

# Re-minding Animals: Developments in the Scientific Study of Nonhuman Animals

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of Animals



A review of Marc Bekoff and Dale Jamieson's (editors) *Interpretation and Explanation in the Study of Animal Behavior, Volume I: Interpretation, Intentionality and Communication* (Boulder: Westview Press, 1990)



## Introduction

Stories about nonhuman animals continue to fascinate us as they have since Aristotle. A phrase recently employed in a moral philosophical account of animals, "animals matter," can also be applied to animal stories—they matter too. For our accounts of animals are a powerful influence on our attitudes toward and practices involving animals.

Of course, all animal stories are accounts both of animals and, whether explicitly or only implicitly, of their storytellers. The authors of this set of 21 essays are biologists, philosophers, and psychologists who share a common concern with "a revival of interest in the study of animal minds" (p. xx) [all references are to the book under review unless otherwise indicated]. They discuss a host of questions centering on whether there can be a science of animal minds, what it might look like, and what its methods and rules of evidence can be. Their attempts to answer these and other questions in the philosophy of science result in these conceptually dense but nonetheless engaging stories about animals, science, and scientists.

The present essay attempts a cohesive reading of the varied perspectives found in the collection. It is itself an animal story, although one thrice removed from a direct narrative about animals. It is necessarily a commentary on accounts in the philosophy of science regarding animal behavior scientists' studies, themselves accounts of animals. In fairness to the editors and authors of this fine anthology, before I tell that story let me locate myself as a storyteller.

I am interested in the ethics of relations "between the species," more particularly between human and nonhuman animals, and most particularly between scientists and educators and their nonhuman "subjects." What will be the results of this revival of interest in animal minds on the treatment of animals in science? How will it affect the numbers of animals used, the conditions under which they are housed, the degree of invasiveness of their treatment?

My own position on the ethics and scientific merit of animal research leads me to favor a significant reduction in the numbers of animals used in research, notably when they are used as models of complex human phenomena. I also am critical of the use of a lab setting and, specifically, of the caging of animals of most species (Shapiro, 1989), preferring a style of research and education which can be conducted in naturalistic or seminaturalistic settings. On ethical, scientific validity and pedagogical grounds, I also favor



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research and educational approaches that feature relatively nonmanipulative and noninvasive data-gathering methods. My position is that we will always study animals where they are and how we are. The only legitimate question in the current debate is whether we will continue to have a science that believes it must or should abduct, produce, and deform animals to study them.

In addition to the direct and concrete effects of this evolving research development, I am also concerned with its influence on society's attitudes and practices involving animals. Both the practices of animal behavior science, the ways in which laboratory animals are actually treated, and the research results, the descriptions of the capabilities, sensibilities and needs of animals, have a considerable impact on how we as a society are educated both formally and informally to think about and treat animals.

I will address the former, more concrete concerns briefly—for I can only offer some impressions, mostly from my own field of psychology.

There are several subfields within psychology which utilize animals in research. Judging by the trend in the number of doctorate degrees granted annually, experimental (including behavioristic psychology), comparative and physiological psychology all have declined in recent years (*American Psychological Association Monitor*, May 1987). This trend may indicate a decline in the number of animals used in these subfields. There is also some evidence of a decline in the degree of invasiveness (suffering, injury, harm) in psychological experimentation, although the evidence is mixed (Field, 1988). However, much highly invasive research continues to be conducted (Field, 1990), particularly in physiological psychology and neuroscience and by politically prominent psychologists (Shapiro, Field and Carr, 1990). Most research involving animals is lab-based, although a small proportion of comparative psychology involves field work (Dewsbury, 1984).

In psychology, the return to the study of the mental life of animals is part of the shift which began as early as the mid-1950's from a behavioristic to a cognitive psychology. In biology, an analogous and more recent shift is underway from classical ethology to a cognitive ethology. It is difficult to judge the role of these shifts in the trends just indicated or in future trends. However, a reading of the studies cited in the two of the four sections in the volume under review that deal relatively more directly with actual research than with

philosophical issues ("Recognition, choice, and play" and "Communication and language") is at least suggestive. Most of the studies cited on recognition and choice are field rather than lab research, most of them involve invertebrates, and most are relatively noninvasive. Studies cited on communication and language include more lab-based but still relatively noninvasive research. On the other side, these latter studies rely heavily on the use of primates. Further, there are occasional references throughout the volume to invasive lab research: spinal cats, rats killing mice in lab enclosures, and isolation-reared monkeys.

We turn now to the possible impacts of the scientific interest in animals' minds on society's treatment of animals. This will require an analysis of a number of philosophical issues for, as the editors point out, "What we do in our analyses of animal behavior, how we do it, and how information is interpreted, explained and disseminated all hang together" (p. xxi).

### Cognitivism

The shift in both psychology and biology to the "re-minding" of animals is called cognitivism. Both behavioristic psychology and classical ethology denied or avoided attributing a mental life to animals. Radical behaviorism's concepts of stimulus, response and reinforcement purposely excluded purpose, intention and subjectivity. Classical ethology's concepts of instinct, releasers, and fixed action pattern also avoided mentalist talk of expectation and emotional life. By using metaphors borrowed from mechanics and hydraulics, both avoided casting animals in a human shape. As a result, the characters in their animal stories tended to be mechanomorphs. Governed by simple mechanisms, they are beings without subjectivity, without a consciously experienced or lived world.

The choice of this physicalistic explanatory style is "[hung] together," at least in the case of behaviorism, with an experimental method featuring quantifiable stimuli and responses and, typically, a subject matter that suggested rather limited cognitive sophistication in the animals under study. This general approach is largely intelligible in terms of the attempts of these incipient behavioral sciences to emulate the positivism of the regnant 19th century physical sciences.

With the advent of cognitivism, there is increasingly an openness to locate and study a more sophisticated subject matter. Further, whether "communicative

pretend play" or "habitat choice" or "kin recognition," these phenomena are no longer explained or explained away in behaviorist talk of simple forms of associative learning or adaptationist talk of the workings of natural selection on evolving genotypes.

As the predominant discourse in this volume, cognitivism invokes the metaphor of information. Animals gather, select, encode, store, retrieve and, in a word, process information. For example, here is Smith on communication in animals: "Communication cannot be understood without taking into account the mental operations that integrate information from many sources" (p. 234). "[The individual] appears actively to organize and store acquired knowledge to provide an essential foundation of information for its continuous *anticipation* of circumstances. The *mechanisms* of its operations are the focus of cognitive research (p. 234, emphases added)." This discourse derives partly from computer science and partly from the attempt to understand, simulate and even create human intelligence artificially through computer hardware and software. Applied to the study of animals' minds, at first glance it is a cryptomechanomorphism which merely replaces Cartesian pulleys with cybernetic feedback loops.

Indeed, the processing of information is often couched in a kind of machine talk. But as we will describe following Dennett (1983) and as the emphasized terms quoted above show, as often this talk is mixed with intentionalistic discourse. An individual animal (and sometimes his or her mental structure itself) is said to anticipate, predict or plan. Further, in addition to or at the center of the working out of the "mechanics" of cognitive processing is a concept of representation. Talk of the forms by which information is represented in an animal's mind quickly overextends most metaphors of mechanics. It is typically replaced by the language of language: Information is represented in the linguistic form of propositions or rules. (Minority positions are that the mode of representation is imagistic [Shepard and Cooper, 1982] or even bodily [Shapiro, 1990] rather than linguistic).

Once granting the capacity of representation, further sophisticated attributes of the mental life of animals readily follow. If animals process and store information that represents the world, then their mental life has "intentionality," in the broad philosophical sense of that term as being about (intending) things in the world. To say that animals have intentions about the world and

act on them is to say that they have concepts and beliefs. (However, Davidson, as against Dennett, takes the position that belief possession requires full-blown linguistic capacity [Dupre, p. 440] lacking in animals.) And if first order intention (beliefs, desires about things), why not second order intention (beliefs, desires about another animal's beliefs, desires) or even third order intention (Mitchell, p. 208)? In fact, as these investigators think through certain sophisticated phenomena for us, we see that almost by definition play and genuine communication involve intentional sharing, influence, and involvement among individuals.

It is partly in this context that Dennett offers his suggestion that those studying animal behavior adopt the everyday intentionalist language of beliefs, desires and intentions in place both of "behaviorese" and cognitivist talk of information processing (Dennett, 1983, p. 343). Of course, Dennett would have investigators hedge their bet, in that the recommended intentional stance denotes only a commitment to an explanatory style that works (is predictive). It does not imply any commitment to an ontological position which holds that animals are in fact intentional beings.

With these attributions of information processing, representation, intention, belief and concept, the shared concern among these thoughtful investigators is not letting in a modernized version of mechanomorphism. Their concern is with that old specter anthropomorphism. As Fisher (p. 115) suggests, the charge of anthropomorphism is overapplied, being based on an overinclusive understanding of the term. The term should be limited to the attribution "of *exclusively* human characteristics to animals" (Noske, 1990, p. 62). It refers to that class of errors that give animals a human form they do not in fact share with us.

Of course, some concern with anthropomorphism is a necessary safeguard against a popular culture which humanizes all manner of nonhuman animals. Some of it also is part of the "healthy skepticism" (Galef, p. 91) of a scientific process that is careful not to distort and, in particular, not to inflate either the description or explanation of the object of study. Associated with the constructive side of a positivistic approach to science, this critique is evident in a number of the present essays. For example, against claims that certain species of animals transmit behavior through complex forms of intergenerational social behavior which is then appropriately termed "tradition," Galef argues that "simple acquisition processes" (p. 91), such as direct

reinforcement, can account for these so-called traditional behaviors.

However, much of the continued over-application of the charge of anthropomorphism against research into animals' minds reflects a positivistic preoccupation with validity and other vestiges of the Cartesian underpinnings of positivistic science. To varying degrees the present authors have assimilated the numerous critiques of positivism from both within and without the natural scientific establishment (Shapiro, 1986). In practice, this means that they accept that the results of their empirical investigations cannot achieve certainty. They recognize that, as investigators, they are embedded in individual concerns, language habits (such as those implied by Fentress [pp. 7-35] in the selection of categories to describe behavior), and cultural biases (such as that described by Gruen [pp. 56-74] as gendered knowledge), all of which prevent access to the transparent and universal truth claimed possible by positivistic lights.

However, in my view many of the present contributors still harbor remnants of positivism and Cartesianism. This results in overly suspicious and rigid concerns about providing an inflated understanding of their own or other researchers' results. These concerns are often couched in terms of the charge of anthropomorphism. For example, beyond the obligatory nod to Morgan's Canon, that the contributors are still more comfortable with an explanation which reduces any apparent indication of an animal's mental life to some form of mechanistic friction points to the continued presence of the Cartesian orthodoxy that only humans have a mental life.

More subtly and more pervasively, they still conceive of the mental, whether attributed to human or animal, as that doubly unobservable Cartesian "nonstuff." The mindful is both irretrievably inside the body *and* not of the body, being precisely "mental," disembodied, incorporeal. Given this radical inaccessibility that is the hallmark of the Cartesian isolated ego (Dupre, pp. 428-434), we can only know another's intentions (whether that other is human or animal) by inference. So much for genuine intimacy. More pertinently here, this strongly held presupposition is an apology for the cognitivist, having let go of behaviorism's impressively limited conceptual universe, to retain at least a methodological behaviorism. The mental is only known by inference from behavior where behavior is conceived in physicalistic and instrumentalistic terms. Rather than immediately given

as meaningful, as an embodied consciousness, action is only known by inference. (Dupre [p. 438] makes a similar argument in Wittgensteinian terms, rather than in the phenomenological terms I use here.) We do not see an animal retreating in or as his or her posture and movement; we only infer his or her retreat after the fact of the leave-taking. In other words, despite what is no doubt the intimate sense and knowledge these authors have of their animal subjects, they will not speak from that. They disqualify the understanding gained from their own hard-earned attempts to empathize, participate, and be involved with animals.

A number of the authors here do grapple with these issues. In my view, Clark in theory and Mitchell in practice clearly overcome the Cartesian legacy. Dupre at least hedges the bet by arguing for the adoption of Dennett's recommended intentional stance.

This emerging cognitive ethology is a mix of neo-Kantianism, computer science and methodological behaviorism. As such, in my view it may not be an enterprise with a stable future. It will likely crystallize into a reductive physiological discourse on the one side and an interpretive science on the other. Unfortunately, in my view, this latter will not be acceptable to most current investigators and will not be given any standing either in biology or psychology. By interpretive science, I mean something close to an "anthropology," if you will, of nonhuman animals. In this science as in anthropology, the objects of study are not uprooted or manipulated. They are studied where they are and how they are. Further, in this enterprise, it is recognized that understanding is gained by an empathic and, where possible, a participatory observation and that it consists in a cohesive interpretation of those lives as they are lived by the individuals studied.

### **"Awakening" Animals**

This brings me to a further criticism of cognitivism, one that I am particularly sensitive to as a phenomenologist. The clear gain in cognitivism is the re-minding of animals, a compensatory move necessitated by the mindlessness of behaviorism. However, understanding the mind is taken to mean working out the mechanisms of information storage and processing. How this processing is *experienced* by an animal or even how or whether an animal is aware of the information processed are questions not typically addressed in a cognitivist style of research. There is a strong, although

often tacit, distinction between mind or mental life, referring to representation and informational capabilities, and consciousness, which refers to awareness. As the behaviorist investigator practiced forgetting mind, so does the cognitivist, *mutatis mutandis*, forget consciousness.

Even those cognitivists who use the intentionalist explanatory style suggested by Dennett and talk of animals anticipating or planning do not mean to imply that their subjects are aware of their own plans. The animals are not having an experience of their own plans or of any other intention imputed to them. There is no question of experiencing, of world as lived, of *umwelt*. Given observations of certain behavior one can infer plans and planning. The basis for such talk rests, in turn, in theoretical talk of cognitive structures such as maps and of information processing. It is behavior as objectively observed that is explained. This move bypasses *both* description and explanation of an animal's lived world.

Given the relative philosophical sophistication of its contributors, a virtue of the volume under review is that there is some recognition and discussion of the problematics of this absence (see Crisp, Akins and Dupre, all in section IV). Here I will not rehearse their arguments regarding the possibility of whether and how a science of animal behavior, having re-minded animals, might also give them back their awareness. Rather, in the remainder of this review I will discuss the implications of the fact that most of the substantive (more empirical) essays on particular animal phenomena eschew talk of consciousness. In particular, I will share my concerns about the ethical implications of this absence. (Note that the formal discussion of ethics occurs in the second volume of this anthology, which is not under review here).

An enterprise that takes subjectivity as the object of its study does not promise that its animal subjects (in this context "subjects" may be, finally, actually taken as that) will be treated ethically. Any knowledge can be used to exploitative ends. On the other hand, as the study of the structure of prejudice shows, discrimination and exploitation are often based on and justified by highly external, partial (in both senses of that term), and rigidly stereotypical knowledge. Knowledge of individuals that is based on involvement with them, understanding in the etymological sense of that term (standing under) tends to dissolve such prejudicial thought and treatment.

The reluctance to allow animals their subjectivity may be seen as yet another in a series of receding lines

drawn for the sake of maintaining a radical cleavage between human and nonhuman animals. As I have argued elsewhere (Shapiro, 1990), historically such discreteness has provided fertile ground for positions that partake of that form of discrimination referred to as speciesism. Jonas (1966) argues on ontological grounds that the more compelling cleavage is between animals and plants.

That animal/plant is a more acceptable cleavage on ethical grounds is clear also from a glance at the several emerging moral philosophical discourses on our treatment of animals. The refusal of the new science of animal behavior to give animals their world as lived costs each of these further empirical and conceptual support. In Singer's utilitarianism (1975), suffering of which an individual is somehow not aware; in Regan's deontology (1983), being the "subject of a life" that is not lived through or lived in; in Rollin's neo-Aristotleianism (1981), purpose that is not known; and in feminism's "relationship" (Adams, 1990), a relation that is not lived—all of these critical phenomena are thinner without consideration of the consciousness of the individual. They all need the backing of a scientific discourse that is not wary of investigating the experience of pain and suffering, of living toward a certain end or purpose, of a certain form of relationship with another animal...

It is reasonable to speculate that if we had had such a contemporary phenomenology of the well-being of primates, the poor resolution of the regulations implementing that provision in the recent amendments of the Animal Welfare Act (1985) might have been averted. (Works by Goodall [1986] and Cheney and Seyfarth [1990], published after the passage of the legislation, are somewhat more open to attempting an account of primate subjectivity).

### **Ethical Implications**

Any scientific enterprise involving research with animal subjects has ethical implications on at least three levels: (1) the direct treatment of the animals involved, (2) the investigatory posture of the inquirer, and (3) the substantive findings. The first has immediate ethical cost in terms of the pain, suffering and harm of the animal subjects. There have been some efforts to measure this through a concept of invasiveness (Shapiro and Field, 1988). The second, investigatory posture, affects (1) and (3), but, as importantly, it influences the general public's approach and attitude toward animals.

For example, an investigatory posture that emphasizes knowledge (and control) gained exclusively through instrumentation, measurement, and inference models an attitude of distance between human and animal. It implies remoteness and detachment, while an investigatory posture that features involvement, participation, and empathy as a means of understanding teaches caring (Cave, 1982).

Substantive findings and, inseparably, the discourse in which they are couched also influence public attitudes. One of the benefits of cognitive ethology is the wonderful capabilities which they have shown in animals. But to say that an animal can *represent* information yet, in the phenomenological sense, is not *present* to the world of which he or she is so informed is likely to have a reductionistic and distancing effect on our perceptions of animals.

In his discussion of the intentional stance, Wilder points out that the danger that it might provide misleading and "inflationary accounts" (p. 356) may be offset by the "fecund[ity]" of the leads so provided. As Menzel and Johnson (1978) have pointed out, in this era of concern about the ethics of our treatment of animals, there is an ethical gain in erring on the side of inflation rather than reduction. While, of course, our intent is to know animals as themselves, given this concern it is a better wager to err on the side of anthropomorphism than mechanomorphism. Consistent with this, including the study of consciousness in animal behavior science will yield both productive leads and ethical gains. Given the strength of critiques from various quarters of the possibility of certainty (Wilder, p. 364) that was the hallmark of positivism, surely animal behavior scientists can risk relaxing their preoccupations with validity and for reductionistic explanations.

Contemporary philosophy of science, developments in moral philosophy, and the new animal behavior science can meet and complement each other if the latter, having moved from behavior to mental life, can make the additional move from mental life to experience. A rigorous science of the experience of animals is possible, fruitful, and fair.



## References

- Adams, C. (1990). *The Sexual Politics of Meat*. New York: Continuum.
- American Psychological Association Monitor. (May, 1987). "The Pendulum Swings." p. 40.
- Bekoff, M. and D. Jamieson (eds.). (1990). *Interpretation and Explanation in the Study of Animal Behavior. Volume I: Interpretation, Intentionality and Communication*. Boulder: Westview.
- Cave, G. (1982). "Animals, Heidegger, and the Right to Life." *Environmental Ethics*, 4, 3, 249-255.
- Cheney, D. and R. Seyfarth (1990). *How Monkeys See the World*. Chicago: University of Chicago.
- Dennett, D.C. (1983). "Intentional Systems in Cognitive Ethology: The "Panglossian Paradigm" Defended." *Behavioral and Brain Sciences*, 6, 343-390.
- Dewsbury, D. (1984). *Comparative Psychology in the Twentieth Century*. Stroudsburg, Pennsylvania: Hutchinson Ross.
- Field, P. (1990). "The Most Invasive Experiments in Psychology Textbooks." *PsyETA Bulletin*, 9, 2.
- Field, P. (1988). "Surveying the Behavior of Researchers with a Scale of Invasiveness." Paper presented at American Psychological Association Convention, Atlanta.
- Field, P., K. Shapiro and J. Carr (1990). "Invasiveness of Experiments Conducted by Leaders of Psychology's Animal Research Committee (CARE)." *PsyETA Bulletin*, 10, 1, 1-10.
- Goodall, J. (1986). *The Chimpanzees of Gombe: Patterns of Behavior*. Cambridge: Harvard University Press.
- Jonas, H. (1966). *The Phenomenon of Life*. New York: Delta.
- McKeon, R. (Ed.). (1941). *The Basic Works of Aristotle*.
- Menzel, E. and M. Johnson (1978). "Should Mentalist Concepts Be Defended or Assumed?" *Behavioral and Brain Sciences*, 4, 586-587.
- Noske, B. (1990). "Review of *Perceptions of Animals in American Culture*." *Anthrozoos*, 4, 1, 61-62.
- Regan, T. (1983). *The Case for Animal Rights*. Berkeley: University of California Press.
- Rollin, B. (1981). *Animal Rights and Human Morality*. Buffalo: Prometheus.
- Shapiro, K. (1990). "Animal Rights versus Humanism: The Charge of Speciesism." *Journal of Humanistic Psychology*, 30, 2, 9-37.



Shapiro, K. (1990). "Understanding Dogs through Kinesthetic Empathy, Social Construction and History." *Anthrozoos*, 3, 3, 184-195.

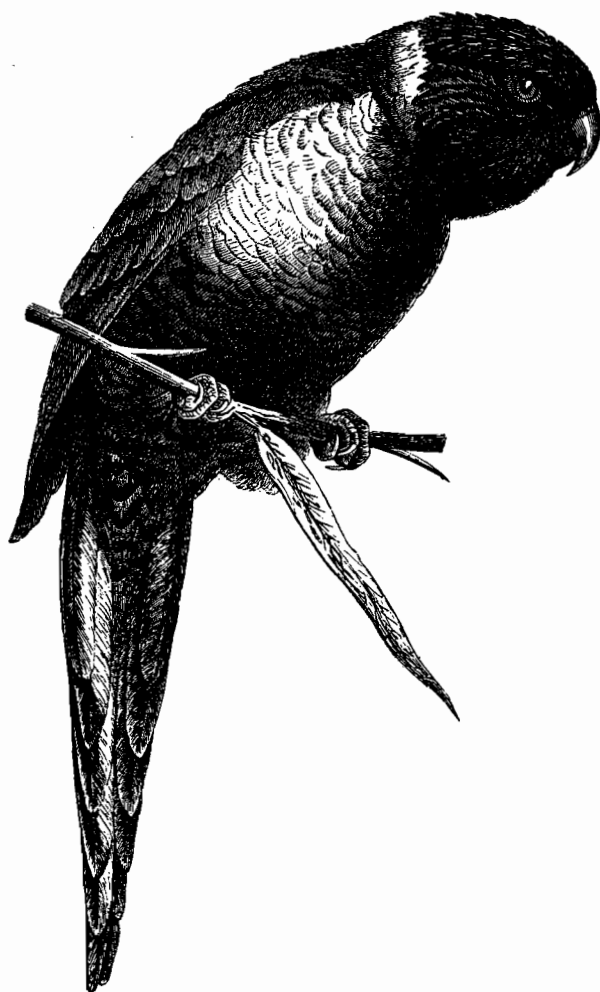
Shapiro, K. (1989). "The Death of the Animal: Ontological Vulnerability and Harm." *Between the Species*, 5, 4, 183-195.

Shapiro, K. and P. Field (1988). "A New Scale of Invasiveness: Its Role in Reducing Animal Distress." *Humane Innovations and Alternatives in Animal Experimentation*, 2, 43-46.

Shapiro, K. (1986). "Verification: Validity or Understanding." *Journal of Phenomenological Psychology*, 17, 167.

Shepard, R. and L. Cooper (1982). *Mental Images and their Transformations*. Cambridge: MIT Press.

Singer, P. (1975). *Animal Liberation*. New York: New York Review of Books.



## Response: Some Problems and Prospects for Cognitive Ethology

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In his excellent review of the first volume of our two-volume anthology, *Interpretation and Explanation in the Study of Animal Behavior*, Kenneth Shapiro provides a provocative account of the strengths and weaknesses of cognitive ethology. We would like to take this opportunity to highlight and extend some of Shapiro's points, and to explain more fully what we hope to accomplish in our work on cognitive ethology.

One of our motivations, like Shapiro's, is practical. Although there is no purely logical connection between views about mental continuity and views about moral continuity, we believe that there are important psychological connections. In our view, a culture which recognizes its behavioral and emotional kinship with nonhuman animals is one that is likely to recognize its moral kinship as well (Bekoff and Jamieson 1991; Wuensch *et al.* 1991; Rollin 1989). The moral case for changing our behavior with respect to nonhuman animals has been convincingly argued by many philosophers (see for example Singer 1990, Regan 1983, and Sapontzis 1987). We see our work in cognitive ethology in part as contributing to the epistemic infrastructure that will make such moral views more widely accepted.

Our motivations are also theoretical. In the post-World War II period, especially in the United States, philosophy and biology have increasingly become estranged. To many biologists philosophy has seemed irrelevant or even



## DISCUSSION