example of the very thing we aimed to study: the cultural and material implications of the charged rhetoric around science and the humanities. We cannot ignore how our relative positions within the university are tied to the topic we have sought to analyze, and that our training has something to say about the ongoing crises (of the humanities, of adjunctification, and others) in the neoliberal university we are living through.

We have experienced and also bear witness to intensified adjunctification, a decline in full-time and tenured positions, the continued rhetorical pitting of STEM against the humanities as a justification for differential funding, a decline in humanities majors and undergraduate degrees awarded, an increase in discussion of “alternative academic” (altac) careers, the underfunding of humanities departments, and the rise of the austerity university. While the majority of chapters in this collection do not take the university as their
object, they do lay out various histories and representational strategies that lend to this auto-critique. Our own lives, the lives of the writers whose work is collected herein, and the nature of the fields in which we have been trained necessitate a brief foray into what we now see as the urgent mapping of the institutional contexts we occupy.

During the period within which we have been editing this volume, the humanities responded in multiple directions to the financial pressures and changing landscape of the university. One major way was through the formation of institutional alliances with the sciences, one sign of which has been the increased application of the scientific lab model to the infrastructure of the humanities. Examples of humanities “labs” include the Health Humanities Lab at Duke University, the Health Humanities: An Interdisciplinary Venue for Exploration (HHIVE) Lab at the University of North Carolina at Chapel Hill, Game Changer Chicago Design Lab at the University of Chicago, Experimental Humanities Lab at Indiana University, and Humanities Lab at Arizona State University, all of which pursue applied and practice-based work, seeking to demonstrate the value of humanities inquiry and methods (e.g., cultural analysis and narrative-based methods) to problems in STEM fields, and to bring humanities-oriented values (e.g., an attention to structural inequality and social justice) into scientific conversations. They bring together work between the humanities and the sciences, often in interdisciplinary fields such as the medical humanities, digital humanities, experimental humanities, and media arts and design. Although the content of such spaces often touches upon science and technology, building on a longer humanistic interest in STS, the form of the science lab itself has also changed the way some humanities scholars work together and with colleagues in other disciplines. Given the reliance of such labs on ongoing institutional or grant funding, some of the challenges are those faced by all collaborations, including our own. Whether innovative or opportunistic, these labs suggest changes within the institutional relationship between the humanities and sciences.

Since the organizational, disciplinary, and financial shifts within the university have made starkly visible the conditions under which we labor, they also offer opportunities for transforming those conditions. The structural reorganization of the academy today—and our own experience of that restructuring—presents opportunities for imagining alternative genealogies and new periodizations of science and the humanities across the twentieth century. Crises are turning points (the word comes from medicine), and they are also opportunities for transformation, especially if we attend to the memories flashing up at this moment of danger. We might, then, consider the lessons of earlier moments of institutional crisis and reorganization, including how non-institutional practices and collectives historically refused the disciplinary divides that have defined the sciences and humanities within the academy, how marginalized subjects have challenged the bifurcations of literature and science within and without the academy, and even the history of adjunct
labor—in both the humanities and the sciences—in earlier historical periods. We might use this crisis to examine how we attend to new modes of dispossession and precaritization while understanding that the university has always been a site of exclusion and immiserating violence for historically disenfranchised populations in the United States and for colonized populations abroad.

In more positive terms, the interdisciplinary and collaborative nature of STS scholarship, including our own here, potentially strains against models of collectivity as they are practiced and co-opted in the sciences, especially in lab settings. If humanities lab settings offer one site of the perils and promises of networking in the sciences and humanities today, the science lab remains a particularly vexed site, as a space and form that brings together what is most utopian about scientific praxis (intensive collaboration, dialogue, and experimentation) with its dystopian underbelly (epistemological and other forms of secrecy, transfer of public resources and knowledge to the private sphere, deeply hierarchical structures under PIs, and the hidden cultures of sexual harassment and assault, in labs as throughout the university system, that our institutions are only beginning to address). This may be a moment when STS scholarship and humanities scholarship more generally—including digital humanities—need to untether from models of collaboration poached from the sciences in favor of ethical models of collaboration that are developed with explicit attention to differential access to resources, time, and institutional power among collaborators within a group. Furthermore, while STS scholars have at times found models for their own collaboration within the sciences, the natural sciences might productively turn (back) to the humanities for tools, models, and even as predictive models for their own likely future. Capital, as Walter Benjamin so famously pointed out, can only proceed through the production of crises, which is why in the current reorganization of the economy and its institutions, natural sciences are experiencing their own crisis and full-scale reorganization, facing the extension and deepening of already existing inequalities and divisions, such as are evident in huge funding gaps between designer fields like bioengineering and the basic sciences, as well as the expectation that Ph.D.s in the sciences will spend years relocating for multiple postdocs or remain dependent on grant cycles and the “soft money” of grants that always run out and thus keep researchers trapped within a cycle of financial precariousness and movement among institutions.

This project has made us acutely aware of the tensions of our contemporary moment, but also of the possibilities for the productive engagement that grows out of scholarly work that crosses fields and disciplines to address issues that are of broad historical and contemporary concern. The exciting range of work collected in this handbook attests to the generative potential of scholarship at the intersection of literature and science.
Chapter Outline

The work on the intersection of literature and science is contributing significantly to the changing terrain of literary studies in a variety of ways. Any new focus brings novel works to light, and this turn in literary studies is no exception. But perhaps the most exciting consequence involves the emergence of new epistemological and methodological questions moving in both directions: literary studies and scientific inquiry. The contributions to this volume represent a range of areas of inquiry and approaches that consider how the integrated study of literature and science generates new insights into the underpinnings in both fields. The contributors show how a focus on literature and science draws out new ways of conceiving how literary works produce and circulate knowledge about the world: how, for example, novels can reveal the infrastructure shaped by fossil fuels; how the relationship of image and word in graphic novels illustrates a peculiarly effective way to address atomic fallout; or how humans imagine the ideas of “nature” or “illness.” Conversely, literary and literary critical approaches to scientific works broaden our understanding of the nature of scientific inquiry, emphasizing the role of narrative or image in conceptual shifts: how, for example, the affective charge of words and images influences scientific models and uses of new technologies; how language can shape ways of imagining life itself; or how linguistic figures can be translated into computational ones.

The chapters solicited for this collection represent a wide range of scientific fields, including epidemiology and global health, genomics and biotechnology, environmental and energy sciences, behaviorism and psychology, physics, and computational and surveillance technologies. They consider how literary works register and often facilitate epistemological shifts and how they are in turn affected by those changes. Many of these chapters address how fiction across media uniquely explores the consequences—imaginative, social, economic, and/or geopolitical—of scientific developments, whether past, present, or future. Chapters examine such issues as how the prevalence of concepts like networks or microbes has affected literary form; how contemporary novels have turned, in light of cognitive science, to the brain in place of the mind; how more sophisticated computers have made literary works more sensitive to the ways information circulates through language, images, and stories; and how literary works can sensitize us to the slow violence of environmental disaster and other forms of destruction. Given the increasing speed of such developments from the second half of the twentieth century to the present, it is not surprising that analyses of speculative fiction in particular are well-represented in this volume, as the genre has become an increasingly mainstream avenue through which to explore the blurring of science fiction and scientific fact in the contemporary world. Most broadly, these chapters share an interest both in how the fields of literature and science know and make the world and in how the intersection of literature and science reveals the ways concepts change and new concepts emerge. While this focus on how
literary works register conceptual shifts is not new, the work on the intersection of literature and science has certainly augmented it. Several of the chapters focus directly on that intensification. The authors represent a wide range of fields and cross-disciplinary specializations as well as a range of professional levels, affiliations, and approaches, but all are making significant contributions to the burgeoning field of literature and science.

Given the focus of this volume on the twentieth and twenty-first centuries, we have found it necessary and invigorating to think expansively about the category of “literature,” especially as it intersects with newer media forms such as film and digital writing. Our contributors consider long-standing literary genres such as the novel, poetry, and memoir alongside film, comics, new media narratives, and other aesthetic forms that have increasingly made their way onto the syllabi of scholars of twentieth- and twenty-first-century literature and science. We note, moreover, that this expansion is not historically unique even if it is technologically specific. In some ways, we see our contemporary use of the term “literature” as deriving from much older definitions of “literature” or “letters” that encompass fictional and nonfictional works of the creative imagination.

We have divided the volume into four units, an organization of the work assembled here that reflects and represents the cutting-edge scholarship across the field: epistemologies; techniques and methods; ethics and politics; and forms and genres. But while we intend these heuristic clusters to show how the chapters begin to suggest emergent conversations within the field, the richness of the chapters often made the decision of where to place them difficult; the chapters consistently spoke to each other across our divides. Just as this volume refuses the boundaries placed between the fields of literature and science, we encourage readers to listen for the conversations that emerge throughout the handbook as they challenge the volume’s own categorizing system.

**EPistemOLOGIES**

The chapters in this unit address the knowledge that emerges at the intersection of literature and science, focusing on how the intersection produces, in a Kuhnian sense, a conceptual shift, a new way of thinking about familiar problems, or, more broadly, a new understanding of the world. Neither “literature” nor “science” has a clear definition; both describe creative processes, although they differ in the ways they engage the world. As we noted in the opening of the introduction, the stark distinction between them—if indeed there is one—is a relatively recent development; the difference between a scientific and literary imagination would have made little sense in centuries past. Their convergence is the subject of the chapters in this section, which explore both the insights each gains from the other and the brave new world that emerges through their joint perspectives.
The production and orientation of affect figures centrally in the sorts of knowledges produced at the intersections of literature and science. Humankind’s reaching for the moon long precedes any disciplinary inquiry; Kurt Beal brings that longing into the mid-twentieth century through his exploration of a multimedia project inspired by the 1969 Apollo 11 moon landing. Chapter 2 chronicles how stories shaped the human experience of the moon even as they gave expression to that longing. Kriwet’s work, Beal contends, helps us understand how knowledge of the world is mediated by the imagination, how we are motivated by our longings, and how we therefore dwell, as Emily Dickinson might say, in poetry and possibility.

If human wonder inspires Beal’s chapter, the writers Anindita Banerjee considers in Chapter 3 were motivated by their effort to make sense of the horror of the Nazi concentration camps and the Soviet Gulag. Seeking to capture the unimaginable led these writers to scientific language, which, though challenging literary language, offered an alternative view of catastrophe “as a web of relations between matter and energy.” Following the insights of these works into imperceptible human and nonhuman relations, Banerjee muses on the connections between the camps and nuclear catastrophes (Hiroshima, Chernobyl) and on the changing coordinates of time and space that disclose the history of human destruction and the uncertain future of human imagination.

Like Banerjee, Brent Ryan Bellamy is intrigued by the intersection of literary and scientific texture as well as textuality. In Chapter 4, he draws on literary and visual depictions of oil landscapes to show the often invisible impact of oil on the landscape as well as the human imagination. Where Banerjee traces a particulate path through the elements of devastation, Bellamy journeys through the infrastructure of petroculture, but both are pilgrimages through disaster with the at least implicit hope of revelation.

If Beal, Banerjee, Bellamy turn attention to the affects—wonder, horror, hope—to which literary and scientific modes of expression give expression, another line of chapters in this section investigates the ways that structures of power shape what is known, and how one knows, in addition to the affects that follow on knowledge. For instance, Jordan Kinder and Imre Szeman’s engagement with petroculture stresses the impossibility of understanding the contemporary moment without perceiving humanity’s thorough saturation in the infrastructure and economy of oil. All contemporary literary works, they maintain, register that saturation, and if, as a number of contemporary critics have noted, authors have not always cognized that fact, their works are important in displaying—to the critical eye—the ways in which oil and its manifestations hide in plain sight. In Chapter 5, they chronicle the dawning awareness of how the contemporary imagination has been shaped by the relationships among energy, aesthetics, and culture both in the emerging
academic field of energy humanities and in the increasing number of literary works that have begun to treat energy—specifically, oil—as a topic.

The problem of how contemporary organizations of power shape knowledge also drives Yves Citton’s analysis of how the added complexity of the computing machine has recast traditional dichotomies between literature and science, showing both new convergences and new divergences between literature and science. In Chapter 6, he takes us into the programmed world we have always inhabited but not recognized as such to introduce us not to the horror of the matrix, but to the everyday mediation of refracted experience as well as the shifting relations between literature and science as technological and political structures reconfigure over the course of twentieth and twenty-first centuries. In closing his anatomy of shifting knowledge structures that follow on the changing relation between literature, science, and computing, Citton returns to Vilém Flusser’s sanguine proclamation of how the advent of mechanized computing has liberated numbers from letters and unleashed a “visionary power” through which “science presents itself as an art form and art as a source of scientific knowledge” with cautious optimism. Caution because the near half-century that has elapsed since Flusser’s observation has not fully liberated the imagination from the deadening machine of financial capitalism, but optimism because the human imagination, manifested variously in such figures as artists, scientists, and hackers, rebels against “the pre-programmed ends of financial profit” and seeks instead its ends in life itself.

The ways that contemporary organizations of power are shaped by the literary and scientific methodologies also inform Scott Selisker’s argument that behaviorism—a psychology of the mind—was an especially powerful illustration of that contemplation. “Behaviorism and Literary Culture” chronicles how the sciences of behaviorism influenced literary culture in two often competing ways: in its influence on the quest for a scientific literary criticism, which found its most influential expression in the methodology of close reading, and in its adoption by speculative fiction in the form of the dominant theme of mind control. Selisker’s Chapter 7 illustrates the intertwined influences of science, literature, and literary criticism on how as well as what we read.

Michel Foucault’s conception of biopolitics arguably represents the consummate epistemological conjunction between science and literature in the narrative harnessing of life itself through which it constellates a population and facilitates certain forms of governance. If there is a literary aspect to biopolitics, then literary works might offer particular insight into its constitution. That assumption informs Dana Seitler’s Chapter 8. Noting the structural inequities implicit in biopolitics, Seitler considers the variable experiences not only of biopolitics but of life in her reading of the treatment of suicide as allegory and critique in novels at the beginning and end of the twentieth century. Arguing against the pathologizing and medicalizing of
suicide in these novels, she reads it as an imaginative act—a fundamentally distinct epistemology—that challenges the conceptions of life emanating from the narrative of biopolitics.

The investigation of how power in our own cultural moment—petroculture, computing, biopolitics—shapes scientific and literary knowledge production doesn’t only delineate how power operates through knowledge. Each also explores ethical responses that might reroute contemporary organizations of power. Lamenting, with Latour, the consequences of the hardening of disciplinary boundaries since at least the mid-nineteenth century, Bishnupriya Ghosh returns to Mary Shelley for her insight into the danger of pursuing science in the absence of philosophy. In Chapter 9, she traces Shelley’s legacy in the emerging academic fields and subfields that are harnessing the conjoined imaginative power of science and literature. Drawing on Margaret Atwood’s speculative fiction as an example, she concludes with a reminder of the importance of attending to how readily today’s fiction bleeds into tomorrow’s reality.

In Chapter 10, Emily Coit traces the fall of the protagonist, a microscopist who gains fame through a satire of popular science, in “The Descent of Man” to show the convergence of literature and science in the power of the word. Coit considers Edith Wharton in the context of a group of prominent intellectuals of the moment—many her friends—who were grappling with what the lessons of biology and linguistics were revealing about the past and what, in turn, they predicted about the fate of civilization.

**Methods and Approaches**

The chapters in this section focus on how the intersection of science and literature produces new methods or approaches either to the history of science, to literary and cultural criticism, or to both. While methods and approaches suggest epistemology—hence there is considerable overlap with the chapters in the epistemologies section—these chapters focus more specifically on how one side of the science and literature equation might challenge the disciplinary practices or categories of the other as well as how literature and science variously impact the world.

The rise of the research university at the turn of the twentieth century derived from as it contributed to the rising prestige of science and the scientific method. Todd Carmody documents the influence of that turn on literary criticism, itself an emerging discipline, in Chapter 11, showing how literary critics turned to science as a model for how they might establish their expertise and prestige. But that turn, he suggests, had surprising consequences, notably the emergence of the third branch: social science. Thereby establishing an important but overlooked corollary between reading texts and reading the world, he offers a new framework through which to understand such
institutional events as the culture wars and the contemporary challenge to the importance of humanities scholarship.

While that challenge has received considerable attention since the turn of the twenty-first century, the previous three decades have also witnessed a growing awareness among scientists and policy analysts of the important contribution literary and cultural critical works and the approaches they inspire can make to the study of science as well as to science policy and ethics. Several of the chapters in this section explore that turn. In Chapter 12, Jay Clayton and Claire Sisco King chronicle their participation in a multi-disciplinary policy initiative concerning genetic policy funded by the National Institutes of Health (NIH). Showing how recent changes in the way health policy is formulated have opened new opportunities for humanities scholars, they describe how they used literary and cultural works and the methods of literary and cultural criticism to demonstrate the human—and communal—dimensions entailed in decisions concerning genetic research and personal privacy.

Science fiction in particular lends itself to these efforts because of its emergence as an engagement with the impact of science and technology on social and geopolitical relations. As SF critics have noted, it is an intrinsically critical genre. Rebecca Wilbanks documents the long-standing demand for science fiction “to do rather than teach...to bring about or ward off real-world states of affairs” in Chapter 13. She calls the works explicitly responding to this mandate “incantatory” because of their authors’ faith in the power of literature—of science fiction in particular—to impact the world. Tracing this faith to “an evolving relationship between SF and the tradition of foresight practices or futurology that dates back to the mid-twentieth century”—when, in fact, science fiction emerged as a mass-produced genre—she shows how incantatory fictions restore some of the techno-scientific optimism of an earlier moment while, at the same time, they are tempered by the darker, more critical turn the genre took after its Golden Age. Wilbanks herself expresses faith in the salutary effect this sub-genre can have both on the genre as a whole and on the culture in which it is being summoned to intervene.

For Amy C. Chambers and Lisa Garforth, that impact comes from readers’ engagement with SF. While literary critics are among the readers they consider in Chapter 14, Chambers and Garforth are interested in the wide array of approaches to fiction—in particular, to science fiction—for what it can reveal about the power of the genre and, conversely, about the readers themselves. The genre allows readers to consider both the strange world science fiction readers encounter and the ways that experience helps them recognize and negotiate the strangeness of their own worlds. In the way science fiction stages the encounter between science and literature, it offers readers a useful way of making sense of the changes that attend rapid developments of science and technology and of the world it is registering as well as the one it is helping to create.
If literary works can facilitate the process of negotiating the strangeness of a rapidly transforming world, it is in part because they can offer insight into scientific methods and approaches—perhaps, in the process, opening up new areas of inquiry. That is the focus of three of the chapters in this section. In Chapter 15, Joseph Fitzpatrick explores the attraction of linguistic theories—in particular, of the Sapir-Whorf hypothesis that language structures human thought and experience—for science fiction. Although he is interested, in this chapter, in why that thesis has such purchase for science fiction, his focus is on what science fiction contributes to a largely discredited linguistic theory. Drawing mainly on Babel-17, he shows both why the subject of language—and translatability—appeals to authors exploring strange alien encounters and the power and urgency of communication, and how science fiction gives material form and cultural context to linguistic theory, thereby drawing out the insightful creativity and the ideological underpinnings of the hypothesis.

Mutual borrowings between science and literary criticism are also the subject of Avery Slater’s chapter, in which she documents the journey of the term “autopoiesis”—the process by which a system reproduces and maintains itself—from its emergence in theoretical biology in 1970 through systems theory to literary theory and cultural criticism. Chapter 16 considers the appeal of that concept but also the wonderful irony, as Slater puts it, that the literary and cultural critics are not so much borrowing the term as “borrowing it back.” In her analysis of the strange history of the term and concept—which, she contends, began in a philosophical treatment of Don Quixote, mutated in its adoption by scientists, and returned to open new modes of inquiry in literary and cultural criticism—Slater illustrates the methodological similarities and differences between literary critical and scientific inquiry, but also the ways in which through their borrowings and reborrowings, they anatomize and expand each other.

Such borrowings make sense, according to Robert Peckham, because of the literariness of science, although that literariness is typically obscured by scientific claims to authority. In Chapter 17, Peckham shows how the use of sound in three works focusing on pandemics and biological containment offers insight into how our senses—in particular, visual and sonic—constitute our experience of the world. With his focus on the sonic, Peckham demonstrates the intrinsic politics of these ways of knowing. But he is interested as well in how the sonic can challenge the visual authority of epidemiology, and science generally, showing, for example, how it exacerbates the social and geopolitical inequities pandemics inevitably underscore. The literariness of these fiction and non-fiction works demands a reading of the “critical dissonances” produced by the scientific approach to these problems and offers insight into possibilities for a multi-factorial approach to pandemics that can potentially address them more effectively and reduce their augmentation of inequities.
The final two chapters in this section focus on two poets’ treatment of science and medicine as ways of making them more accessible to a broader readership, as a way of exploring their complexity (Jay Wright) or offering a critique of their assumptions (Max Ritvo). In Chapter 18, Steven Meyer chronicles the parallel development of experimental ideas pertaining to science and poetry. Jay Wright’s engagement with philosophy and physics, he contends, finds expression in poetic experimentation that juxtaposes “multiple symbolic discourses,” including physics, to simulate “a pluralistic cosmos.” This experiential poetics allows readers to grapple with complex scientific concepts.

Where Wright is interested in how these scientific ideas open the world to a more engaged inspection for a public unfamiliar with and perhaps intimidated by the complexity of the ideas, Max Ritvo’s interest was in publicizing his experience of genetics and scientific medicine for what it revealed about assumptions he sought to challenge. In Chapter 19, Lara Choksey shows how Ritvo turns his medical diagnosis, his treatment, and his dying into a poetic meditation that explores assumptions about the discrete and unique—and isolated—body that at once determine and are reinforced by scientific medicine. Considering how Ritvo’s poetry dissects as it engages with the contemporary concept of precision medicine, Choksey shows how Ritvo thereby offers an account of the human condition—and the value of the human community—that challenges the very premise of contemporary medicine.

ETHICS AND POLITICS

The chapters in this section are concerned with the ways in which literary works address the ethical and political questions that arise out of scientific research. They are interested in how literary works speculate about the broad implications of the social and cultural changes wrought by new sciences and technologies as well as in the difficulty of responding adequately to uncomfortable or politically inconvenient scientific knowledge. Taken together, these chapters offer insight into the nature of literary works, their differences from other forms of inquiry, and the various ways these works circulate in and intervene against the social realities in which they were produced.

Jenni G. Halpin takes up the quintessential literary template for thinking through the relationship between scientific discovery and social consequences, the Faust myth, in Chapter 20. In 1932, before the Manhattan Project provided the ultimate case study for scientific ethics, friends and students of Niels Bohr produced a play, written by Max Delbrück, called “The Blegdamsvej Faust” as part of a variety show traditionally held at an annual Copenhagen conference. The play reimagines the debates between Bohr and Wolfgang Pauli over the existence of the neutrino as the conflict between the Lord and Mephistopheles in Goethe’s Faust. Halpin navigates the Blegdamsvej Faust along two parallel axes, simultaneously understanding it as a student roast of the habits and mannerisms of their teachers but also as...
a sublimated articulation of the tensions fracturing the physics community at that time—in the process presaging all the joys and terrors twentieth-century atomic science would unleash.

In Chapter 21, Coleman Nye considers a contemporary Faust-style bargain between science and social progress in a study of in vitro flesh, which would allow for widespread meat consumption without requiring the raising or slaughtering of livestock. Artificial meat has been variously served as a marker of utopian futurity (as with the cruelty-free replicators of *Star Trek: The Next Generation*) as well as dystopian possibility and hypercapitalist global impoverishment (as in Margaret Atwood’s *MaddAddam* trilogy). Nye’s study explores multiple vectors of fictionality and journalistic reportage to explore how the concept of a future of in vitro meat is being “sold” to customers in the present by activating existing circuits of racial and social capital. In these transactions/exchanges, the power of agrocapitalist megacorporations extends to an entirely new market that will give them even more direct control over everything we consume.

Sherryl Vint’s Chapter 22 similarly explores the extraction of value from life itself through her reading of contemporary science fictions about biocapitalism and biotechnology. Her reading of Carrola Dibbel’s *The Only Ones* (2015) and Ben H. Winter’s *Underground Airlines* (2016) shows how literary works can register and agitate against the massive social changes produced by scientific discovery, in this case the way biocapital’s ecstatic promises of life extension and genetic perfection obscure the more sinister intensification of corporate wealth and social control. Science, we see in these novels, is never science by itself, but is always imbricated in existing networks of power—a reality that literature can help us understand and strategically assess/address.

Natalie Roxburgh explores a similar circuit between science, capitalism, and the consumer in her study of late-twentieth- and early-twenty-first-century American literary “neuronovels” about psychopharmacology. Chapter 23 interrogates the way Don DeLillo and Jonathan Franzen frame psychiatry as a potentially suspect pseudoscience whose trademark drugs threaten to flatten individual subjectivity into homogenized, universalized brain chemistry. “Pharmaceuticals offer useful fodder for contemporary fiction,” Roxburgh says, “because they are somewhere between science and technology, substances for treating an ailment and products manufactured according to a market demand resulting from the transformation of patients into consumers”—which the novels problematize through their figuration of psychopharmaceuticals as potentially fraudulent, potentially addictive, potentially harmful, and potentially life-saving. The novels pit neoliberal market imperatives against medical ethics and find both compromised when it comes to the pharmaceutical industry.

In Chapter 24, Kyla Schuller explores a historical instance of a political crisis caused by science and registered by literary history: the promulgation of racist and eugenic ideals by some of Anglo-American literature’s most
revered and celebrated writers. Here we find literature working not against science, as some heroic exemplar of “resistance,” but rather extending the most pernicious version of what circulated as knowledge. Schuller finds this “eugenic aesthetics” in literature not simply in the content of these works, but in their very form, which sought to “improve” its own readers toward some pseudo-evolutionary reproductive ideal. And the way these writers aligned their own reception with the health of the social organism is no mere historical oddity; as Schuller shows in her conclusion, it has an unhappy parallel in contemporary defenses of the humanities that insist on the power of high-prestige artistic objects from the Western tradition as an allegedly “civilizing force.”

Everett Hamner’s Chapter 25 reads three of Kim Stanley Robinson’s recent novels—New York 2140 (2017), 2312 (2012), and especially Aurora (2015)—as meditations on the crisis of political optimism in an era of mass extinction and climate disaster. Robinson’s well-known utopian thinking is here tempered by a Gramscian pessimism of the intellect, growing angry without also becoming despondent, and calling for long-term, intergenerational action to remediate the ecological crises caused by technoscience in the twentieth century. Hamner uses Robinson’s science fiction to link difficult political action in the present to the prospect of a better future, albeit one that can fully never escape the mistakes of the past (or, for that matter, cannot avoid making its own, new mistakes).

Chris Pak’s Chapter 26 offers an extended reading of oil and energy infrastructure systems in the science fiction genre, focusing on twentieth- and twenty-first-century figurations of petrocapitalism. In a time when the workings of oil capitalism are so ubiquitous as to seem nearly invisible, almost synonymous with modernity as such, how has literature attempted to register its presence and its consequences, as well as the ongoing geopolitical disruptions caused by the bottomless need to extract more oil from the ground? Pak discusses stories from as early as 1933 and as late as 2011, which figure oil simultaneously as incredible resource and enormous vulnerability, a diagnosis that only becomes more frantic and severe as the Western world’s reliance on oil grows both more unshakable and more precarious. As Pak shows, the cultural anxiety around oil ultimately turns this mode of storytelling to representations of oil as possessing its own agency, almost as a sinister Lovecraftian God, intruding on the human world—a figuration which helps us recognize the true enormity of petroculture’s radical break with the pre-oil, pre-carbon past.

In Chapter 27, Sofia Ahlberg similarly turns to the emerging genre of the “New Weird,” linking Jeff VanderMeer’s fantasy of a toxified exclusion zone, abandoned by and dangerous to humans, to the radical transformations of real-life ecologies produced by global warming and by industrial catastrophes like the Deepwater Horizon spill. Ahlberg argues that it is VanderMeer’s consideration of permeable boundaries and liminal spaces—metaphorized in the novel by skin—that helps the reader of the Area X books to push past an
overly rationalist, anthropocentric approach to the environment that assumes the exceptionality of human beings in favor of ways of knowing that foreground the interconnectedness of life. Skin, Ahlberg argues, is the point of contact between us and a world that is both us and not-us, an assemblage of connections between inside and outside that can reorient our thinking, not only in VanderMeer’s storyworld but in our larger time of crisis.

Finally, Jeff Gonzalez’s Chapter 28 uses Richard Powers’ *Gain* as the occasion to cognitively map the complex relationships among illness, masculinity, the environment, and biocapitalism. As Gonzalez notes, the frequent rhetorical attribution to cancer of a sort of malicious agential consciousness has a parallel in conspiratorial narratives about evil corporations—and lets us rethink the role of the consumer-citizen in resistance to both of these hostile alien agents. Powers thus ultimately suggests that we must think about the relationship between humans and megacorporations the way Ahlberg argued we must think about ecosystems, with the same sort of polyvalent, promiscuous mixing between insides and outsides that makes it hard to know where one begins and the other ends.

**Forms and Genres**

The chapters in this final cluster concern how science has changed literary forms and genres as well as, conversely, the ways in which literary works have challenged scientific categories and classifications. While these challenges certainly produce epistemological transformation, lead to new techniques or methods of analysis, and/or address ethical and political concerns, the focus of these chapters is on how the literary critical vocabularies of form and genre make boundary-crossing itself more visible. These chapters explore how ways in which the ongoing, multi-generational dialogue between science and literature is constantly producing new innovations in both fields of inquiry.

In Chapter 29, Kirsten E. Shepherd-Barr considers how scientific and medical science structured two American plays of the progressive era in the early twentieth century. Susan Glaspell’s *Inheritors* (1921) and Sidney Howard’s *Yellow Jack* (1934) consider genetics and epidemiology, respectively; considered from the perspective of a century hence, the two plays together show how robust our habits of dramatizing scientific discovery still are, as well as how assumptions about science and gender shape historical narratives.

S.H. Daw’s Chapter 30 examines Muriel Rukeyser’s manifesto *The Art of Poetry* in light of the development of quantum physics, showing how she seeks to “forge a new poetics responsive to this new scientific field.” Rukeyser’s combination of cutting-edge science with a reach back to the Transcendentalists of the mid-nineteenth century creates a new field for poetics appropriate to the governing epistemology of the twentieth century, an achievement for which Rukeyser has not received sufficient appreciation due to appropriative erasure of her work by some of her male contemporaries.
A different sort of look back at the nineteenth century can be found in Josie Gill’s Chapter 31, which seeks to understand how neo-Victorian novels (contemporary novels that are set in the Victorian period or which seek to reimagine or reinterpret classic Victorian literature) deal with the horrifically out-of-date racial presumptions of the era. The neo-Victorian novels seek to emphasize the poisonous nature of race thinking in science. While these neo-Victorian dramas seek to challenge the Victorians as well as the eugenic, pseudo-scientific “race realism” that was emerging in that time, the requirements of Victorianism as a historical genre made it difficult for these novels to ever fully break away from the racist presumptions of that period (or our own).

In Chapter 32, Michael Collins looks at the intertwined history of race, anti-racist activism, and IQ, showing how W.E.B. Du Bois deployed IQ testing as part of his larger project of education and enlightenment, in the name “of black survival within a racist world.” Du Bois, Collins argues, was no more able to speak back to “scientific authority” than any of us, and so was forced to maneuver within the epistemic terrain defined by the state’s embrace of IQ rather than refusing or transcending it. Posed and validated by the proper authorities, “I.Q. becomes an intractable and sprawling ‘fact’ everywhere that thought occurs”—forcing even Du Bois to accept its authority if he wants to be heard by the cultural elite of his moment.

Lindsay Michael Banco, in Chapter 33, considers the representation of the atomic bomb in comic books, exploring the ways nonfictional and historical comics try to represent the history of nuclear science. In particular Banco explores the antinuclear politics of such graphic narratives—always inflected by the retrospective, post-Hiroshima knowledge of the bomb as an epoch-defining horror—against the more complex history of the actually existing Manhattan Project. Because comics is an art form that always foregrounds its own artificiality and constructedness, Banco argues, they help us to see the constructedness of scientific narratives, as well as create an intervention point from which the possibility of other, nonnuclear worlds might emerge.

Lorenzo Servitje’s Chapter 34 uses comics in a similar fashion to explore a potential future of antibiotic-resistant microbes, serving as both warning and education about a science-fictional nightmare that is rapidly becoming our actual present. Servitje’s interdisciplinary approach foregrounds the difficulty in accepting the enormity of antibiotic resistance, even as it becomes an increasingly important part of contemporary medical practices. The comic strip deploys an aesthetic of cognitive estrangement to help readers understand both the enormous threat posed by such antibiotic resistant microbes as well as the historical and political-economic forces of austerity and impoverishment that are facilitating their rise.

Nathaniel Isaacson’s Chapter 35 explores the usefulness of this volume’s union to area studies, considering the use of robots and other artificial life-forms in recent Chinese-language film. Isaacson’s study explores how the
local use of robots in post-socialist Sinophone nations intersects with global concerns about automation, technoscience, and global capitalism.

In Chapter 36, Carlos Rojas introduces the “sick man of Asia” trope in Chinese literature, which uses medical discourse to diagnose social anxieties in China’s relation to the West. Analyzing the Taiwanese narrator of Luo Yijun’s novel Superman Kuong, Rojas argues that the sick man trope can be generative of identity and nationalist feeling, in this case as Luo’s novel explores Taipei’s contemporary relationship to multiple imperial formations.

Finally, Lindsay Thomas’s Chapter 37 uses quantitative analysis to model the connections between characters in extremely lengthy prose narratives, attempting to merge scientific and literary heuristics to produce a new sort of criticism. Thomas playfully refers to her chapter as an experiment leading to the development of a hypothesis, which is that character co-occurrence (“the average number of times any given character name appears with another character name in a 1,000-word slice of the novel”) can serve as a proxy for the length and complexity of a novel. In its articulation of a tendency across novels as well as its discovery of an interesting outlier (Marlon James’s 2014 novel *A Brief History of Seven Killings*, which contains an unusually high co-occurrence index for a novel of its size), Thomas’s method models how quantitative, data science-oriented approaches to literature can help us uncover new literary truths.

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In view of Latour’s timely reminder that arts and theory should bring us closer to the facts, the critical project of Arnold’s “belles lettres” remains very much the same, and very much coincident with contemporary scientific practice. For, as Latour (2004) insists, and as this collection shows, the cultural critic “is not the one who debunks, but the one who assembles… not the one who lifts the rugs from under the feet of the naïve believers, but the one who offers the participants arenas in which to gather” (246). A manufactured culture war between the arts and sciences is certainly not to blame for today’s ugly post-truth moment, but their continued coalition is the essential arsenal needed in the wake of our growing global crises, including climate change, structural racism, rapidly expanding income inequality, and the COVID-19 pandemic that is ongoing at the time of this publication. It is just such a collaborative gathering space that our volume has assembled.

**Note**

1. For an account of mid-twentieth-century molecular biology and its development alongside emerging computation technologies and information theory, see Lily Kay, *Who Wrote the Book of Life?: A History of the Genetic Code* (Stanford University Press, 2000). Notably, Kay challenges the metaphor of gene as code because, among other things, “technically speaking it is not a code” (6).
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