

## **Introduction**

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In an introduction to a volume such as this it is standard to offer a synoptic account of the contents, with a general statement of the goals of the volume and summaries of the material contained within. The tone taken is scholarly and impersonal, exemplifying standard academic standards.

A book on interdisciplinarity raises the possibility of a different approach. Examining the current methods and goals of knowledge production—at its core, the remit of a volume on interdisciplinarity—challenges the academic status quo. Conventions concerning the proper depth of inquiry or degree of academic rigor marginalize unconventional claims or approaches, which are often hard to document or measure. And so interdisciplinary work is often accused of dilettantism and shoddy standards. These dangers are real enough. But at its best, interdisciplinarity represents an innovation in knowledge production—making knowledge more relevant, balancing incommensurable claims and perspectives, and raising questions concerning the nature and viability of expertise.

Rather than simply a summary of what is contained within the volume, this introduction also constitutes a reflection on interdisciplinarity and the future of knowledge.

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Most people think of knowledge like they think of money—that they can never have enough of it. But the beneficial nature of continued, indeed infinite knowledge production is the great unexamined premise of our justly named “knowledge society.” It is a belief that has guided the progress of Western Civilization since the Enlightenment.

This despite the fact that it is evident that knowledge can sometimes do more harm than good. After all, even robust knowledge can be misapplied: its introduction ill-timed, or its variant forms need the counter-weight of other kinds of knowledge in order to answer a question or solve a problem. The pursuit of knowledge also carries a variety of personal or moral dangers. Seeking knowledge to exercise greater control over the world can, for instance, betray a lack of control over oneself. Or it can become dysfunctional, obsessive, or escapist, hindering effective action. These are obvious dangers, familiar to all lovers of knowledge.

But our fundamental assumption is rarely questioned. Knowledge—rather than, say, moderating our desires—is seen as the answer to all of our quandaries. And so we are awash in all the cognates of knowledge: data, facts, information, statistics, and records. But has this cornucopia of knowledge led to an increase in wisdom? Has it led to happier, more fulfilled lives? Research on happiness (e.g., Lane, 2000) indicates that beyond a certain point additional wealth leads to no increase in felt satisfaction with one’s life. Could the same be true for knowledge? Should knowledge also be subject to an Aristotelian mean?

Still the data keeps pouring in, from university think tanks, biotech labs, space probes, and the reaches of the Internet. NASA’s latest project is called the Lunar Reconnaissance Orbiter (LRO). In round numbers it will return 200 megabytes of data a day of ‘spectral image cubes.’ A book

may total 1 megabyte of data, so the LRO will return the equivalent to 200 books a day of data. This is, of course, only a drop in our ocean of data: a recent IBM commercial announces that each day we generate eight times the knowledge contained in all the world's libraries—as if this were something to celebrate rather than be concerned about.

To one degree or another, the contributors to this volume share the intuition that the solution to our social, political, intellectual, and economic problems does not simply lie in the accumulation of more and more knowledge. What is needed today is a better understanding of the relations between fields of knowledge, a better grasp of the ways knowledge produced in the academy moves into society, and a better sense of the dangers as well as the opportunities of continued knowledge production.

As a whole, then, this volume focuses on the question of what is *pertinent* knowledge. It also implicitly raises the question of whether, in a given situation, knowledge is pertinent at all.

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The *Oxford Handbook of Interdisciplinarity* (HOI) surveys the state of interdisciplinary knowledge today—knowledge that spans the disciplines and interdisciplinary fields and crosses the space between the academy and society at large. Its 37 chapters and 15 sidebars provide both a snapshot and a critique of the state of knowledge integration as interdisciplinarity approaches its century mark. Despite the limitations inherent to such a project we hope that it fulfills the goal of all handbooks: to supply a ready and concise compendium of information about a topic of increasing importance.

Of course, when the subject is interdisciplinarity the very idea of a compendium becomes problematic. One may ask whether the editors are latter-day Encyclopedists—or unreconstructed positivists—who propose to offer a unified account of all knowledge. Or perhaps to provide a *mathesis universalis* of post-modern culture, summarizing all learning within the bounds of a single volume. The Oxford HOI harbors no such ambitions. It does not offer a synthesis of the disciplines, an overarching theory of interdisciplinary education, or a universal methodology of inter- or transdisciplinary research—although some of its individual authors may harbor such aspirations.

What, then, are the goals of this Handbook? First, it provides a picture of current efforts of knowledge production that cross or bridge disciplinary boundaries (“interdisciplinarity”), and of the growing effort to make knowledge products more pertinent to non-academic actors (“transdisciplinarity”).<sup>1</sup> Building from previous such efforts,<sup>2</sup> HOI offers the most synoptic and

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<sup>1</sup> In the title of this volume, following US generic usage, ‘interdisciplinarity’ covers both the integration of knowledge across disciplines, narrow and wide, and the intercourse between (inter)disciplines and society. The latter often goes by the name of transdisciplinarity, particularly in Europe. Where further distinctions are needed they will be made.

<sup>2</sup> Among those who have preceded us, there have been monographs (e.g., Lattuca, 2001; Stehr, 2006; Klein, 1990, and 2005, and 2010; Fuller, S. and J. Collier, 2004; Repko, 2008); anthologies of reprinted articles (Newell, 1998); and collections of original essays (e.g., Weingart and Stehr, 2002; Hirsch Hadorn, et al., 2008).

broad-based account of interdisciplinarity to date. Its original essays bring together many of the leading thinkers on interdisciplinarity and its resonances in particular subject domains, including—crucially—accounts of the institutional and administrative aspects of interdisciplinarity.

Second, and more to the point here, HOI heralds the centrality of philosophic reflection for 21<sup>st</sup> century society. Not, it must be immediately stated, philosophy as it was done across the last century. From the perspective of the history of philosophy, 20<sup>th</sup> century philosophy was an aberration—a field disciplined, and a specialist's domain, one more regional expression of knowledge in principle no different from other fields such as geology or chemistry. (The point applies generally across the humanities, which embraced specialization rather than seeing their role as at heart integrative in nature.) While philosophers have always had a fraught relationship with their community, in the last half of the 20<sup>th</sup> century the connection was broken: academic philosophy was characterized by great technical acumen wedded to societal irrelevance (Kuklick, 2000).

Interdisciplinarity represents the resurgence of interest in a larger view of things. As such, interdisciplinarity is inherently philosophical, in the non-professionalized and non-disciplined sense of the term. The impetus for this was in the first instance extra-academic in origin. As knowledge production expanded, with much of it since World War Two funded by the public, demands for accountability have grown. The assumption of a linear or automatic connection between knowledge and social benefit has given way to sharp questions about the usefulness of knowledge. The power of knowledge to constantly overturn society (Marx: all that is solid melts into air) calls for a field of study, or an anti-discipline, devoted to the examination of knowledge in the largest possible compass. An anti-discipline, because it is crucial that such a study resist being once again drawn in by the gravitational pull of disciplinary approaches and standards.

The fields of social epistemology, science and technology studies, and science policy each have made important efforts in this direction. However, philosophy and the humanities—before they became exercises in logic chopping and nook-dwelling expertise—had the best claim and pedigree to being broad and incisive studies of the relation between knowledge and the good life. It is a 20<sup>th</sup> century irony that just when anti-disciplines were most needed the humanities withdrew into specialization. To be clear: this is not to place the discipline of philosophy over other disciplines. It is rather to state that, in an ex post facto manner, the very search for and challenging of disciplinary standards *is* (or at least, *was*) philosophy. The corollary is that insofar as a field becomes disciplined it cannot offer the peculiar kind of insights that our times require.

To state it again: this volume does not seek to somehow constitute a unified field theory or methodology of all knowledge. Such dreams are chimerical: there never will be *the* interdisciplinary method any more than there exists *the* scientific method. Interdisciplinarity represents a new word for a perennial challenge which will never be fully answered. Experienced hands can offer hints and rules of thumb constituting a rough theory and practice of interdisciplinarity. The chapters presented here provide a number of such insights. But success

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at integrating different perspectives and types of knowledge—whether for increased insight, or for greater purchase on a societal problem—is a matter of manner rather than of method, requiring a sensitivity to nuance and context, a flexibility of mind, and an adeptness at navigating and translating concepts.

In aggregate, the 52 essays presented here represent a snapshot of the current and evolving state of academia-based knowledge production in the early years of the 21st century.

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In her chapter Julie Thompson Klein offers a masterful set of definitions of ‘interdisciplinarity’ and other cognate terms. But the term may be approached in another, more psychological and archeological manner, where we are alive to more obscurely felt resonances. ‘Interdisciplinarity’ often functions apophatically: it announces an absence, expressing our dissatisfaction with current modes of knowledge production. It contains a collective unconscious of worries about the changing place of knowledge in society, and expresses a feeling that the academy has lost its way. Excessive specialization, the lack of societal relevance, and the loss of the sense of the larger purpose of things are tokens of these concerns.

The assumptions that we have relied on—that knowledge is inherently beneficial, or that scientists and scholars can justify the pursuit of knowledge in terms of “curiosity” or the innate love of knowledge—now have the faint, yet unmistakable, scent of anachronism. In a similar manner, academic research programs are often badly out of step with our needs on the ground. Climate research within the US continues to be funded at two billion dollars a year, though it is unclear what further insights are likely to result. Climate change is almost certainly occurring, and it is almost certainly caused by human activities; but greater uncertainty or greater specificity than that is unlikely. Similarly, within the humanities, the philosophy of science has been “pure” for decades, built on the assumption that the epistemological aspects of scientific research can be separated from the social, ethical, political, economic, and religious causes and consequences of science. Only the former counted as “the philosophy of science”—while all around us, science and technology were transforming our lives. The philosophy of science was disciplined, when it needed to be interdisciplinary.<sup>3</sup>

“Interdisciplinarity” should not be treated as a shibboleth or a sign of one’s advanced thinking. Neither is it an incantation that will magically solve our problems. Interdisciplinarity is simply a means. But to what end? Pragmatically put, toward the ends of greater insight and greater success at problem solving. More fundamentally, however, interdisciplinarity is a means toward the end of preserving or achieving the good life in a complex, global, rapidly innovating society. That is, interdisciplinarity constitutes an implicit philosophy of knowledge—not an ‘epistemology,’ but rather a general reflection on whether and to what degree knowledge can help us achieve the perennial goal of living the good life. It is the newest expression of a very old question.

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<sup>3</sup> One can find tentative moves in a new direction, for instance in the 2006 formation of the Society for the Philosophy of Science in Practice.

This point needs to be stated squarely, because in a global age when pluralism and relativism have become default positions, means (such as new technologies, or new techniques of knowledge production) have a tendency to become ends. Despite the riches that it has brought us, disciplinary knowledge has tacitly functioned as an abdication. By focusing on standards of excellence internal to a discipline academics have been able to avoid larger responsibilities of how knowledge contributes to the creation of a good and just society.

The worst abdication has been by the humanities. Intimidated by success across the sciences, the humanities also embraced an analytic model of knowledge production. A few protested: at the beginning of the last century William James spoke of the “plaster-grey temperament of our balding young PhDs boring each other in seminaries, and writing those direful reports of the literature in the ‘Philosophical Review’.” But most interpreted the change in positive terms as an increase in rigor. Making a point so obvious that he places it in rhetorical parentheses, University of Chicago philosopher Brian Leiter stated in 2007 that we must aim for the highest possible pitch of philosophical rigor: “(Which ‘camp’ of philosophy could possibly be committed to less careful analysis, less thorough argumentation?)” But rigor should not be our paramount value. It must be balanced with other virtues such as timeliness, cost, and pertinence to one’s audience. Rigor of argumentation—like knowledge production itself—should be subject to a mean.

One discerns a growing movement to reflect on such matters, which sometimes goes by the name of the philosophy of interdisciplinarity. This is a positive development, but we should be alive to the dangers of disciplinary capture, where new questions become just one more regional study or specialist’s nook, as has happened with most new attempts to make connections across varied domains. At the very least, if we are going to have a philosophy of interdisciplinarity, it should be complemented by philosophy *as* interdisciplinarity.

The former would be given over to philosophical specialists who address questions such as whether ‘interdisciplinarity’ carries any distinctive epistemic content and whether there are specifically interdisciplinary objects or methodologies. It would be another ‘philosophy of...’—another species of the philosophic enterprise. Rigor would be its paramount intellectual virtue. The philosophy of interdisciplinarity would treat reflections on interdisciplinarity in a *disciplinary* manner, as a discrete domain of reflection. In time this study would result in a scholarly, peer-reviewed literature, conferences, and journals.

In contrast, philosophy as interdisciplinarity points toward something closer to what Heidegger called fundamental ontology, or in his later writings, *Denken*. It strikes a balance between breadth, depth, timeliness, and societal relevance. Moreover, it constitutes a philosophical *practice* where philosophers and humanists work as much outside as within the study. Call it field philosophy, on analogy with field rather than lab science: philosophical spirits (with or without a PhD in philosophy) participate at the project level with others such as scientists, engineers, and policy makers, community groups or NGOs, helping to draw out the philosophic dimensions of controversies that stymie progress (Frodeman, 2008). Philosophy as interdisciplinarity would not eschew theoretical questions; quite the opposite. But its theory would be rooted in and always return to extra-philosophic practices.

More particularly, the nature and possibility of expertise would be central to its concerns. The literature on expertise has grown significantly in recent years,<sup>4</sup> but it has not connected its points to questions of interdisciplinarity. It is noteworthy, but rarely noted, that the pursuit of specialization today lacks epistemological warrant. Specialization and expertise are built upon two assumptions—that it is possible to get down to the bottom of things, and that it is possible to study parts of the world in isolation from the world at large. The first of these are undercut by the work of modern physics, which suggests that there are no Newtonian ‘simples’ or irreducible pieces of matter to be found. (And if there is no bottom to things, how deep is deep enough?) More generally, however, this is the everyday experience of those in academic life. Every question raises another question, every argument a counter-argument, ad infinitum.

Secondly, our assumptions concerning the viability of expertise has been guided by the metaphors of the laboratory, where the separation of a bench experiment from the world at large has been thought to be relatively epistemologically unproblematic. Certainty becomes possible when we make conditions and results replicable by controlling the materials used and constraining the parameters of the experiment. The upshot: robust results, but within a self-contained bubble. When those results enter the larger world we lose our controls, with often quite unexpected results.

It turns out that the world is more ecological than we had hoped. The epistemological pretensions of laboratory science have been dashed: rather than it being possible to study phenomena in isolation, everything is implicated with everything else, at least potentially. We can go deeper into a given subject only by passing over examination of the lateral connections between that subject and the rest of the universe of thought and action. But this bias for the deep rather than for the broad is rarely defended. It is in fact indefensible. Nonetheless, specialization and expertise remain the coin of the academic realm, for reasons of ease of measurement rather than any inherent virtue to the approach.

Although greater clarity and depth of insight is always possible, life is lived *in media res*. Every topic of research is infinite; there is no final or unimpeachable answer that does not give rise to another question. Current standards for what counts as expertise in a given domain are as much a reflection of political and sociological factors such as societal relevance, funding streams, or intellectual fashion as they are of inherent epistemological standards. If this point is not yet reflected in disciplinary peer review and standards for tenure and promotion, it has been recognized by institutional bodies such as the National Research Council, which recently has depicted a profusion of interdisciplinary activity that challenges conventional notions of the static nature of expertise (NAS, 2004).

Reality does not allow us to control its parameters. There is no beginning or end to thinking, no straightforward path to scholarly relevance. It is as if, in our drilling down into the bedrock of knowledge, our drill bit strikes open air—revealing a cavern with a variety of wonders, but with no imperative concerning which direction we should head. Of course it is possible to know things: airplanes fly because they are competently designed; certain interpretations of Plato are better than others; we trust our physician’s interpretation more than our own. But these cases are

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<sup>4</sup> See, for instance, Crease and Selinger, 2006, Ericsson, et al, 2006, and Collins and Evans, 2007.

proximate. The densely imbricated nature of existence means that expertise has limits—and that these limits cannot be defined beforehand.

Confucius claimed: “to know that you know what you know, and to know that you don’t know what you don’t know, is true wisdom.” The problem with this dictum is that it is very hard to draw the boundary between one and the other. Any knowledge that we possess—with the obvious exception of those domains we construct ourselves, such as the deductive world of geometry—is intrinsically fallible, proximate, and unbounded. Attempts to understand the world or any part of it need to be inter- and transdisciplinary in nature—even if this means that we lose the comfort of disciplinary guarantees of expertise.

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Identifying the optimal structure for a Handbook of Interdisciplinarity raises a number of ontological and taxonomic issues. Disciplines are not simply mirrors held up to reality. They are economic devices and psychological supports as much as reflections of the way things are. Their boundaries are permeable and subject to movement. From the outside disciplines can appear conceptually unified, but those within often find themselves in internecine conflict. Analytic and continental philosophers argue over who is a ‘real’ philosopher; geology and biology departments house both systematic and historical approaches; the social sciences struggle over qualitative versus quantitative methods. In response, an account of interdisciplinarity needs to be tentative and flexible in nature.

The sections and chapters included here try to mark out the major boundary crossings between disciplines and between academia and society. Nonetheless, difficult judgments abound. Should there be a single article on interdisciplinary social science, or individual chapters on geography, sociology, and economics? A chapter on the transdisciplinary nature of environmental concerns, or one more tightly focused on, say, climate change? Individual authors were chosen through a combination of stature, the editors’ knowledge and contacts, and availability. The result is a collection of authors—many of whom are scholars of international reputation—whose views on interdisciplinarity are often quite at variance with one another.

The chapters themselves are ordered in terms of a fivefold division. Part 1, “The Terrain of Knowledge,” offers a set of historical, taxonomic, and philosophic accounts of the genesis and development of disciplinary knowledge. The chapters of this section constitute the most synoptic of the five divisions. In “A Short History of Knowledge Formations” Peter Weingart provides a summary account of the development of the disciplines. Julie Thompson Klein’s “A Taxonomy of Interdisciplinarity” provides the definitions of terms relied on by the rest of the authors of this volume. And Wolfgang Krohn’s “Interdisciplinary Cases and Disciplinary Knowledge” frames interdisciplinary problem solving in terms of the complexity and contingency of case work.

At turns descriptive and evaluative, the chapters of this section explore the overall landscape of interdisciplinarity, providing critical commentaries on the possibility, use, and desirability of interdisciplinary knowledge. Thus Steve Fuller challenges the ‘Whig’ sense of intellectual history by offering his own account of “Deviant Interdisciplinarity,” while in “Against Holism”

Dan Sarewitz points out the limits of interdisciplinary approaches to knowledge. All told, this section is likely to be of greatest interest to readers concerned with the historical and theoretical dimensions of interdisciplinarity.

Part 2, “Interdisciplinarity in the Disciplines,” begins from knowledge as we find it today in the academy and explores the distinctive manifestations of interdisciplinarity from specific disciplinary perspectives. The seven chapters of this section make it clear that interdisciplinarity manifests itself differently in different disciplinary contexts—that “Interdisciplinary work by an art historian looks markedly different from that by a sociologist of art.”<sup>5</sup> Early reviewers of this work pointed to the paradoxical nature of providing an account of interdisciplinarity in terms of the disciplines. But the paradox is only apparent: disciplinarity is the precondition for interdisciplinarity. As a self-conscious movement interdisciplinarity only arose in the face of academic specialization that so markedly accelerated in the late 19<sup>th</sup> century.

While the chapters of this section overlap to some degree, they largely break down along discrete disciplinary lines. In “Physical Sciences” Robert Crease treats physics as an opportunity to explore the challenges of coordination, quality assessment, and communication across different academic cultures—issues that bedevils all interdisciplinary work. Craig Calhoun and Diana Rhoten examine the two great interdisciplinary engagements of the postwar era within the “Social Sciences,” the development of area studies and of quantitative research methods. Warren Burggren and colleagues take on the daunting task of summarizing the varieties of interdisciplinarity within the “Biological Sciences,” ranging from biochemistry to medicine to mathematics to bioengineering. And in their chapter on “Art and Music Research” Julie Thompson Klein and Richard Parncutt emphasize the universality of art and music across cultures while reviewing new critical approaches to art and music scholarship and teaching.

In their chapter on “Engineering” Patricia J. Culligan and Feniosky Pena-Mora use civil engineering to focus their analysis of the future responsibilities of engineers within society. Sarah Fredericks’ examination of “Religious Studies” treats religion as an academic discipline distinct from religious practice and explores the play of anthropology, sociology, philosophy, and other disciplines in the field. In the final chapter of this section, Carole Palmer’s “Information Research on Interdisciplinarity” provides an overview of research on interdisciplinarity in Library and Information Science and discusses ways to manage the problem of information scatter.

Part 3, “Knowledge Interdisciplined,” examines the development of regions of knowledge that have grown up in the spaces between established disciplines (e.g., Sheila Jasanoff on “Science and Technology Studies”), or have formed as both their own specialty and as a methodology or perspective for other domains of knowledge (e.g., Johannes Lenhard on “Computation and

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<sup>5</sup> Ken Wissoker, “Negotiating a Passage between Disciplinary Borders,” *Items and Issues* [Social Science Research Council], vol. 1 (Fall 2000), p. 1.



Simulation”). Some of these regions are new—see for instance Paul Thagard’s account of “Cognitive Science”—while others are as ancient as the tradition of Western thought itself (Anne Balsamo and Carl Mitcham’s account of “Ethics”). It remains an open question whether these interdisciplines will evolve into disciplines, or whether they embody different models for intellectual activity.

The effects of cultural and technological innovation on knowledge also receive attention here. Cathy Davidson looks at cross-fertilization effects in “Humanities and Technology in the Information Age,” while in their chapter on “Media and Communication” Adam Briggie and Cliff Christians offer an account of the consequences of new media on knowledge production, dissemination, and consumption. Prasad Boradkar’s chapter on “Design as Problem Solving” examines the transdisciplinary developments of material culture from spoons to cities. Finally, in “Learning to Synthesize” Veronica Boix-Mansilla utilizes psychological studies of cognition in order to develop an account of interdisciplinary learning.

The nine chapters of Part 4, “Institutionalizing Interdisciplinarity,” look at the opportunities and challenges of making higher education more open and supportive of the inter- and transdisciplinary dimensions of knowledge. Antiquated administrative forms can strangle innovation; but despite this fact the institutional expressions and challenges of interdisciplinarity are often neglected. To have a realistic chance of success the reformation of knowledge must operate simultaneously at the levels of teaching, research, and administration.

The chapters of this section therefore address a wide range of issues relating to assessing, administering, and institutionalizing interdisciplinary work. In “Evaluating Interdisciplinary Research” Katri Huutoniemi proposes three different perspectives on how to appraise interdisciplinary research. J. Britt Holbrook’s chapter on “Peer Review” discusses the institution of peer review and its response to interdisciplinary and transdisciplinary pressures. Beth Casey’s “Administering Interdisciplinary Programs” examines the development of innovative policies across the U.S. in support of interdisciplinary programs, schools, or colleges. In his chapter on “Undergraduate General Education” William H. Newell offers an overview of the evolving role of interdisciplinary studies in undergraduate education in the United States. The section also includes Deborah DeZure’s “Interdisciplinary Pedagogies in Higher Education,” which surveys the array of instructional methods now available for promoting interdisciplinary learning outcomes.

Other chapters in this section look at these institutional questions from the perspective of individual researchers. Stephanie Pfirman and Paula Martin’s “Facilitating Interdisciplinary Scholars” identifies means for better facilitating interdisciplinary scholarship within the discipline-based academy. And in their chapter on “Doctoral Student and Early Career Academic Perspectives” Jessica Graybill and Vivek Shandas discuss the unique and sometimes disconcerting challenges faced by graduate students trained in interdisciplinary approaches once they graduate.

Finally, two essays fall into categories all their own. In “Policy Challenges and University Reform,” Clark Miller uses science policy as a prism for thinking about the future of the university. And in “A Memoir of an Interdisciplinary Career,” Dan Callahan gives a personal

account of the development of an interdisciplinary institute devoted to bioethics, the Hastings Center.

Part 5, titled “Knowledge Transdisciplined,” presents knowledge integration from an extra-academic perspective—as starting from societal needs and perspectives. The section begins with “Solving Problems through Transdisciplinary Research,” where Gertrude Hirsch Hadorn and associates explore two contemporary approaches to integrative research—transdisciplinary research from Europe, and integration and implementation sciences from Australia—in order to prevent or mitigate problems such as violence, disease or environmental pollution. In “Systems Thinking,” Sytse Strijbos explicates this now classic term encompassing postwar developments in fields such as cybernetics, information theory, game and decision theory, automaton theory, systems engineering, and operations research. And in “Cross-disciplinary Team Science Initiatives,” Dan Stokols and a team of researchers at the National Cancer Institute look at the unique challenges of large-scale team research projects that involve hundreds of scientists from different fields and locations working together on a common problem.

Another set of chapters in this section are topically based. In “The Environment,” J. Baird Callicott frames the discussion of interdisciplinarity and the environment in terms of the recent development of the trans-discipline of conservation biology. Jennifer Terpstra and colleagues show how health outcomes result from the interplay of factors from the cellular to the socio-political level in “Health Science and Health Services.” Similarly, in her chapter on “Law,” Marilyn Averill shows how the development of law has been inherently interdisciplinary, transdisciplinary, and problem based, shaping individual and group behavior and the distribution of social costs and benefits. In his chapter on “Risk” Sven Ove Hansson discusses the mix of disciplines (e.g., psychology, epidemiology, statistics) used to assess risk in areas as wide-ranging as air pollution to airbag regulation. Finally, in “Corporate Innovation,” Bruce A. Vojak and colleagues examine the role of “serial innovators” who are adept in repeatedly developing successful corporate innovations through the combination of technical skills, insight into customer needs, and political savvy necessary for getting their projects accepted for commercialization.

Of course, even with this range of perspectives significant gaps remain. Some of the gaps were inadvertent. A planned chapter on interdisciplinarity in economics did not quite come to fruition. The same is true for a proposed chapter on literature, history, and philosophy (even though the humanities are reasonably well represented), and for specific chapters within area studies, e.g., gender studies. A volume such as this will always remain a work in progress.

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