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The Ethics of Animal Research: An Overview of the Debate

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The practice of animal research is at once familiar and strange. On the one hand, almost everyone knows that it is a regular and widespread part of modern scientific and medical research. Indeed, the idea of being a “lab rat” or “guinea pig” is frequently invoked and readily understood in contemporary discourse. On the other hand, the vast majority of animal research is conducted outside public view. Aside from oversight committees, government regulatory agencies, and research personnel, very few people will ever have first-hand exposure to what occurs in animal research laboratories. For most people, “access” is limited to two very different kinds of post facto news stories: (1) those about new drugs or medical devices that have shown promising results with animal subjects or (2) those exposing the (sometimes lurid) details of certain experiments or the abuse or neglect of animal subjects, or both, that come to light because of whistleblowers or undercover investigators or activists.

The curious result of all this is that animal research is either hardly noticed at all or, when it is noticed, a source of considerable controversy. This book sets out to explore the issue as it manifests in this latter way. The chapters that follow offer many perspectives for analyzing and evaluating the ethical issues at stake in animal research. They aim to elevate the quality and tone of the debate while elucidating where progress can be made. In this introduction, I will (1) briefly describe the history and contemporary practice of animal research, (2) identify five important factors driving the scientific and ethical controversy, (3) pinpoint the moral crux of the debate, and (4) briefly introduce the individual chapters in this volume and explain how they contribute to the overall aims of the book.

The Practice of Animal Research in History and Contemporary Society

While it is possible that the rudiments of “animal research” extend much further back in human history, the practice can be traced to at least the

fourth century BCE. Aristotle, arguably the world's first biologist, studied the bodies of both live and dead animals in developing his accounts of anatomy, embryology, and physiology. Five centuries later, the great Roman physician Galen derived his influential model of human biology from studying the cadavers of pigs and monkeys, among other animals. (Both Aristotle and Galen worked within wider cultural parameters that strongly forbid human dissection.) In this early period, and for roughly the next 1,700 years, animal research was a limited and isolated practice, confined primarily to a small handful of curious scientists and physicians (aside from Avenzoar and other Muslim physicians, the most notable examples come from the last 300 years of that span, including William Harvey, Stephen Hales, Antoine Lavoisier, Claude Bernard, Louis Pasteur, and Ivan Pavlov).¹

It was not until the early to middle portion of the twentieth century that animal research became a regular, widespread, and even (legally) required component of the multistage methodology of modern biomedical and toxicological research. In addition to the general increase in scientific activity fueled by the needs and ambitions of burgeoning nation-states, two specific factors contributed significantly to the rapid expansion of animal research during this period. First, the United States and other nations enacted federal product safety legislation in the late 1930s in response to various tragedies resulting from ineffective product safety testing (most notably, the 1937 Elixir Sulfanilamide incident). One part of these legislative decrees was the requirement that products such as food, drugs, and medical devices be shown to perform safely with animal subjects prior to being tested on or sold to human subjects and consumers. A second important factor was the Nuremberg Code, a seminal ethics declaration developed in response to the Nazi program of involuntary human experimentation in the 1930s and 1940s. This code identified ten points of guidance for ethical research with human subjects that significantly influenced subsequent research ethics legislation worldwide. In addition to establishing the need for research to satisfy now-familiar requirements of informed consent and general beneficence and utility, the Nuremberg Code also enshrined a requirement for animal research in its third directive, which states that experiments “should be so designed and based on the results of animal experimentation and a knowledge of the natural history of the disease or other problem under study that the anticipated results will justify the performance of the experiment” (NIH 2010). These two factors, then, contributed to the rapid expansion of animal research by positioning it as an important component in

the defining legal and ethical documents governing research ethics in the twentieth century.

Since that period, the scale of animal research has increased dramatically both in the United States and abroad. At present, in the United States alone, between 17 and 50 million nonhuman vertebrates, including primates, dogs, cats, rabbits, hamsters, guinea pigs, birds, rats, and mice, are bred, captured, or otherwise acquired every year for research purposes.² Worldwide figures are obviously considerably larger, possibly numbering 100 million animals or more (Nuffield Council on Bioethics 2005, 7). The purposes of such research are multiple and include biomedical testing, product safety and toxicology, science education, and basic research. Supported by billions of dollars in funding, modern animal research almost always entails confinement in small and artificial environments (often without any contact with conspecifics or other sources of stimulation), emotional distress, pain, and injury (if not permanent incapacity) for the animals involved. The kind and duration of harms inflicted upon animal subjects varies considerably, but a substantial portion of research, by researchers' own admission, inflicts significant and sometimes extreme amounts of pain, distress, and injury. And, if the animals are still alive after all of this, most will be put to death once they are no longer useful to researchers (*ibid.*, xix).

Unsurprisingly, then, ethical guidelines and regulations governing research with animal subjects have been developed across the world, though they vary considerably from nation to nation. At the broadest level, there is widespread agreement that such research ought to be guided by "the 3 Rs": (1) *refinement* (improving the experimental design of research projects so as to improve the welfare of animal subjects), (2) *reduction* (minimizing the number of animal subjects used in a given research protocol), and (3) *replacement* (developing alternatives to live animal subjects wherever possible). However, when it comes to applying these principles in policies and regulations, nations have differed widely in their respective approaches. Some, such as Canada and Japan, rely largely on a system of self-regulation where individual research companies and institutions voluntarily follow guidelines under the review of internal committees; others, such as the United Kingdom and United States, have national regulatory frameworks for overseeing all research involving animal subjects. There are other differences as well, including with respect to the list of animals receiving protection, the quantity and kind of protections that are enforced, and the regularity, strictness, and severity of enforcement.

Five Factors Fueling the Controversy

As with so many other bioethical issues, the controversy over animal research is complex and springs from many sources. Some of these sources are philosophical in nature, while others decidedly are not. Chief among the latter group are the *political* and *economic* factors at work any time there is a fundamental challenge posed to a pervasive and entrenched practice. Many people and institutions have a clear financial and professional interest in seeing animal research continue unabated, while others may have similar interests in reforming the practice or even in abolishing it altogether. This is perhaps most clearly seen in the case of the multibillion-dollar global industry that captures, breeds, genetically tailors, transports, houses, and sells research animals and related paraphernalia. However, it also manifests with individual researchers who build career-long research agendas that involve experimenting with animals, as well as with various interest groups that seek to preserve, reform, or abolish the practice.

A second factor is *historical* in nature. Researchers have, for most of recorded history, routinely overlooked and compromised the interests and welfare of research subjects, whether human or nonhuman. Sometimes this was done in the name of scientific progress or general social utility; other times it was for simple curiosity or individual prestige. Whatever the motivation, however, scientific and medical research in past ages generally targeted vulnerable groups as research subjects (e.g., animals, children [especially orphans], the disabled, the uneducated, etc.) and operated virtually unrestrained by any ethical considerations. (Indeed, it is precisely this troubling history that has led to the various legal and ethical frameworks governing research today.) Set within this history, then, it is unsurprising to find that animal research has been ripe for criticism and outrage.

A third contributing factor is *cultural* and relates to the general gulf that persists between the humanities and the sciences. These two “cultures,” as C. P. Snow (1993) called them, often appear to have different values and vocabularies and it is a rare person who can speak authoritatively in both domains without being considered a traitor, “sell-out,” or flake by one or the other (or both). This general tension certainly manifests itself in the relationship between scientists and ethicists. Historically, scientists have been reluctant to accept any ethical limitations on research practices. Partly this is due to a fear that even the tiniest steps in that direction could lead to more drastic limitations down the road. Partly it is due to a certain amount of scientific self-confidence (some might say hubris) that stems from the undeniable successes of science in the past three or four centuries. As such,

scientists sometimes see their work as answerable only to other scientists and only according to the standards and values internal to science. Finally, the reluctance has partly to do with what Bernard Rollin (in his chapter in this volume and in his 2006 book, *Science and Ethics*) has termed the “scientific ideology” and its unofficial slogan that “‘science is value-free’ in general, and ‘ethics-free’ in particular.” The predictable result of this uneasy relationship (in conjunction with the increasing specialization and complexity demanded by advanced scientific and ethical training) is that very few persons are experts at both the scientific and ethical dimensions of animal research. Thus, misunderstanding and intellectual insularity abound across the spectrum and create conditions whereby otherwise intelligent and sophisticated thinkers can be seduced by uncharitable caricatures of the motives and positions of their “opponents.”

A fourth factor fueling the controversy is *epistemological*. Since we cannot *know* what would have happened had history played out differently, there is an (unavoidable) lack of consensus regarding how properly to understand the necessity and efficacy of animal research in past research successes. Maybe the only possible way that we could have created the polio vaccine and other medical breakthroughs was through animal experimentation; maybe not. Perhaps ethical limitations on the use of animal subjects would have encouraged a greater degree or different kind of scientific creativity or motivated more voluntary participation from human subjects (and hence better models for studying human function and disease); perhaps not. The inevitable uncertainty in counterfactual analysis enables people to draw conflicting conclusions about the relative efficacy and necessity of animal research in fueling scientific and medical progress. Unfortunately, this entails that support can be found for any prior conviction one might begin from, which further reinforces and entrenches these positions.

A final factor in the controversy is straightforwardly *ethical*: there are many genuine values and perennial questions at stake here. Almost everyone would agree that medical progress is a genuine good, that the alleviation of human and animal suffering is a worthy end, and that we ought to make effective use of social resources and stand opposed to cruelty, abuse, and unnecessary harm. However, in considering how these values are to be understood and ranked, differences in judgment emerge. Since *genuine values* can be put forward in defense of each position, it is not surprising to find that conflicting commitments are strongly held and largely inflexible.

Additionally, the issue of animal research raises profound and complex questions about scientific, philosophical, moral, and religious values. What

is the position of humans in the cosmos with respect to nonhuman life? Does the *possibility* of achieving otherwise worthy ends justify employing means that *definitely* will be harmful to other beings? In what ways and to what degree are human and nonhuman animal systems similar? How effective and reliable are animal models for drawing inferences about likely human responses to various interventions? Should we spend billions of dollars pursuing potential cures for diseases that only a small portion of the earth's (wealthier) population will benefit from at the end of life, or instead devote those resources to preventive or existing solutions to conditions that take millions of lives prematurely every year? These are just a few of the many thorny questions that foster differing moral and scientific assessments of animal research.

The Moral Crux of the Debate

Given the complex nature of the controversy, is it possible to boil the moral debate down to a single question? One plausible candidate is this:

Supposing that it were uniquely necessary for obtaining genuine medical or scientific benefit, is it morally permissible to use animals in research that is (1) harmful, (2) nontherapeutic, and (3) nonconsensual and that would be judged unethical if done with any nonconsenting human subjects or if the same acts were done in a nonresearch setting?

Further analysis of this question is useful here. First of all, it makes an important working assumption: namely, that some animal research is “uniquely necessary for obtaining genuine medical or scientific benefit.” This way of framing the question is significant for at least two reasons. First, it allows us to bypass the controversial question of whether or not animal research actually is “uniquely necessary” for obtaining genuine medical or scientific benefit. By granting this claim for the purposes of argument, we can then evaluate the permissibility of research under terms favorable to ardent defenders of animal research. If a sufficient justification of the practice cannot be offered even under the most favorable terms, then we need not worry about the other questions facing a defense of animal research; and if a sufficient justification can be offered, then we can go back to the question of whether animal research is in fact “uniquely necessary” with a better appreciation of its importance in the moral debate. Second, the working assumption makes potential human benefits central to the defense of animal research, which accurately reflects

the place that the “benefits argument” assumes in the debate. Given the high value placed on promoting human welfare in ordinary moral thinking, including by those opposed to animal research, explicitly placing the benefits argument as part of the crux of the moral debate makes it as favorable as possible to defenders of animal research. It also reflects the fact that very few persons would be willing to defend animal research if it offered no benefits at all.

A second feature of the question worth highlighting is the three properties of the most worrisome examples of animal research: namely, the properties of being “(1) harmful, (2) nontherapeutic, and (3) nonconsensual.” Research is *harmful* when it is detrimental to some interest that a being has, such as the interest in expressing its nature, maintaining life and bodily integrity, avoiding pain and frustration, and so on. Research is *nontherapeutic* when it does *not* aim at restoring the health of a research subject with prior injury, disease, or debilitation of some kind. Research is *nonconsensual* when it is conducted with subjects who have *not* voluntarily agreed to participate after being sufficiently informed of the nature, purpose, and risks/benefits of the research project.³ Emphasizing research characterized by all three properties manifests maximal charity toward those opposed to animal research. Since few persons would be opposed to animal research that was genuinely harmless, and still fewer to research that was genuinely therapeutic, we should focus the moral debate on the worrisome cases that underpin the strongest arguments against animal research.

Finally, the question notes that the research in question “would be judged unethical if done with any nonconsenting human subjects or if the same acts were done in a nonresearch setting.” This qualification, it would seem, forms a point of common agreement between the various sides to the animal research debate. Very few people would sanction the use of nonconsenting *human* subjects in the kinds of research projects to which animals are routinely subjected, *even if such projects promised important benefits*. And most would straightforwardly condemn someone who caused such pain, distress, injury, and death to nonhuman animals if it were done for any reason other than potential public benefit (especially if the particular modalities for inducing such aversive states—for example, electrocution, drowning or suffocation, or burning—were described in detail⁴). People would be even more shocked if such treatment were encouraged and supported by significant quantities of scarce public (or even private) resources that could be directed elsewhere toward any number of other important pursuits.

Since animal research imposes considerable *costs* in terms of animal welfare and also in terms of the scientific energy and finances diverted to it and away from other worthy pursuits, the burden facing those who would defend the institution of animal research appears to be twofold. First, they need to offer a compelling defense of the *unique benefits* made available through animal research. Second, because potential human benefits do not always provide a sufficient justification for a practice (else beneficial involuntary human experimentation would be justified), they also need to articulate a rationale for why these benefits justify treating animal subjects in ways that would generally be unacceptable with any human subjects. It is this two-fold burden that lies at the heart of the chapters in this book. Some of the chapters will argue that the burden can be satisfied fairly easily; others will argue that it never can be satisfied; and still others will argue that it sometimes can be satisfied, though not necessarily easily.

The Book

The structure of the book is four-fold. After (1) setting out some basic ethical and scientific starting points, it (2) considers how moral theory bears on the practical ethical questions before (3) examining the unique challenges raised by the new and emerging possibilities of animal biotechnology. It then concludes (4) by looking forward, with a particular eye toward some alternative ways in which progress can be made in the debate.

Animal Research: Ethical and Scientific Starting Points

Part I of this book helps establish some starting points for a meaningful discussion of the ethics of animal research. In chapter 2, Bernard Rollin argues that progress in the debate requires confronting “‘scientific ideology,’ the set of basic, uncriticized assumptions presuppositional to twentieth-century science”—in particular, that science is “ethics-free.” This ideology, according to Rollin, creates an ethical vacuum that fosters public disenchantment with scientific research, if not outright rejection of various projects on ethical grounds. What is worse, the dismissive orientation of scientists to analyzing and evaluating wider ethical concerns enables public reactions that are shallow or misguided (e.g., something is not “natural”), if not based on pure hyperbole or sloganeering. In the area of animal research, Rollin argues that failing to treat invasive animal studies as constrained by ethical standards is not only detrimental to animal welfare, but also leads to bad science. For instance, he notes that “historically, in the United States at least, basic animal care was a very

low priority in animal research, ironically harming the science by failing to control pain, stress, and other variables.” He concludes by describing a consensus social ethic that can guide research with animal subjects. In this way, Rollin’s chapter sets the tone for the rest of the volume by framing the issue of animal research as fundamentally ethical in nature.

In chapter 3, Stephen Schiffer begins from the premise that there is clear public support for ethically guided animal research and then seeks to articulate a scientific basis for this intuition using the theory of evolution. According to Schiffer, the public recognizes that “if we are related to other animals, then studying them in health and disease states may yield insight to our own condition.” Schiffer then cites examples where the phylogenetic similarities between humans and other animals have played a role in contributing to such insights. He boldly concludes that evolution not only provides a biological basis for animal research, but also supplies “a sound, albeit cold, defense for using nonhuman animals for research.”

Bringing Moral Theory to Bear on Animal Research

Moral philosophy figures prominently in debates over the ethics of animal research. In part II, six philosophers consider how various approaches to moral theory might assess the ethics of animal research. Baruch Brody leads off by defending what he calls “the reasonable pro-research position.” He begins chapter 4 by canvassing several potential candidates for a defense of (at least some) animal research, ultimately reducing the field to two broad positions: (1) the *lexical priority view*, which gives human interests unqualified priority over the interests of nonhuman animals, and (2) the *discounting view*, which allows for the discounting (to varying degrees) of the interests of nonhuman animals in comparison to human interests. After criticizing the lexical priority model, Brody argues that the second kind of position, rooted in a wider appeal to moral partiality, can justify much of the research that is conducted with animal subjects.

Chapters 5 through 9 offer more critical perspectives on the ethical status of animal research drawn from a rich variety of moral theoretical positions; notably, however, only one (Tom Regan’s rights-based approach) comes down unequivocally against all forms of animal research. In chapter 5, Alastair Norcross points out that few people would sanction using any humans, even severely cognitively-impaired orphans, in the kind of research that is performed regularly with animal subjects (as he illustrates using an imaginative thought experiment). Thus, any defense of animal research needs to identify some significant difference in moral status between all humans and all animals. However, meeting this challenge adequately

requires answering “the problem of marginal cases.” This “problem,” as Norcross describes it, is that “whatever kind and level of rationality is selected as justifying the attribution of superior moral status to humans will either be lacking in some humans or present in some animals.” Norcross concludes by examining some of the more prominent responses to the problem, arguing that each fails when examined carefully.

The moral theory of utilitarianism, perhaps more than any other theory, holds enormous appeal in the ethical controversy surrounding animal research. But as Robert Bass notes in chapter 6, while many proponents and critics often appeal to the principle of utility, few do so with a full appreciation for the complex nature of utilitarian calculations. Bass seeks to rectify this tendency by clarifying precisely those inputs that are needed in order to make a fully informed utilitarian judgment. He concludes by noting that, although utilitarians would not rule out animal research (or any other practice) *in principle*, it simply is unclear how much, if any, research can be justified via a utilitarian calculus that is sufficiently sophisticated and accurate.

Tom Regan has been one of the more prominent critics of animal research for the past thirty years. According to Regan, the moral case against animal research begins and ends with recognizing that animals, like humans, are “subjects of a life” and, thus, have moral rights. As such, it is always morally impermissible to use animals or humans in research that is harmful, nontherapeutic, and nonconsensual, regardless of the potential benefits that such research might yield. In chapter 7, Regan reviews the basic argument linking animal rights with human rights and then critically responds to some of the more frequently encountered objections to animal rights.

Despite the notable reemergence of virtue theory in twentieth-century ethics, most discussions of the morality of animal research have focused on utilitarianism and rights theory. According to Garret Merriam, this is an unfortunate trend, as virtue theory has the potential to offer a better treatment of the ethical issues than either of those theories. He argues in chapter 8 that “since it has neither the maximization component of utilitarianism, nor the deontological constraints of rights theory, virtue ethics can restrict animal experimentation to a narrow set of justified cases, while not prohibiting it outright.” Notably, Merriam does not shy away from considering how a virtue account might distinguish between cases of research that are justified and cases that are not. Instead, he develops a virtue framework for making such judgments that should be of great benefit to this debate.

Part II's focus on moral theory concludes with an examination of how contractarian accounts of morality might approach the ethics of animal research. Such accounts, which ground morality in some form of agreement between rational contractors, have traditionally been thought to offer animals only an *indirect* form of moral status. According to this view, the interests of animals do not require direct and independent moral consideration, but only are regarded insofar as they are intertwined with the interests of humans. In chapter 9, Mark Rowlands takes strong exception to the traditional assumption. He argues that "while some versions of contractarian moral theory preclude granting moral status to nonhumans, the most *plausible*, and the most *influential*, versions of this approach are not only *compatible* with the moral claims of animals, they actually *entail* these claims."

The Ethics of Animal Research in the New Era of Biotechnology

Animal research is becoming increasingly intertwined with biotechnology. More and more, animal models either constitute the site where biotech research is conducted or are in themselves genetically designed to be better suited to a particular research design. This changing landscape is ethically significant because it raises a host of new questions, not the least of which concerns the moral status of the entities created through genetic engineering. Perhaps most notable in this regard are entities that incorporate human genetic material and also entities that are engineered with diminished cognitive and sensory capacities. The former raise the question of how much human genetic material an entity needs in order to have the full moral status of ordinary human beings, while the latter challenge us to consider whether extremely diminished entities have any moral status whatsoever.

In their respective contributions to the book, David Resnik and Autumn Fiester address numerous issues raised by increasingly sophisticated animal biotechnology. Unlike with the chapters in part II, however, they do not engage in full-scale ethical evaluation of animal research. Instead, they offer recommendations for how we might best utilize and improve existing ethical frameworks in evaluating this ongoing and rapidly expanding area of animal research. In chapter 10, Resnik examines the scientific objection that "we should curtail or stop using animals in research because animal species are often not good models for human physiology, pathology, toxicology, or behavior." While acknowledging the seriousness of this objection, he points out that biotechnology provides a potential solution. By genetically engineering better animal models (often through

inserting, deleting, or modifying certain genes), researchers may be able to improve our understanding of “the basic biological mechanisms and processes found in all mammalian species,” as well as “our understanding of the human diseases.” Additionally, transgenic animal research promises to facilitate “3R” ethical goals as well, since it may (1) *reduce* the number of animals needed for a given project and (2) *replace* animal models with genetically engineered cell or tissue models. However, Resnik urges researchers and oversight committees to be mindful of several important ethical concerns, including the ways in which transgenic research may increase pain and discomfort for the animals used, produce human–animal chimeras with indeterminate moral status, and require rules for the patenting and sharing of transgenic animals. He concludes by offering ethical recommendations to address each concern.

Meanwhile, Fiester begins chapter 11 from the premise that animal biotechnological research is conducted in a variety of ways and for a variety of ends. As such, our method of moral evaluation needs to be flexible and sensitive to individual variation. According to Fiester, bioethical casuistry is the ideal tool for such a task. By identifying paradigm cases of moral permissibility or impermissibility, a case-based approach to ethical analysis allows us to establish a continuum of animal biotechnology whereby individual projects can be placed relative to the paradigm cases. Fiester concludes her discussion of bioethical casuistry, appropriately enough, by demonstrating it in practice with two cases of animal biotechnology.

Making Progress in the Debate: Alternative Paths Forward

The book concludes with part IV, which aims to identify some ways that progress can be made in the ethical debate over animal research. What chapters 12 through 16 have in common, despite diverging recommendations, is that they begin with values that most people will find attractive at some level or to some degree—values like moral consistency, effective resource usage, medical progress, alleviation of suffering, and an opposition to cruelty. This approach promises to bring very different groups into a more meaningful and good-faith conversation, if not closer to agreement. The aim of part IV, then, is not to close down, let alone definitively settle, the debate, but rather to invigorate a productive dialogue between parties whose values are not so vastly different as they might appear on the surface.

The first contribution in part IV is from Andrew Rowan. He emphasizes in chapter 12 that the vast majority of people agree on several important points—animals have at least some moral status, at least some research

done with them produces beneficial knowledge, and we should aim for a future in which animals are no longer harmed in order to achieve such knowledge. The controversy ensues, Rowan notes, because of the difficulties in determining “the value of research on animals as well as the costs in animal suffering.” Too often, advocates and critics of animal research make unsophisticated anecdotal appeals to a few examples that seem to support their position rather than engaging in “a carefully balanced analysis of the pros and cons of their position.” Such an analysis, Rowan claims, reveals that a more middle-ground conclusion is warranted—animal research is surely not wholly useless, but neither is it as crucial to scientific and medical advancement as many purport. He concludes by noting at least one additional source of potential common ground: by better “defining and assessing animal distress,” researchers could likely reduce such distress and also improve the quality of research results.

Chapters 13 and 14 emphasize the need for critical and consistent moral reasoning when seeking moral progress. Mylan Engel Jr. challenges those who would reject the conclusions of opponents of animal research because they think there are flaws with a particular underlying ethical theory. He points out that all ethical theories have weaknesses, but that should not prevent us from accepting concrete moral judgments about particular practices (e.g., the wrongness of slavery). Seeking to bypass potential sources of theoretical disagreement, Engel constructs a case against animal research using only widely shared, commonsense moral beliefs. He concludes that “even if one only cared about humans and their well-being, one would still have good reason to oppose using animals in biomedical research.”

Nathan Nobis starts chapter 14 from the premise that moral progress does not require any “new” philosophy or ethical theorizing. What is needed, he claims, are improvements in our ability to “engage the arguments already on the table.” To this end, Nobis identifies three basic logical skills for rationally evaluating moral arguments. After demonstrating the value of these skills when applied to historical moral issues, he turns them back on the issue of animal research and reveals problems with the most common defenses of the practice. He concludes by outlining a cumulative, pluralistic case against animal research that draws on “*every* major moral perspective that plausibly explains the moral relations among human beings.”

In his second contribution to this volume, chapter 15, Tom Regan addresses the issue of moral consistency from another angle. Here he explores whether those with strong commitments against animal research can maintain moral integrity while using products that have previously

been tested on animals. After challenging the track record of animal research for producing drugs that are both safe and effective, Regan turns his full attention to the charge of hypocrisy. According to Regan, this charge actually rests on a logical fallacy. It assumes *post hoc ergo propter hoc* (“after this, therefore because of this”) that because the beneficial outcomes of modern medicines sometimes *come after* animal research, these benefits result *because of* animal research. Here Regan reminds the reader of a simple point—namely, that humans benefit from a chemical compound itself, not from the particular modalities of research development and testing that led to its discovery. Therefore, he concludes, it is simply false to say that animal rights advocates act hypocritically when seeking benefits from products tested on animals, since whatever benefits these product may have to offer exist independently of such testing.

Christina Bellon concludes the volume with an evaluation of the issue of animal research, and the other chapters in part IV, from a feminist perspective. Contrary to the trend of thinking about the issue purely within ideal theory, Bellon in chapter 16 reframes the debate as one within non-ideal theory—how do we transition from a situation where much research is unjustified to one where any remaining research would be morally permissible? Drawing on the rich resources of feminist theory, and in particular its commitments to transparency, accountability, and relationship, Bellon seeks “to provide a vision of what morally permissible animal experimentation requires, why it is in the interest of researchers as well as their animal subjects to transform the practice accordingly, and how we might bring it about.” Her chapter, then, provides a provocative and challenging conclusion to the discussion of moral progress and to the volume as a whole.

Better Dialogue, Better World

Historically, moral progress often has been preceded by a compelling moral vision of an ethically superior world. With respect to animal research, the ultimate goal, as the Nuffield Council on Bioethics succinctly and elegantly puts it, must be “a world in which the important benefits of such research could be achieved without causing pain, suffering, distress, lasting harm or death to animals involved in research” (Nuffield Council on Bioethics 2005, xix). As the council goes on to note, while moral argument alone is unlikely to bring about this world, it can facilitate further progress if people are willing to engage with each other in good faith and from common ground. Indeed, achieving a more productive dialogue than

currently exists *is itself* moral progress. It is my hope that this volume will serve this worthy end.

Notes

1. Though it should be noted that the practice was at least prevalent or significant enough (or both) to garner (qualified) criticism (both scientific and ethical) from leading intellectuals, including Voltaire and Darwin, to say nothing of the anti-vivisection movement in the nineteenth century.
2. As Nobis notes in chapter 14, the true number is difficult to determine, since mice and rats, easily the most numerous research subjects, do *not* count as “animals” when such numbers are calculated. The numeric estimate also does not include members of nonvertebrate species.
3. It may seem unnecessary or even absurd to mention this property in the context of research with beings that are not typically thought to be capable of offering consent. However, I do so to emphasize just how far the accepted legitimacy conditions for animal research depart from the much stricter conditions imposed on human research. If researchers cannot obtain the consent of human subjects, even if it is due to the subject’s permanent incapacity to offer consent, then research cannot go forward. Yet the precise opposite is true in the case of animal research. Thus, it is worth calling attention to this asymmetry here even if it would seem to go without saying.
4. Indeed, one need only consider the recent public uproar regarding NFL quarterback Michael Vick’s involvement in the breeding and fighting of pit bulls.

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