# *Introduction*

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Traditions of humanistic thought and activism, and traditions of scientific investigation and practice, admit of such variation across time and place that it can be a dizzying task to grapple with one or the other let alone both together. That said, understanding at least some of the many, deep connections between these richly varied traditions seems crucial if we are to think well – perceptively and wisely – about how we may hope to connect them today and in the future. It is not hyperbolic, I think, to suggest that humanistic aspirations for the dignity and well-being of persons and the very integrity of the world in which we live have never been more intimately connected to the nature and consequences, whether intended or unintended, of our science and technology. This book is an attempt to illuminate a number of striking relationships between humanistic thought and science – and to help us consider the promise and challenges inherent in the foremost ambition of contemporary humanism *for* science: that it may serve to improve the human condition, broadly conceived.

Described this way, the project of this volume could easily have been a massive undertaking, encompassing a detailed intellectual history spanning millennia concerning the development of humanism, science, and relationships between the two. Our goal, though, has not been to write the encyclopedia this suggests but, more modestly, to motivate something of a philosophical agenda. It is fair to say that while issues *relating to* science and humanism pervade the history of ideas, the topic itself has been for the most part neglected in recent years and in contemporary discussions of science and society, even while the inhabitants of our planet are beset by mounting challenges on a global scale. Given the importance this suggests of a return to thinking about connections between humanist aspirations and scientific practice, and before describing more concretely some of the seeds we are attempting to sow here, let me make two further, preparatory



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remarks – one about reading the book, and another about the partiality of what we have been able to tackle.

First, then, who are these essays for? We have tried to make them accessible to a wide audience. While we hope and expect that philosophers, scientists, historians, and other scholars will be interested – after all, the discussions here range over the philosophy of science (and values), the history of philosophy and science, ethical, social, and political matters, and the history of ideas – we also hope to reach people beyond the academy. Granted, the ease with which these chapters may be read will, of course, vary somewhat with one's background interests and willingness to look up the occasional, unfamiliar term, but we have tried to avoid excessive jargon and to explain more technical ideas where they are helpful. It is worth noting the reason for this, I think: To the extent that we as a species share a collective interest in making this world a better one, it is incumbent on us, in as many ways as we can, to bring experts and nonexperts together to think about how we are going to proceed, collectively, and nowhere is this more urgent than in the domain of science and humanism.

Even with the best of intentions, though, we have only scratched the surface of the many topics that could easily fall within the remit of our title. As already noted, the subject matter is spatiotemporally immense, and we have done our best to sample some key parts of it. Furthermore, since no one is an expert in everything, some chapters focus more centrally on humanism, some more centrally on science, and some more centrally on issues crucial to understanding relations between the two. In other words, not all of these chapters engage in equal measure with all of these things; and yet, together, they are all pieces of the larger puzzle of science and humanism. With this in mind, I hope this book will be read as I envisioned it, optimistically, as something intended to be greater than the sum of its parts: While readers should certainly feel free to zero in on bits and pieces of it, the volume as a whole asks us, I hope – readers and authors alike – to think about how the larger picture fits together, or *should* fit together. No one chapter can do this, but each one is poised to help, and to this end I believe we have put a good deal on the table, and have wedged open some doors to further questions, discussions, and answers.

Turning now to the content, let me start with the obvious fact that many different but connectible views have been associated with the term "humanism" historically. Similarly, the term "science" has been associated with an amazing diversity of practices of inquiry. The common thread running through this book is a persistent strand of humanism conceived as a broad approach to thinking about and acting in the world (as well as

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various, more specific views of humanism, some in conflict with this strand), which has coevolved with the development of the sciences: the idea that in order to understand the natural and social worlds in which we live, and ourselves, and to act in pursuit of the common good, special prominence should be given to science. Whether in the form of knowledge and technologies to help feed and shelter people, to treat disease and injury, to address harms done to our planet, or to promote tolerance, equality, and freedom, the application of the fruits of scientific investigation by reason is crucial to shaping a better, collective future.

This is a powerful idea, but on reflection, it is immediately apparent that there is nothing intrinsic to the sciences that suggests they are or must be causes or facilitators of social or moral progress. Indeed, in some (and some notorious) cases, scientific work has been a cause or a facilitator of substantial harm. This reality calls for careful scrutiny and vigilance; our ideals for the interweaving of the sciences and humanistic thought call for articulation in every age. In hopes of promoting this sort of contemplation presently, let me proceed now to describe how the contents of the book are organized – into three parts – marking some natural divisions between spheres of thinking about science and humanism. Part I is concerned with certain relations between scientific and other forms of theorizing and practice, such as philosophical and moral reflection, which are intimately connected to humanism. Part II explores links between science and humanism in some venerable traditions of philosophy this past century, as possible sources of inspiration today. Part III engages with contexts of scientific practice, examining roles that philosophers, scientists, and others have played and *could* play in addressing (for example) the welfare of women, minorities, marginalized groups, and the environment, as well as our ethical and social responsibilities.

Appreciating that there are different ways the book *might* have been organized, and given that the thematic unity of each of the parts just described is inevitably somewhat abstract, let me elaborate next on some rationales for structuring the volume this way, and on the more specific issues discussed in each chapter.

Part I, "Interrelations: Scientific and Other Forms of Knowledge." The essays in Part I are all, though in different ways, concerned with relations between scientific and other forms of belief and knowledge (philosophical, moral, etc.), the latter of which are central to conceptions of humanism. Chapters 1 and 2 are natural companions, drawing on histories of humanism to discuss various affinities and antipathies of this tradition to science. In Chapter 1, "What Is Science For? Modern Intersections of Science and

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Humanism," Anjan Chakravartty argues for a return to a vital aspect of a long arc of intellectual history connecting a broad, humanistic worldview and scientific inquiry, which seems to have gone missing in the present: a conception of the aim of science in terms of human and planetary welfare. Shifting from the notion of a general worldview, however, to more specific views that have been associated with humanism in philosophy, the extent to which the latter are congenial to the sciences has varied significantly. In Chapter 2, "Varieties of Philosophical Humanism and Conceptions of Science," Ian James Kidd explores this range of positions, focusing on those that are or have been critical of science and scientific modernity.

Completing Part I, Chapters 3 and 4 are also in a sense companions, each considering a different aspect of the notion of *scientism*, commonly associated with an overly strong confidence in the certainty or scope of scientific knowledge. While it is fair to say that humanists have not, necessarily or as a matter of course, subscribed to scientism historically, it is not unusual to hear scientistic-sounding claims in the public sphere of humanism today. The upshot of Chapters 3 and 4 is that a humanistic understanding of science should not be scientistic: The first of these chapters targets a version of scientism according to which the sciences are the ultimate adjudicators of objectivity; the second targets a version according to which the sciences are capable, in principle, of describing the natural world completely. In Chapter 3, "Scientism and the Limits of Objective Thinking," Gurpreet Rattan argues that while scientific thinking may *exemplify* the limits of objective thinking about the world, it does not itself *determine* what these limits are. They are determined, he contends, by norms that govern critical reflection more generally. In Chapter 4, "Scientism: Reflections on Nature, Value, and Agency," Akeel Bilgrami maintains that the presence of value in nature cannot be understood by means of scientific inquiry and description alone, and that appreciating this is crucial to understanding how we act in the world.

Part II, "Inspirations: Philosophies of Science and Its Social Role." Part II turns to influential movements in the recent history of philosophy to bring a number of accounts of science, values, and implications for humanistic understanding and action to the foreground. The spotlight here alternates between the two most important, explicitly humanist philosophical movements of the earlier twentieth century: logical empiricism and American pragmatism – the first two chapters exploring the formulation and development of certain humanistic dimensions of each of these movements, respectively. Chapter 5, "Scientific Humanisms: Sarton, Reichenbach, and the Crisis of Western Science after World War

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I," by Alan Richardson, considers various, overlapping reflections on science in the soul-searching aftermath of the Great War, including the logical empiricism of Rudolf Carnap and Hans Reichenbach, and the New Humanism of historian of science George Sarton. In Chapter 6, "John Dewey, Humanism, and the Value of Science," Aleksandra Hernandez traces the concurrent development of Dewey's progressive, pragmatist humanism, which championed the sciences in the service of human flourishing, responding in part to hostilities toward science expressed by conservative literary humanists of the time.

Chapters 7 and 8 likewise examine logical empiricism and American pragmatism in turn, but with the goal of linking some of their philosophical contentions, in a more targeted way, to specific matters of present concern. The past several decades have witnessed a groundswell of feminist (and other) literature taking particular interest in forms of bias and inequity in relation to science, and in Chapter 7, "Sociopolitical Engagement and Scientific Value Freedom: The View from the Left Vienna Circle," Thomas Uebel charts thematic connections and differences between an advocacy for social, economic, and political reforms by prominent logical empiricists this past century and theorizing about similar ambitions more recently. Chapter 8, "The Pragmatic and the Religious Functions of Science," by Matthew J. Brown, draws another sort of connection between thinking about the sciences and an issue of perennial humanist interest – in this case, the question of religion. Brown contends that a pragmatist emphasis on science as a problem-solving activity has the potential, especially in Dewey's hands, for elaborating how the sciences may fulfill social and personal roles that are often (and more typically) associated with religion, concerning questions of meaning and our place in the world.

Part III, "Interventions: Scientific Knowledge and Social Imperatives." After the more conceptual discussions of Part I, and the reflections on some especially significant, theoretical views from our recent past in Part II, Part III is devoted to thinking about relations of science and humanism in a more concrete vein, wrestling with particular issues and cases of science in society. In Chapter 9, "The Present Plight of Science, and Our Plight," Janet A. Kourany poses several questions about the capacities of the sciences to help facilitate desirable outcomes given the many serious challenges we face, some of which threaten the integrity of science itself, as a prelude to thinking about how these capacities may be enhanced. Then, focusing on these and related questions in part through an examination of the case of global agriculture, Chapter 10, "Science and Justice: Beyond

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the New Orthodoxy of Value-Laden Science," by David Ludwig, urges us to go beyond thinking about the roles values play in composite systems of scientific inquiry and science-and-technology-based applications, to think about what it would mean for these systems to be *just*, not least in relation to those directly impacted by them.

These themes of learning from cases, and bringing the sciences to bear in society (and in the world as a whole) to help combat marginalization and promote more widely distributed well-being, continue through to the end. In Chapter 11, "The Human Sciences and the 'Theory of Women'," Catherine Wilson considers a history of "scientific sexism" implicated in nineteenth- and twentieth-century subordinations of women, and the genesis and development of more recent science that, in contrast, is straightforwardly supportive of moral and political values of equality, serving to oppose these earlier forms of injustice and oppression. Perhaps one day, a natural humanist inclination may lead us to establish more representative sciences that, as a consequence of their own principles of operation, investigate our natural and social worlds in ways that help us to address such issues of broader flourishing more systematically. In Chapter 12, "Toward More Inclusive Science: New Challenges and Responsibilities for Scientists, Philosophers, and Citizens," Stéphanie Ruphy examines an increasing demand (in many liberal democracies, for instance) for greater participation by citizens in scientific inquiry in hopes of better aligning research with the needs of society, and the new responsibilities for each of us this would entail.

In closing, let me return to my earlier remarks about the motivation for a book like this one, at this time. Arguably, though not taking center stage as a clear or pivotal problematic in its own right for over half a century, a return to relationships between science and humanism has been prefigured in other discussions more recently. A number of the chapters in this volume could be read in isolation as fitting contributions to these allied literatures – say, regarding the nature of scientific knowledge and its relations to other, putatively distinct forms of knowledge, or regarding the roles of science in society, or regarding connections between values and the sciences. Viewing these issues through the lens of humanism, however, encourages us to think in a more synthetic way about what science *is*, and what it could be, as a now-dominant component of our many cultures – to stand back from those allied literatures and see the sciences more transparently in these more synthetic terms. It is my hope that bringing these essays together with this explicit framing in mind may induce us to think about the contributions that such studies may make, beyond the insights

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they surely afford within the confines of otherwise separate discussions, to a spirited consideration of something greater.

Thus, by design and however partially, the collection of essays to follow covers extensive ground. As noted at the start of this Introduction, over a long stretch of intellectual history, a great many facets of the nexus of science and humanism have emerged. In the face of persistent and growing challenges in our own times, it seems crucial that we consider these many facets anew, in the present, for our own good and for that of the planet. In compiling a varied sample of the space of issues constituting this nexus of science and humanism, I hope we have succeeded not only in conveying its breadth but also in prompting further questions and deliberations on these and related matters. I hope that readers will engage with these chapters and ponder the aspects of science and humanism to which they are most relevant, reflecting and building upon them where they agree, and contesting and improving upon them where they do not, all in the spirit of a critical yet collaborative project, and with the ultimate goal of working toward an articulation and fulfillment of our best and most inspiring humanistic ambitions for science in the twenty-first century.

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