

William D. Casebeer

# Natural Ethical Facts

EVOLUTION, CONNECTIONISM, AND MORAL COGNITION



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William D. Casebeer

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The sharphoofed moose of the north, the cat on the housesill, the chickadee, the prairie-dog,  
The litter of the grunting sow as they tug at her teats,  
The brood of the turkeyhen, and she with her halfspread wings,  
I see in them and myself the same old law.  
Walt Whitman, *Leaves of Grass* (1855)

Philosophy ought to imitate the successful sciences in its methods, so far as to proceed only from tangible premises which can be subjected to careful scrutiny, and to trust rather to the multitude and variety of its arguments than to the conclusiveness of any one. Its reasoning should not form a chain which is no stronger than its weakest link, but a cable whose fibres may be ever so slender, provided they are sufficiently numerous and intimately connected.  
Charles S. Peirce, *Some Consequences of Four Incapacities* (1868)



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## Preface and Acknowledgements

I have been told it is inappropriate to begin a paper or (heaven forbid) a book with an apology. So: I apologize . . . not just for ignoring this piece of advice, but also for attempting a project whose scope and nature precludes thorough examination in a single volume, let alone a whole series of books. I beg your indulgence, and hope that by the end of the book you will understand why I think writing it was necessary, despite its myriad shortcomings and truncated discussions of theses that deserve a far more elaborate defense.

Bringing this book to completion has been a distributed cognitive enterprise of the first order. Many scholars have been involved in the intellectual labor required to integrate the core ideas of the project into an organic whole. In particular, Paul Churchland, Patricia Smith Churchland, Jeff Elman, Georgios Anagnostopoulos, and Joan Stiles were kind enough to read original drafts in their entirety when the project was merely embryonic; they all provided useful feedback and encouragement, and the structure of the book owes much to their groundbreaking work in this area in the past decade. Paul and Pat Churchland in particular have been sources of constant inspiration; their willingness to see (with Paul's mentor Wilfrid Sellars) how things (in the *largest sense*) fit together (in the *largest sense*) is but one reason why their philosophy *about* philosophy is and will continue to be instrumental in helping us cope with the challenges presented by the brain and mind sciences. In addition, the scholars Larry Arnhart, William Rottschaefer, Louis Pojman, P. D. Magnus, Wayne Martin, Carl Sachs, Carl Ficarrotta, David Schiller, Joseph Cohen, David Barash, and Bill Rhodes all provided useful critical feedback on pieces of the manuscript at various stages. Of course, the factual errors and mistakes in reasoning

that remain are all my own, while most of what is true and good in the book is theirs. My thanks are also due to the excellent editorial staff at The MIT Press, particularly Tom Stone and Paul Bethge, whose patience and advice I very much appreciate.

Raising a family while writing a book can be problematic; I lovingly thank my wife Adrienne for her intellectual and emotional support and for the tremendous efforts she has placed into raising our three children (Jonah, Mara, and Linnae) when I was otherwise preoccupied. My greatest hope is that this project can contribute in some small way to making the world that they and other children grow up to inhabit a better, more sane place.

My heartfelt thanks to all those whose ideas and attitudes have otherwise made their way into this book, particularly friends, philosophers, and cognitive scientists from the University of California at San Diego, the University of Arizona, and the United States Air Force Academy. You know who you are—it's an honor to be among your company. Finally, I thank the United States Air Force (and, in turn, the American taxpayer) for funding my graduate education, and for the daily reminder that supporting and defending the U.S. Constitution is a worthy use of heartbeats.

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# Natural Ethical Facts

## Why Care about Natural Ethical Facts?

Evolutionary biologists have been at work for more than 100 years telling us about our nature as evolved, embodied creatures. Cognitive scientists have been plumbing the depths of the mind for 50 years, discovering the neural and computational roots of complex behavior and cognition. For more than 2,000 years, moral philosophers have been plugging away at big-picture normative theories regarding how we ought to conduct ourselves and, ultimately, what the point of this blooming and buzzing confusion of life and mind is. Until relatively recently, however, work at the intersection of these three areas of inquiry was difficult to find. Scientific theories of life and mind have had relatively little contact with normative moral theory, and moral philosophers, when they have made contact, have often expressed disappointment with the results. Why is this? What can we do to ensure that fruitful consilience between our best theories in the cognitive sciences, evolutionary biology, and ethics is the norm rather than the exception? Addressing these issues by showing how there can be useful interactions between science and ethics is the critical issue facing the sciences. As we cast about for a post-Enlightenment normative anchor, if we are to prevent backsliding into dogmatic supernatural and non-naturalistic conceptions of the moral life, it is imperative that we demonstrate the possibility of intelligent, useful interactions between the human sciences and human ethics.

This book is an attempt to show that, theoretically speaking, there is no reason to rule out a scientific naturalized ethics *tout court*, and that, practically speaking, by taking into account recent developments in

evolutionary biology and the cognitive sciences, the outlines of one promising form of such an ethics can be sketched. It will be a pragmatic neo-Aristotelian virtue theory, given substantive form by both conceptions of function from evolutionary biology and connectionist conceptions of thought from cognitive science. The rough structure of the book follows from the unfolding of this admittedly synoptic thesis.

### **Moral Judgments, Connectionism, and the Cognitive and Biological Sciences**

The naturalization of ethics has been a problematic enterprise for moral philosophers. Historically, there are several reasons why this is so. For one, theoretical arguments regarding the impossibility of a systematic reductive relationship between the natural realm and the normative realm have stymied attempts to unify the two spheres by those sympathetic to such a union. In addition, the cognitive capacities we use to grasp moral knowledge have been thought by some to be far too subtle for “mere” empirical explanation by a scientifically informed theory of cognition. Finally, some previous attempts to construct a scientifically informed moral theory, and thus remake ethics into a science, have been too simplistic (or have been painted as such by critics) to do justice to the full range of our considered moral intuitions and our reasonably informed moral judgments. As a result, much of the work in the naturalization of morality has taken place in metaethics rather than in normative moral theory, leaving the latter bereft of empirical content. And very little research has attempted to relate the latest findings of the cognitive sciences to moral psychology and moral judgment, let alone normative moral theory, in any systematic fashion.

This isolation has had a debilitating effect on both the empirical plausibility of normative moral theories and the societal impact of the biologically informed cognitive sciences. Our normative moral theories would be greatly enriched if the questions they posed were empirically tractable, and the breadth of our cognitive and biological sciences would be enhanced if they were to offer plausible reconstructions of our cognitive capacity to reason about, grasp, and accede to moral norms. Such an enrichment and enhancement also would pay dividends external to the academic professions, giving us alternate strategies for framing and

resolving moral conflicts and allowing us to improve our methods for cultivating moral knowledge by enhancing the effectiveness of our collective character-development institutions.

My project embodies a synoptic reconciliation of the sciences of cognition with a fully naturalized conception of morality. I argue that we can improve our understanding of the nature of moral theory and its place in moral judgment if we better understand just what morality consists in. Such an understanding will best be informed by treating morality as a natural phenomenon subject to constraints from, influenced by, and ultimately reduced to the sciences, particularly the cognitive sciences and biology. Treating morality as a matter of proper function, biologically construed (e.g., at least partially fixed by our evolutionary history), with a concomitant emphasis on skillful action in the world, will also shed light on just what kind of creatures we must be (cognitively speaking) if we are to possess knowledge about morality so taken. Connectionist accounts of cognition can best accommodate this style of knowledge and can also account for other gross moral psychological phenomena, giving them ample explanatory power and making them the centerpiece of moral cognition. The nature of morality and the picture of moral cognition I defend are rooted in a pragmatic construal of knowledge and in a modern, biologically informed neo-Aristotelianism. Exploring these roots, particularly as they manifest themselves in John Dewey's theory of moral deliberation, will shed light on the role of moral theory in such a scheme and will help distinguish this approach from less fruitful and more purely sociobiological undertakings. Finally, I discuss objections and draw out some practical implications, regarding the nature and form of our collective character-development institutions and our methods for moral reasoning that arise from taking this approach seriously.

## The Way Forward

In chapter 2, I discuss and rebut two popular arguments against a reductive and naturalizable account of morality: the naturalistic fallacy and the open-question argument. I contend that both arguments fail, primarily because they rely on an outmoded analytic/synthetic distinction. Arguing for a continuum of analytic and synthetic judgments, thus demonstrating

that moral knowledge and scientific knowledge are commensurable, will open the way for a reductive naturalistic account of morality. I accomplish this by recapitulating W. V. O. Quine's arguments against the analytic/synthetic distinction. I also present the basics of Dewey's theory of moral deliberation, arguing that his conception of "ends-in-view" effectively demonstrates the continuity of scientific and practical knowledge with moral knowledge. The conception of morality I thus offer will be cognitivist and realist but will nonetheless constraint our ability to systematize moral theory. Moral conclusions, I will argue, follow abductively from properly construed non-normative premises. Our moral judgments are part and parcel of our web of beliefs. If the proper reductive relationship between moral terms and natural terms is captured by a theory that relates the two in a fecund way, then inferences from non-normative premises to normative conclusions will not be excessively licentious.

In chapter 3, I articulate the basics of such an approach, rebutting the "error-theory" arguments against a moral science articulated by John Mackie. Moral claims should be reduced to functional claims technically construed, hence the shared roots with an Aristotelian view of the world. Such functional claims should be treated as they are in biology and the life sciences, with a suitably modified Wright-style teleonomic analysis: a Godfrey-Smith-flavored "modern-history" theory of functions. Such a theory will thus take advantage of the explanatory power of the neo-Darwinian synthesis. Some functional facts about human beings fully fix normative claims; others will only constrain the possible state space of moral options. A small percentage of the decisions we face may have no effect at all on functional concerns, in which case we are (morally speaking) simply free to choose. The basics of this account will thus allow some flexibility in the normative structure of our lives. My account also has the resources necessary to distinguish itself from hedonistic, egoistic, desire-satisfaction, and utilitarian theories of morality, particularly after I make some crucial distinctions (including the difference between proximate and distal functions and the difference between ahistorical and historical functions). On this picture, moral facts are not "queer" and unscientific, nor is morality globally relativistic and dramatically contingent. We can in good conscience be moral realists and yet embrace an acceptable form of humility regarding our ability to

know the good; such humility reflects not only constraints on our cognitive economy but also constraints on the form of norm-fixing evolutionary processes in nature. Ultimately, this approach makes empirical and scientific investigation of moral normativity possible. I also examine contemporary work done in the same vein, including more purely sociobiological and Darwinian approaches to morality. I focus primarily on modern accounts, ranging from Larry Arnhart's theory to E. O. Wilson's, although I briefly discuss wrong-headed evolutionary ethical theories, such as those offered by Herbert Spencer and the Social Darwinists. I discuss similarities and differences between these approaches and my own, concluding that the account on offer has strengths that the other approaches lack.

In chapter 4, I draw on resources from connectionist accounts of cognition and from the embodied cognition movement to articulate a purely biological notion of moral judgment that bridges the "normativity gap." Using resources from these two approaches, it becomes possible to specify a conception of judgment that harmonizes with the account of moral knowledge discussed in chapter 3. A purely biological notion of judgment is possible, and such a notion comports well with the idea of judgment as the cognitive capacity to skillfully cope with the demands of the environment. Thus, moral judgment is possible only in systems that learn in a natural computational manner, whose nature is at least momentarily fixed,<sup>1</sup> and that exist in an environment where demands are placed upon the organism. Having good moral judgment amounts to being able to accomplish cognitive tasks that enable one to meet the demands of one's functional nature. Morality is therefore a matter of "knowing how" more than a matter of "knowing that." Some of these cognitive capacities can be captured in "representation-free" neural nets that are best described in the language of dynamical systems theory; others require traditional connectionist distributed representations. Some advanced forms of moral reasoning may require a model-theoretic account of reasoning. I discuss what mental models look like in connectionism, postulate how they can accommodate more advanced aspects of moral cognition, and point out their essential connection to action in the world and embodiment in an organism. Certain high-level aspects of connectionist mental models may lend themselves to a truth-functional analysis rooted in a symbolic redescription of network activity, but such



a redescription will be possible only in certain instances and should not be reified into a categorical demand placed upon normative action and its associated psychology. I draw connections between this discussion and Dewey's account of moral deliberation, which I sketched in chapter 2. I also offer a useful typology of moral characteristics that follows from this account, distinguishing between those objects of science that are the proper subjects of moral *cum* functional concerns, and between creatures that are able to effectively model their environment and their relationship to it (and that can hence formulate their own moral science). This generates a continuum among living things that have functions, ranging from simple moral agents (for example, most insects) to maximally robust moral reasoners (most social creatures with a significant range of behavioral repertoires, especially—but not only—human beings).

In chapter 5, I use the explanatory power of a connectionist approach to account for other gross features of moral reasoning. The interaction of advances in connectionist accounts of thought and traditional issues in moral cognition and psychology is an interesting one, as heretofore disparate phenomena in the latter can be unified by an account from the former. Connectionism can serve as a platform on which to reconstruct several high-order moral cognitive phenomena, including moral knowledge, moral learning and conceptual development, moral perception and the role of metaphor and analogy in moral argument, the appearance of staged moral development, the possibility of *akrasia* (acting against one's best considered judgment), the presence of moral systematicity, moral dramatic rehearsal and moral motivation, and moral sociability. A connectionist account of moral cognition best unifies the neurobiology and cognitive psychology of morality and sheds new light on traditional issues in moral psychology, including questions about the motivational efficacy of moral claims, the affective aspect of moral reasoning, and the importance of moral exemplars. I support these contentions with reference to the exponentially increasing body of modeling work in artificial neural networks. Finally, I briefly examine the literature relating brain structure and function to these models, identifying key components of the several cognitive systems that jointly constitute our capacity to be maximally robust moral reasoners.

In chapter 6, I draw together themes from the preceding five chapters, examining how naturalizing morality by way of evolution and

connectionism may affect our moral theories, our moral practices, and our moral institutions. Where does this attempt at reduction leave traditional moral theory? On the one hand, some aspects of moral theory—particularly an appropriately naturalized Aristotle and large parts of Dewey’s attempt to develop a pragmatic ethic—remain components of the moral life; on the other hand, certain traditional moral theories do not fare as well, at least if they are taken to be universally applicable. A Kantian approach, for example, has at best heuristic value but at root makes demands that are psychologically unrealistic. I conclude that it functions well as a device for drawing attention to the strong conditions necessary to enable social reasoning to occur, but that it fails to appropriately accommodate primary functional concerns. This pragmatic approach recognizes a healthy limit to the usefulness of grand moral theory: its existence can be explained, but its limits are outlined. Ethical reasoning becomes a species of pure practical knowledge and as such is responsive to the demands of the present. Just as pragmatic epistemology is a process-oriented philosophy, so too is a pragmatic ethics that draws on the useful portions of previous moral theorizing, insofar as they are informed by and illuminate the issues raised by functional *cum* biological concerns. This emphasis on proper function is rooted in an Aristotelian account of the nature of humanity and requires the defense of at least a “soft essentialism,” which I offer here by adverting to the findings of the neo-Darwinian synthesis. Though we might think that one of the primary lessons of Darwinism is that there is no such thing as a species essence, I argue that population thinking serves as a healthy corrective to the idea that our functions are immutable and that all of us must possess exactly the same functional natures. I discuss the similarities between this explicitly pragmatic approach and an Aristotelian virtue ethic, arguing that the two are successfully unified with very little remainder and that the neo-Darwinian synthesis can give biological bite to Aristotle’s contentions about the limits of moral theorizing. I conclude chapter 6 by using the aforementioned approach as a tool to critique character-development institutions and to illuminate cases of moral conflict. I address real-world case studies in ethics that demonstrate how this conception has the ability to contend with these objections directly and not just abstractly. I focus first on whether an individual should develop deep or wide friendships (modern-history

functions call for deep friendships) and second on how we should structure our societies (modern-history considerations lead to liberal democratic forms of organization). In more abstract and general terms, my account restores an emphasis on habituation and mindfulness that our social institutions would do well to attend to. I examine the implications of this view for character development and moral education, arguing that it propels to the forefront a narrative-driven case-study approach to moral education, a solid grounding in the biological and sociological dimensions of the human situation, a careful tending of the institutional environment in which moral action is situated, a demand for consistency between articulated principles and practical actions, and a healthy flexibility in the practical application of rules and regulations. Nothing teaches like experience, and so the proper environment for moral experience must be carefully cultivated and maintained by institutions of moral education and character development. Such a process is demanding and requires those engaging in it to stay informed of the results from a large number of fields of empirical inquiry.

In chapter 7, I address the remaining objections to the aforementioned approach and outline its additional strengths. It must answer some hard questions usually put to more traditional sociobiological undertakings that any naturalistic account of morality must deal with. Among the grounds for concern are the perceived lack of robust and genuine normativity in the approach, some purportedly morally repugnant “entailments” of the position, an argument that the position demands its own rebuttal for heuristic “Platonic noble lie”-style reasons, and an argument that the position is empty of useful moral content. In the conclusion of this chapter, I outline several areas where there is a notable absence of empirical work or where more empirical work is needed; these areas include the connectionist modeling of moral cognition, applied moral cognitive psychology, moral anthropology, the neurobiology of moral cognition, and biologically informed game-theoretic approaches to skillful coping. I also discuss the need for further exploration of more traditionally philosophic topics, such as alternatives to a simple-correspondence account of cognition. A biological and neurobiologically informed pragmatic ethic holds the most hope for being the unifying procedural glue that can successfully hold together otherwise disparate and possibly mutually antagonistic approaches to the moral

life. Although moral progress using this approach is not a given, I highlight its essentially optimistic character and hold out hope for reconciliation between the humanities and the sciences.

### **‘Naturalism’ and ‘Ethics’: Problematic Terms?**

Before I begin my discussion of the naturalistic fallacy, there are several terms whose use demands clarification so that the nature of this approach is clear. These include ‘naturalism’ and ‘ethics’. (Entire books have been written about the definition of these terms, so my discussion will be concise.)

#### **‘Naturalism’**

The principal approach that I will use in the book is best typified as a form of methodological naturalism, by which I mean that the methodological and epistemological assumptions of the natural sciences should serve as standards for this inquiry. If at the end of the inquiry we feel compelled to postulate the existence of a non-naturalistic entity or process, so as to best explain the results of our study, then our methodological naturalism will have led us to a denial of ontological naturalism. However, I don’t think this will be the case, and for the moment we should hold our methodological naturalism close so as to see if normativity can be derived without postulating “spooky” non-natural entities (gods, a noumenal realm, and so on). Of course I will avail myself of the ontologies postulated by the natural sciences during the course of this inquiry, but this will be done with requisite sensitivity to moral experience, and with the fallibilistic view that the ontologies of our current sciences might be wrong, so, although the project will presuppose ontological naturalism to a certain extent, naturalist methodologies are still the primary constraint.

Dewey (1902, p. 142) provides a nicely succinct definition of naturalism: “The theory that the whole of the universe or of experience may be accounted for by a method like that of the physical sciences, and with recourse only to the current conceptions of physical and natural science; more specifically, that mental and moral processes may be reduced to the terms and categories of the natural sciences. It is best defined

negatively as that which excludes everything distinctly spiritual or transcendental. . . .”

Some of the traditional methodological and ontological theses of naturalism will be actively defended in this paper; others will be assumed. For example, I will actively defend a realist conception of morality, whereas I will simply assume that there are no miracles and there is no extrasensory perception (at least until evidence demands that we change these assumptions). In other words, my defense of certain traditional tenets of naturalism will take place against the background of (a) uncontroversial findings from the sciences (e.g., no ESP), (b) controversial but eminently defensible findings from the sciences (e.g., the explanatory power of connectionist approaches to cognition), and (c) the interesting points of conflict between fields of inquiry not generally considered to be part of the sciences (e.g., certain assumptions about the nature of ethical claims) and the sciences of cognition and life.

Gerhard Vollmer’s list of the traditional ontological and methodological theses of naturalism (taken from his “Naturalism, Function, Teleonomy,” as published in Wolters 1995) is worth quoting in full:

- A) Only as much metaphysics as necessary!
- B) As much realism as possible!
- C) For the investigation of nature, the method of empirical science is superior to any other.
- D) Nature (the world, the universe, the real) is, at bottom, constituted of matter and energy, both temporally and causally.
- E) All real systems—the universe as a whole included—are subject to development, to evolution, to assembly, and disassembly. That’s why any modern naturalism is an evolutionary naturalism.
- F) Complex systems consist of and originate from less complex parts.
- G) The real world is interconnected and quasi-continuous.
- H) Instances transcending all human experience are conceivable, but dispensable for the consideration, description, explanation and interpretation of the world.
- I) There are no miracles.
- J) There is no extrasensory perception.
- K) Understanding nature doesn’t transcend nature itself.
- L) There is a unity of nature which might be mirrored in a unity of science.

The naturalization of ethics would thus entail making ethics consistent with this list of statements and thereby showing how knowledge of the normative can be derived and justified using this methodology and ontology. As Vollmer notes, every thesis on this list deserves explication

and refinement, but I hope they are intelligible without this and that they serve as useful guideposts for present purposes.

Jay Garfield (2000, p. 423) distinguishes between strong naturalism and moderate naturalism. Strong naturalism requires more than mere consistency (which is demanded by even the weakest forms of naturalism); it also requires entailment or some form of reduction to more fundamental and already unproblematically naturalized theories. Moderate naturalism would require (1) consistency, (2) that the research be guided by the methodological canons of the sciences, and (3) that there be (in Garfield's words) "plausible explanatory strategies for linking the theories, explanations and theoretical perspectives" of the body of knowledge being naturalized to the remainder of science. In my case, I will be happy if I achieve a moderate naturalization, but I keep in mind the goal of strong naturalization as a regulative ideal. This reflects my suspicion that mere supervenience relations, though acceptable in a developing science, often are used as an excuse not to explore the phenomena in question in more depth, or, in the worst of cases, merely restate a problematic relation rather than "solving" it.<sup>2</sup>

In sum, we should expect that a plausible naturalization of ethics would explain the essential nature of moral judgments, their subject matter, and how we come to make them. Such a naturalization would make full use of background knowledge from the sciences, especially (at least in the case of this book) from the cognitive sciences and evolutionary biology.

## **The Natural Method**

Keeping the background knowledge of the pertinent sciences in mind while constructing a theory has been given a name by Owen Flanagan: the Natural Method.<sup>3</sup> Though Flanagan uses it to triangulate on a theory of the nature of the mind (paying attention to results from the associated departments of the cognitive sciences, as well as to first-person phenomenology), there is no principled reason why the process couldn't be applied to any phenomenon of interest. Flanagan (2000, p. 14) characterizes the Natural Method as follows: "The idea is to keep one's eye, as much as is humanly possible, on all the relevant hypotheses and data sources at once in the attempt to construct a credible theory. The

natural method involves seeking consistency and equilibrium among different modes of analysis applied to the study of some . . . phenomenon.” Flanagan’s prescription derives in part from Quinean considerations about confirmatory holism. Insofar as these considerations also drive my inquiry (as will become evident at the end of chapter 2), it is no surprise that the method I advocate for framing theories of morality is, in essence, the Natural Method.

### Two Desiderata for Naturalization

To summarize the desiderata for naturalism (for comparison to the conclusions of chapter 7), naturalizing ethics would therefore consist in producing (1) an account of moral normativity that roots normativity in nature, where the content of nature’s ontology is (provisionally<sup>4</sup>) provided by the methodological canons of the natural sciences, and (2) an account of our capacity to grasp and accede to these norms that is rooted in the best theoretical frameworks that the mind sciences have to offer.

### ‘Ethics’

What does the subject matter of the study of morality consist in? Broadly speaking, it is the study of what we ought to do, what we ought to intend, or what kind of people we ought to be, all in the largest sense—how ought we live our lives? The three traditional theoretical approaches to ethics have been thought to answer these questions in turn: utilitarianism<sup>5</sup> focuses primarily on the consequences of actions (as they relate to the production of pleasure and the reduction of pain), deontology<sup>6</sup> concentrates on what duties we owe to one another (and, in its most famous Kantian version, on what duty-filtered maxims or intentions we ought to form in our minds), and virtue theory<sup>7</sup> considers what states of character we ought to cultivate in ourselves. In the course of this book, I discuss all three of these theories as they relate to naturalization, particularly virtue theory.

There are many more fine-grained distinctions to be made here, beginning with the difference between instrumental reasoning and reasoning

about final ends. On the one hand, we can ask what we ought to do given some desire or project; such a question is one of means and involves instrumental reasoning. What is the best means or instrument I can use to accomplish my goal? On the other hand, we can ask what we ought to desire or what projects we ought to have; such a question is one of ends and involves practical reasoning about *final* ends. Naturalized systems of ethics, particularly modern approaches, are often accused of dealing only with the former, and hence of not dealing with ethics proper at all. In this project, I intend to deal with both instrumental and final norms, although the distinction often obscures the true nature of moral reasoning and can cloud inquiry. Rather than construing “grand theory” ethics as the search for final ends, we should seek explanatory unification of reasoning about both instrumental and final ends.

Some authors draw a distinction between morality and ethics. For example, Bernard Williams argues that morality is a subset of ethics, and that the former concentrates on obligation whereas the latter deals with larger questions.<sup>8</sup> Others argue that ethics is a specialized body of knowledge applicable only to certain roles, and that morality is actually the larger term; there can be “military ethics” or “medical ethics,” both of which derive their content from more general *moral* considerations.<sup>9</sup> I am dubious about the work done by drawing these distinctions, at least for this project (although in other contexts, such a distinction might be eminently useful). For present purposes, then, the terms ‘ethics’ and ‘morality’ will be used interchangeably, and no particular substantive inferences about the project should be drawn from my use of one term instead of the other.

## Final Context

Philip Kitcher offered an enlightening list of potential alternative goals for those who would “biologize” ethics. Kitcher formulated the list while attempting to discern the exact nature of the project encompassed by E. O. Wilson’s sociobiology, which Kitcher criticized in his 1985 book *Vaulting Ambition*. Kitcher’s piercing critique of Wilson is a healthy corrective to both excessive ambition and vagueness, though



Wilson's program has much about it that is worth admiring.<sup>10</sup> Kitcher (1985, pp. 417–418) postulates four possibilities for “biologicizing” (E. O. Wilson's neologism) morality:

A. Evolutionary biology has the task of explaining how people come to acquire ethical concepts, to make ethical judgments about themselves and others, and to formulate systems of ethical principles.

B. Evolutionary biology can teach us facts about human beings that, in conjunction with moral principles that we already accept, can be used to derive normative principles that we had not yet appreciated.

C. Evolutionary biology can explain what ethics is all about and can settle traditional questions about the objectivity of ethics. In short, evolutionary theory is the key to metaethics.

D. Evolutionary theory can lead us to revise our system of ethical principles, not simply by leading us to accept new derivative statements—as in (B)—but by teaching us new fundamental normative principles. In short, evolutionary biology is not just a source of facts but a source of norms.

Though it is a stretch to say that any single science (let alone evolutionary biology) can do all these things, I will claim that collectively the sciences can accomplish A–D.<sup>11</sup> The methodologies and the ontologies of the science are up to the task, particularly if our approach is subtle. In particular: I think the cognitive sciences have the leading role in A; both cognitive science and biology can contribute to B; the evolutionary sciences—evolutionary biology, ecology, systematics, etc.—can answer C (I will defend a version of realism using those resources); and both cognitive science and evolutionary biology can answer D (they reaffirm an appropriately naturalized virtue ethic, such as that developed by Aristotle and Dewey, and they can inform normative principles in interesting and enlightening ways). Minimally, and relatively uncontroversially, this book will make a contribution to A and B. Maximally, and controversially, it will also make a contribution to C and D.

So, on to certain pieces of philosophical undergrowth that must be cleared out before the project can begin in earnest, beginning with the naturalistic fallacy. Is ethics explanatorily autonomous from the sciences? Can a valid argument be given that has only factual premises and a normative conclusion? Doesn't the nature of the concepts of “normative” and “empirical” preclude any meaningful interplay between the two, and if it does, what kinds of interaction are prohibited? Depending on our answers to these questions, we may be able to rule out naturalization from the start.

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