the full range of ethical considerations. What we need, Thompson maintains, is a "choreography" of ethics and science dancing together. Then and only then might we achieve "good science."

Thompson gets at her argument through a series of essay-like chapters. The first section looks at factors she considers central to the biopolitics of stem cell research. First, she gives an account of what she means by the end of the beginning of human pluripotent stem cell research. The research involved a lot of actors playing their roles—in many cases without reflection. Egg donors, embryo donors, researchers, patients, students: all have had views that have developed from their own multiple and complex perspectives. Now human pluripotent stem cell research exists, is well established and relatively well defined, and has begun to move from laboratory to clinical treatments. Now is the time to move forward with greater attention to what will count as good science.

Establishing what that means takes up the second chapter and rounds out the first section. Good science includes issues of doing science well according to its own internal logic, but the focus here is more on doing good with science while recognizing that this is not easy. Curing requires procurement—of eggs, embryos, and willing donors in an ethical environment. Sciences come "with ethics" in our current climate, and that means both doing science well and doing good with science. As Thompson makes clear, it is not possible for those who carry out this research to escape the ethical world.

In the second section, Thompson looks at the national and state contexts for stem cell research. Presidents Bush and Obama made pronouncements, and the people of California voted after vigorous campaigning by scientists and other supporters of research. As a result, federal research funding is available for some aspects of stem cell research but not others, and California funding is available but is expected by citizens to produce clinical results. Some movement of scientists and patients across international borders has followed such political and legal decisions, which Thompson details. These are familiar stories, but Thompson tells them with clarity and with a perspective that probes many simplistic assumptions and asks the reader to think more about what will count as good.

The third and final section of *Good Science* asks us to think about other lives. When people donate research material, what reciprocity should occur? Should they be entitled to the results of research using their materials? When they give a gift, should they benefit personally, or is this a public good? Thompson lays out four different models for donation: open consent, in which donors willingly donate to a cause; "propertization," in which donors could have property rights to their tissues and cells; benefit sharing, in which donors and commercial firms could share the profits and patents; and in-kind reciprocity, in which donors of biomaterials derive benefits from their contributions. The final chapter considers whether animal models can work for this kind of research.

Thompson has herself been involved in policy work, in the state of California and through federal discussions, as well as in international reflections on the role of donors and donated materials for this kind of research. She is neither a supporter of biological research no matter what nor a critic of any research whatsoever. She is a reflective thinker who wants a dialogue between scientists, on the one hand, and those providing the research materials and prospective recipients of the resulting "goods," on the other hand.

This is not new. But Thompson suggests that we need something more, a "choreography." "Good stem cell science will require satisfying public concerns about the safety and efficacy of stem-cell-based therapies while moving the science from the laboratory to clinical trials and on to treatments" (p. 224). This complex demand implies the need for honest and clear communication, as well as the building of trust, which will come only when the research enterprise system considers issues of equitable access to benefits as well as sharing of costs. "Good science cannot be achieved or legislated once and for all. It is ongoing and iterative, and it requires openness to dissent and the best work of many different kinds of contributors" (p. 225). This idea of good science requires choreography.

Choreography implies a choreographer, and Thompson does not explain fully who might play this role. Nor does she bring historical examination of other cases into the story where they might inform thinking about this particular case. Stem cell research is unique in some ways, perhaps, but not in others, so what might we learn from the history? Perhaps that is another book, for others to write. Perhaps she is challenging us to move forward in new ways, informed by her multiple perspectives. Socially engaged historians and philosophers of science can learn from this clear and easy-to-read book.

JANE MAIENSCHEIN

■ Sociology and Philosophy of Science

Carl F. Craver; Lindley Darden. *In Search of Mechanisms: Discoveries across the Life Sci-*

ences. xxii + 228 pp., illus., index. Chicago/London: University of Chicago Press, 2013. $25 (paper).

A characteristic feature of contemporary practice in the life sciences is the study of mechanisms; consequently, mechanisms have become one of the major issues currently discussed by philosophers of biology. Lindley Darden and Carl Craver have been at the forefront of creating this philosophical trend and have (jointly and individually) made significant contributions on the nature of mechanisms and mechanistic explanation. Now, with their coauthored book *In Search of Mechanisms: Discoveries across the Life Sciences*, they successfully target a wide audience of philosophers, science studies scholars, and biology students. While philosophical discussions of mechanisms have focused on the theoretical issue of explanation—for example, articulating how mechanism schemas explain and what the standards for a good mechanistic explanation are—this recent contribution is novel in that it is dedicated to the practical issue of how mechanisms are discovered. Given the nature of most literature written by philosophers, a particularly refreshing aspect of Craver and Darden's account is that it does not advocate for one particular point of view while criticizing the arguments of others. Instead, the different aspects of mechanistic research (and thus its complexity and diversity) are laid out, well illustrated by a variety of examples from such different biological fields as molecular genetics, physiology, and neuroscience, often—though not exclusively—from the twentieth century.

An intellectually novel and most fruitful feature of Craver and Darden's treatment is a thorough taxonomy of various types of investigation and evaluation strategies found in mechanistic research, which also systematically structures the whole book and each chapter. For instance, among the different experimental strategies are "interlevel experiments for componential relevance," which are broken down into "interference experiments," "stimulation experiments," and "activation experiments." Each such category is explained using a concrete example. Likewise, in the context of revising mechanism schemas, different anomalies can be encountered, such as "experimental error," "data analysis error," "monster anomaly," "special case anomaly," "model anomaly," and "falsifying anomaly"—each of which gives rise to a different strategy for dealing with an anomaly. A peculiar aspect of the presentation is that the main body of each chapter does not contain any references; these are provided in a bibliographic discussion at the end of the chapter. This deliberate attempt not to distract from the case-based presentation of reasoning strategies by standard scholarly support and contextualization works out quite nicely.

The complexity of mechanistic research is well represented by Craver and Darden's examples of multifield and multilevel integration. While their taxonomy breaks the search for mechanisms down into the stages of characterizing the phenomenon, constructing a mechanism schema, evaluating the schema, and revising the schema, Craver and Darden acknowledge that these stages are often pursued in parallel and in interaction with one another. But given that they discuss each stage in different chapters using different examples, I would have liked to see one case that combines these different aspects of research, including how the (re)characterization of a phenomenon occurs at a later stage, so as to exhibit the full intricacies of mechanistic research. Moreover, while the penultimate chapter, "The Pragmatic Value of Knowing How Something Works," makes it plain that the search for mechanisms (beyond gaining intellectual, explanatory understanding) often serves biomedical and other applied purposes, this is something that should have been indicated in the examples throughout the book, so as to lay out how application aims guide the actual steps of mechanistic research. But in any case, *In Search of Mechanisms: Discoveries across the Life Sciences* offers an insightful taxonomy of the various facets and possible reasoning strategies of mechanistic research that is well illustrated by relevant examples. Because of this, the book will be of interest not only to philosophers of biology and other science studies scholars; for biology students, it offers an instructive framework for learning about reasoning in mechanistic discovery.

INGO BRIGANDT

Helen E. Longino. *Studying Human Behavior: How Scientists Investigate Aggression and Sexuality*. xi + 249 pp., tables, app., bibl., indexes. Chicago/London: University of Chicago Press. $25 (paper).

Studying human behavior is difficult, for many reasons. Studying how scientists do it nonetheless is even more difficult. In her new book, Helen Longino shows how to study behavioral scientists from a pragmatic-pluralist point of view. The focus is on the so-called nature/nurture debate. Longino takes two examples, two alleged unitary phenomena—aggression and