



## Arguments on evolutionary ethics

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*Here we shall assume it to be an inevitable inference from the doctrine of organic evolution, that the highest type of living being, no less than all lower types, must go on molding itself to those requirements which circumstances impose. And we shall, by implication, assume that moral changes are among the changes thus wrought out.*

(Spencer, *Principles of Ethics*)

*I fully subscribe to the judgment... that of all the differences between man and the lower animals, the moral sense or conscience is by far the most important. This sense... is summed up in that short but imperious word ought, so full of high significance.*

(Darwin, *The Descent of Man*)

## Introduction

The scientific community consists of workers, administrators, idea people, and critics. The critic acts as a governor that keeps the community at its best; by encouraging positive, or by piercing silly ideas, the critic is the community's agent of natural selection. This was the role Tony Hoffman was born to, or perhaps he had it thrust upon him; but it is where he carved his niche. Throughout most of his writing he was an inspector general, a judge, a reviewer, and a censor. In more than one-quarter of his second book, *About Evolution* (1983 in Polish), Hoffman applied his fine analytical sense to the evaluation of sociobiology, this most bellicose, yet most imaginative, theory. Evolutionary ethics was one aspect of sociobiology that Hoffman did not discuss. I will attempt to reconstruct how he might have ruled on evolutionary ethics.

Perhaps, at the time of his writing, the subject was too messy and emotions not yet a spent force—things emotional offer little rational argument. In ethics, as in politics and religion, emotions are supreme (consider *Science for the People*). Other problems were with definitions; almost everyone who dealt with evolutionary ethics studied a different aspect of it, and thus, in various ways, narrowed the scope. The greatest difficulties in coming to terms with evolutionary ethics have been the untroubled assumptions of evolutionary and moral progress.

Hegel introduced the idea of the negative as the necessary precondition for progress. Karl Marx incorporated the element of the negative into his dialectic, and claimed that progress (good) can only be achieved by conflict. Darwin's concept of maintenance of the fittest by perpetual changes is also a Hegelian dialectics of progress. Our assumptions that negative feedbacks are necessary to achieve positive responses are woven of the same thread. It is these concepts of opposites, seen as the Darwinian red in tooth and claw, that were difficult

to reconcile with an ethics based on progress. Indeed, in our time, the idea of evolutionary progress is anathema; nor do we have much taste for the idea of moral progress. Hence, the older, nineteenth-century conceptions of an evolutionary ethics, either Spencer's or Darwin's, have been abandoned.

With rejection of progress, faith in the future was also given up. The belief in progress was based in large degree on the optimistic view of the future. Without progress, there was hardly any solution of ethical questions. The concept of ethics, including evolutionary ethics, was based on faith in a better world and in the belief that humans would act morally. But, implicitly, all of this was placed in question.

The contributions of sociobiology to evolutionary biology must not overshadow its contributions to evolutionary ethics. The most far-reaching consequences of sociobiology and, therefore, evolution itself, are their effects upon our moral, religious, and ethical life. Charles Darwin shook down the absolute immutability of nature, and Edward O. Wilson toppled the holy ark of ethics. Darwin reduced human behavior to a matter of biology, and Wilson permanently transferred ethics from the exclusive and sacred grounds of philosophy to the plebeian area of population biology and genetics. The conflict, started by Darwin and enforced by Wilson, is now less disputatious, and fewer voices are heard calling for war. Like all battles about ideas, ethical jihads and old questions are abandoned to be replaced by new ones. Not only the medical ethicists but even lawyers are raising their sociobiological and evolutionary ethical banners (Beckstrom 1989). The appeal to ethical arms against sociobiology comes now from the defenders of natural selection and naturalistic fallacy.

### Roots of biological wars

Whether Herbert Spencer was, in 1850, the first who founded 'the system of ethics' on evolution, as he claimed (1893, vol. 1: pp. vii-viii), and whether evolutionary ethics was incorrectly attributed to Darwin is irrelevant. In his *Social Statics* (1850) Spencer argued that our physiological constitution determines our rational behavior, and our moral conduct is guided by instinct. Our moral sense secures indirect benefits by regulating our social intercourse. In other words, morality springs from innate impulses. The modifications that mankind is subject to result from a universal biological law underlying the whole organic world. Human faculties are molded by natural selection for social purposes. Universal laws of nature are at work at all levels, including that of man. Unfortunately, Spencer, a popular idol of Victorian intellectuals, is misunderstood (generally without being read), and most of his ideas are now rejected out of hand. Spencerianism, or the utopian worldview in which peace and happiness will eventually reign supreme – a sort of present-day 'end of history' myth – is rejected with other of Spencer's thoughts.

Evolutionary direction is unknown and unrecognizable in the fossil record. Thus, the fossil record is irrelevant to evolutionary ethics, and speculation on what evolution might tell people about how they *ought* to behave is meaningless. Spencer, however, was right that humans are products of evolution, and that morality also must be a product of evolution. Undoubtedly, it is of adaptive benefit to humans to act morally. Therefore, morality has a base in biology. The question, then, is not how humans ought to behave, but which behavior is good for them.

Darwin, in the first edition of *The Origin* (1859: p. 488), only briefly commented on psychology, and on the 'light [that] will be thrown on the origin of man and his history' (his German translators omitted this very measured statement). It was only in *The Descent of Man* (1871) that he started ethics on its evolutionary moral path and attempted to explain the origin of human altruistic behavior by group selection. Darwin based his model of human moral conduct on the altruistic behavior of social insects. It is possible that Darwin was influenced by Spencer's success in exploiting the evolutionary sources of ethical behavior, but he was certainly less adversarial than Spencer (*The Principles of Ethics*, 1893). Robert Richards (1986, 1987: pp. 71–242, 1988, 1993), who more than any other living philosopher has propelled evolutionary ethics on its way to acceptance, has given the clearest exposition of the history of the evolutionary ethics of this and other periods. All students of evolutionary ethics must consult Richards's work.

### **Biological fallacies of natural selection**

Even though there were some differences between Darwin and Spencer, their views on ethics were generally accepted. The scientific controversy on evolutionary ethics began with Thomas Huxley's shift in emphasis from Darwinian group selection to natural selection. In his *Evolution and Ethics* (1894), he aimed his big guns against Spencerianism. To Huxley, natural selection was almost synonymous with the 'cosmic process' or the 'state of nature' that opposes man's work or his 'state of art.' Human ethical activities must continuously struggle against the cosmic forces that stand in conflict with the human state of art. Huxley saw the cosmic process as controlled by the struggle for existence and survival of the fittest; and the state of art as controlled by sympathy and cooperation. He perceived the cosmos as providing only for the survival of the fittest, and the state of art for the survival of the largest number. These two processes are in eternal conflict.

Huxley, on the issue of ethics, split the evolutionary camp into believers that humans are animals and into nonbelievers. If human anatomy could be reduced to that of primates, then behavior, including moral, can also be reduced to animal behavior or instinct. If, on the other hand, the differences between humans and nonhuman animals are unbridgeable, then human behavior, particularly moral behavior, cannot be reduced to any social conditions existing in the animal world.

George C. Williams (1989, 1993) returned to Huxley's argument that the universe is hostile to life, particularly human. Due to the difference in interpretation of natural selection, Williams's cosmos, in comparison with Huxley's, is grossly immoral. Natural selection often has two meanings – one referring to success and failure of an organism, the other to changes in gene frequency. Williams's is certainly the gene's-eye-view of evolution. He is not claiming that genes for altruism exist, but that human behavior is subject to genetic variation. He sees nature as a 'wicked old witch,' and natural selection as morally unacceptable.

Huxley and Williams are right to object to the new egoistical economic correctness that falsely employs Spencerian evolution. However, they are not right to assume that humaneness is outside natural selection and, therefore, outside nature. Humans and human ethics are as much a part of nature as are all living creatures. Ethics can be understood and moral behavior judged only when nature is bent to human needs. Ethics demands that all knowledge

be part of a moral universe, because without knowledge it cannot be known whether actions are morally right or not. All moral actions must be based on all possible knowable situations and on the knowledge of the consequences of action. This, of necessity, must include biology. Without knowledge of the consequence of behavior, there cannot be any judgment of good or bad.

Huxley's and Williams's interpretations of natural selection are very pessimistic. By calling natural selection wicked and by assuming that it displays a cold demonic indifference to human life and suffering, they assign a moral value to it, and void their entire universe of any ability to produce morality. I cannot accept such an interpretation. Natural selection is also responsible for the evolutionary innovations that enrich life with new possibilities and options. Evolutionary innovations originate morphological novelties, new functions, and, therefore, new physiologies of new properties. They are sources of new opportunities – openings of new environments and new niches of enriching life – and they offer new challenges of raising moral or ethical hopes. I am not assigning morality to nature. Neither God nor nature can tell man how he ought to act. Neither am I claiming any optimistic properties for evolution or for natural selection. I am only pointing out that other interpretations are possible, and hence the pessimistic view of the universe is not necessarily justified. Evolution tells us that we are animals, but animals different from all others, just as all taxa are different from each other. Sociobiology also tells us that we share our 'noble' traits of love, kindness, and altruism with other living creatures.

Huxley's and Williams's interpretations of natural selection assume it to be merely bad. But natural selection includes social selection, or more accurately, social pressure. Throughout history humanity insisted on right and ethical behavior, because to be moral, at least to Darwin, is human nature. *All* who are part of society put demands upon others, and respond to the demands of others. Behavior depends on responses that others have to our behavior, and our behavior is influenced by the behavior of others. All human behavior by social approval or by condemnation is socially controlled in a human environment and subject to natural selection within that environment. Behavior and morality are determined by society that dictates the ought.

Natural selection is not a simple, clear-cut concept. I doubt that it can be easily defined. It is a complex process that includes not only the biological, but also as John Dewey (1898, 1930) so eloquently reasoned, all the social instincts and habits and ideas and theories. It must include the ethical, because ethics are part of human life. Natural selection is not an absolute force outside the realm of observation, a supernatural power. If humans are considered to be not subject to natural selection, natural selection operates only in the prehuman conditions. Thus, I cannot accept the view that natural selection has ceased operating on humans.

Dewey opposed Huxley's application, and even Huxley's understanding, of natural selection. It is unfortunate that the ideas of this great philosopher are so poorly known to biologists. I believe that his arguments are the clearest expositions of the great fallacy surrounding the concept of natural selection. He argues that the term 'fittest' must include the present, and not only the conditions that apply to the nonexistent world of the past as conceived by Huxley and later by Williams. What is fit for nonhuman animals is not fit for humans. The fittest must not be interpreted in terms of a nonexistent environment, one that ceased for humans long ago. No organism is adapted to only

one environment. *Drosophila* had to adjust to all environments – that of larva and that of adult. The struggle for human existence takes place at all levels, including the moral. This struggle is continuous, it cannot stop. Survival of the fittest is not the destruction of the weakest, the sickly, the defective, and the insane. Dewey rephrases the argument of Darwin: the protection of infants and the weak fosters group loyalty.

To Dewey the struggle for existence is existence itself; life is the struggle. The struggle for existence is the struggle for whatever it is that life is, for both the moral and the biological (or the ethical and the cosmos). These ideas in a most profound way have a deep moral, not only for evolutionary biology and ethics, but for all our body politics, and for the entire human universe. The conflict is not between Huxley's cosmos and the state of human art, but between radicalism and conservatism, between aims and habits. The human struggle is the reconciliation – the natural selection – of these two forces. To give up the institutions is chaos and anarchy; to maintain the institutions unchanged is death and fossilization' (Dewey 1898: p. 335). This social conflict is the basis of natural selection and the basis of **all** social life, which is impossible without the struggle of existence. Monopolization of society is its death.

### **Philosophical fallacies of the naturalistic fallacy**

George E. Moore, like other British philosophers, read Huxley and was strongly influenced by him. However, I cannot find in Moore's work any mention of Dewey's evolutionary ethics. Moore (1903, 1912) shifted the discussion on evolutionary ethics into the concept of the naturalistic fallacy and the assumption that 'ought cannot be derived from is.' His naturalistic fallacy is difficult to understand and, hence, to summarize, but his argument against the derivation of ought from is, is easy to follow. As I understand Moore, the naturalistic fallacy denies that moral judgments can be deduced from facts. While, to Moore, evolution is a cause of direction in development, he strongly and emphatically denies that evolution shows how we ought to develop; since goodness or good cannot be defined, and since neither is a natural object, the undefinable ought cannot be defined in terms of some natural states. He appears to see good in terms of fixed, permanent, and absolute ideas – a moral conduct, an absolute in a Platonic universe.

Antony Flew (1967), by comparison with Moore, is lucidity itself. He shifts from the 'ought' and 'is' to the prescriptive and descriptive. Flew's arguments are similar to Moore's, and both seem to perceive biological laws as absolutes. Flew argues that if the law of nature includes the human actions, then nothing in human behavior can be inconsistent with the law of nature. But my **premise** is that there are no biological laws, and that laws of nature are statistical statements and not absolute prescriptives. His distinctions of prescriptive and descriptive laws in nature hardly apply to evolution. Neither Moore nor Mew accept Hume's utilitarianism, or that human needs and desires are ethical motivations. Both are justly against the political correctness of social Darwinism, but both defend the exclusive rights of ethicists to deal with ethics.

I see the naturalistic fallacy itself as a fallacy, because morals are based on conduct, and conduct is factual; values can be derived from facts, and arguments for moral actions are always based on facts. Observation is theory-laden, and, since facts are based on observations, facts are also theory-laden and empirical facts are value-dependent – and not value-free. Therefore, observations are almost as subjective as values. Furthermore,

values cannot be based upon other values ad *infinitum*! I cannot accept that moral judgment can be deduced only from moral data, but not from any other data, because sooner or later the moral judgment will fall flat on facts.

What is good now may not have been good yesterday and may not be good tomorrow, and what is good here may not be good there. Good is relative and must be always referred to a set of relationships between different sets of behaviors. It is nonsense to think in terms of absolute good, and not in relative and changing behavior. By itself, and independent of time, place, and relationships, good does not exist. Now sociobiology has brought good and evil down to earth, and made them relative terms. Good is that which wins approval; bad is that which is disapproved, and the boundaries between good and bad are in the penumbral zone. It is a folly to assume that since *all* societies have ethics, their ethics will be the same and based on the same meaning of good. Human relations are complexes difficult to comprehend, and no desire to resolve this complexity to a simple model of one absolute good will help. All human societies have ethics, always have had, and always will have. The differences between these ethics are merely temporal and spatial adjustments to the existing human ecology. Nothing can offer us any measure of absolute morality. Human morality is the pattern of relationships of human behaviors within society. Without these relationships there is no morality. Morality is an order of human behavior. Contrary to Moore not only good, but neither red, nor warm can exist outside the good, or red, or warm objects as observed by our sense organs.

The naturalistic fallacy can be accepted only when the moral values are placed outside all values. Bertrand Russell (1935) has already proved that this is clearly impossible since it would imply placing moral values not only outside science but outside all knowledge. I once believed that moral behavior does not depend on facts, but on beliefs and wants of what to accomplish, and that these concepts are undefinable in terms of biology (Nitecki 1993). I was wrong. Should values indeed lie outside knowledge, it would be impossible to consider not only what is good and what is not, but it would be impossible to pass any judgment. That *summum* bonum does not exist was already Darwin's revolution.

Good and bad exist only after the action to be performed is considered; it is only then that the alternatives to behavior, and hence to values, appear. The alternatives by themselves are neither good nor bad – they are options of behavior on a sliding scale of values, in which some are good and others better or less so; we can assign on some scale a numerical value or position to good, but only after the moral choices or decisions are made. It is only after the choice is made that the action that is chosen is moved to either side of the scale to become good, and the rejected to become bad. This is the way actions acquire values. Good or bad has meaning only in reference to relationships; something is good or bad with reference to its position on the scale of values, actions, or concepts. For example, consider the influence of smoking upon human health. If it is accepted that smoking causes lung cancer in smokers and in nonsmokers, and if it is accepted that causing cancer in others is bad and, therefore, one ought not to smoke, then, *ought* is clearly derivable from *is*. I see no escape.

To say how people should behave expresses a desire of what I think people should do. *All* that – following Russell – means that the moral ought is the *wish* of how people ought to behave, or how they ought to think about actions that previously may have been controlled by habit only. This wish will differ in different cultures and times. Values are highly subjective. The Roman gladi-

torial ethics is now unacceptable. If absolute good is rejected, so must absolute evil be rejected. Only good or bad behavior exists, and again by good and bad we mean that which we wish. Nature is neither good nor evil, neither can the cosmos be described in moral terms. Good and evil are not absolutes. Just because 'good behavior' exists does not mean that 'good' exists, no more than because design exists there must be a designer. Motives of human behaviors are murky items to penetrate or to demonstrate – only actions can be judged.

So how should behavior be judged, and what criteria are needed to call behavior ethical? These are not the concerns of evolutionary biology, but of ethics. Perhaps even ethicists cannot answer them, and perhaps human behavior is only more or less ethical. Such 'environmental' influences as learning and observations and everything that goes under the name experience are as imprinted upon human minds as genetic factors are, and both remain in the mind for a long time. How experiences are imprinted, and how they remain in the mind is unknown. What is known and how, and what is remembered and how, are the secrets of life not yet deciphered. Evolutionary ethics deals with abstract ideas, not concrete objects. Neither science, nor history, nor theory of evolution and natural selection existed before the emergence of man. Like all ideas, evolutionary ethics is the product of the mind, and the nature of mind is, so far, a *tabula rasa*. Yet the nature of ethics is still forcefully argued in absolute terms.

No moral standards can exist without reference to the now and here (meaning to the particular relationships of human behavior), and it is impossible to have a single definition of good for two different human societies. Therefore, it is impossible to give a subjective good an objective value. Only God can do it, but then there are many gods to choose from!

## Sociobiology

Hoffman (1983) summarized the origin and synthesis of sociobiology and the conflicts that it generated. I will discuss only those aspects of sociobiology that bear directly on evolutionary ethics.

Edward O. Wilson, in his monumental *Sociobiology* (1975), shifted evolutionary ethics from the investigation of behavior of individuals to that of population and genetics. Because humans are primates, human social behavior strongly resembles behavior of other primates, and can, and must, be studied by biologists. Wilson defined sociobiology as the 'systematic study of the biological basis of social behavior' – a branch of evolutionary biology, particularly modern population biology. Human actions, including the moral, have a genetic base, and biology determines our behavior. Consequently, natural selection controls our ethics, and 'biologic evolution like a sorcerer's apprentice liberated human power which it cannot control any more' (Hoffman 1983: p. 9). Wilson's sociobiology explains the existence of culture and ethics, not only their characters; furthermore, it delineates the ethical boundaries, e.g., incest is forbidden, while xenophobia, homosexuality, and cannibalism are possible and permissible. In 1978 Wilson explained ethical human behavior in terms of sociobiology; in 1981 (Lumsden & Wilson) he formulated a unified view of human culture and evolution, and I understand that he is now synthesizing the entire field of evolutionary ethics.

Of course, the issue is nature versus nurture. Consider the worn-out example of the thickening of human skin on the palm and the sole, which are evolutionary responses to temporal adaptations and genetic survival. The

thickening of human skin on the hand is acquired and ontogenetic, and on the heel, innate. Although it cannot be determined how ethical traits are fixed or duplicated, we, nevertheless, can apply these adaptations to the problems of the inheritance of ethics. The thickening of the skin on the heel is phylogenetic, that on the hand is developmental, but neither is transmitted wholly on chromosomes – neither are the ethical adaptations. All are preadapted, and, therefore, inherited. The differences between what we call acquired or genetic are slight. Calluses will always appear after an extensive use of a shovel, and moral behavior will always appear in response to social pressure.

Behavioral adaptations can be endosomatic (eyes for seeing), or exosomatic (cactus spine used by finches to pick out insects). The endosomatic are genetic, the exosomatic acquired. But the exosomatic are also innate and preadapted. Perhaps all so-called exosomatic adaptations are, in effect, truly endosomatic. After all, the cactus spine is an extension of the beak, and when used it becomes a part of the organism. Microscope, hammer, spectacles, cacti spines are tools only when used, and when used they are extensions of the body, and thus endosomatic behavior. Culture, acquired by tradition and learning, is also an endosomatic behavioral adaptation. If culture is not an endosomatic adaptation, then a separate evolutionary explanation for human behavior is required, and such has not been recognized. It is only human conceit that makes modern *Homo sapiens* so unique and so much above all other forms of life that biological laws do not apply to humans. Only in this distorted light can ethics be seen to be outside of evolutionary explanations. Ethics is part of human culture. If culture is defined as the transmission of learning and the abilities to use the endo- and exosomatic tools, then, by definition, culture and ethics are evolutionary adaptations. We all agree that genes for ethics have not been, and never will be identified, but neither will there be any genes known for any other behavioral adaptations. It is also incredible to believe that the complexities of any organism's behavior can ever be reduced to genes. Only in science fiction movies are the complexities of dinosaurs' behaviors reconstructed from the bits of strands of amphibian and reptilian DNA.

The prescriptions of moral behavior by society are based on the knowledge that the society possesses. This knowledge is greater than knowledge of a single individual. It is above and beyond any individual. But, I must repeat, the total knowledge is needed for the prescribed moral action. Thus, morality is a necessity of the society, just as are order and other biological needs. Morals and oughts are meaningful only within the framework of society, not outside. What is good for the society and how individuals ought to behave is morality. Good and bad have meaning only in society, and not outside in some Platonic universe. Human life is controlled by the code of behavior, or morality. We do not jump from bridges unless we wish to commit suicide, nor do we break moral codes. Human ethical behavior is the total behavior that society demands. What humanity demands of its members can be only answered by the science of man. At present that science is sociobiology.

In a most profound way, sociobiology has become the science of human nature that humanized ethics. It is only the science of human nature that can enlarge our horizons of what is man and put humans back into nature, while at the same time keep humans separate. I cannot conceive of a rational picture of humanity outside of sociobiology.



## Rapprochement

Evolutionary ethics has its roots in Spencer's early vision of the entire cosmos as a product of evolution, in which the simple led to the moral and the ethical. Spencer and Darwin produced a coherent, strongly evolutionary and unified worldview of ethics, which implied that ethicists are wrong in assigning good a universal meaning outside the sphere of natural experience. The concept of evolutionary ethics, like all concepts, has changed since the time of Spencer and Darwin. It is as pointless to argue evolutionary ethics from Darwin's point of view as it would be to argue the nature of the atom from the nineteenth-century knowledge of atomic structure (see Richards 1986 and his critics' responses!). All the recent literature on evolutionary progress (see for example Nitecki 1988) underlines that only a few ethicists argue now for the dead issues of evolutionary progress, and only a few philosophers still guard ethics from the biological advances. The battle lines have been redrawn. Ethical philosophers are deserting Huxley, while the sociobiologists are joining Darwin's cause. The main *casus belli* the supernatural source of ethics, has disappeared, and the politically correct rupture of the *Science for the People* has produced more heat than light.

The theory of evolution has a moral implication for the slow human struggle to understand the roots and bases of ethics. Darwin's genius was to show that both evolution and ethics deal with stability and change, not with the permanent and fixed. Stability is maintained by the continuous change. Tomorrow's adjustment to a changing environment will force a different solution. Therefore, no permanency of morals exists. Ethics will be as changing as life is. To phrase this in evolutionary terms, ethics evolves as life evolves. Plato, or bibles, are not sufficient to explain the future. Neither evolution nor morals have any direction. We must rid ourselves of the Spencerian idea that evolution, and, hence morals, are progressively cumulative – they are not, but they do evolve. Today may dissolve itself into nothingness, rather than leaving behind the residue of past accomplishments.

Whether human behavior can be reduced to biology depends on whether it can be reduced to sociobiology, which in turn depends on the depth of the gap between humans and nonhumans. Only when we answer this shall we fully understand morality and what is human. What is human can be deciphered from *all* knowledge, and not only from philosophy, biology, or sociobiology. What we are biologically can be defined by dentition, but who we are morally is a different matter. Ethics and, therefore, evolutionary ethics, are uniquely human traits that differentiate humans from all other creatures. I think, and Hoffman would have agreed, that we can define humanity by ethics, and that all the properties that we define as human, including biology, are of importance to ethics. To understand human nature means to understand the nature of human conflicts and their resolutions. We must know how this conflict occurs in nature, and what is the relation of nature to our human condition. Nature is neither harmonious nor full of conflict, only a human interpretation of nature assigns value to it. Without understanding this we cannot act morally.

Humans are morphologically and biochemically primates. No reason exists to suggest that behaviorally they are nonprimates. Therefore, human behavior has evolutionary foundations. Humans have culture and culturally derived behavior; and ethics, as we perceive it, belongs in human culture. The question today is not whether ethics is genetically controlled, but whether it is sociobi-

ologically explainable, and hence whether evolutionary ethics is a legitimate subject of biological studies. It appears to be.

**Acknowledgements.**— I am grateful to Jack Fooden, Robert J. Richards, Olivier Rieppel, and Ellis L. Yochelson for the critical reading of the manuscript, but not necessarily *avec plaisir*.

## References

- Beckstrom, J. 1989. *Evolutionary Jurisprudence*. 152 pp. University of Illinois Press, Urbana, Illinois.
- Darwin, C. 1859. *On The Origin of Species by Means of Natural Selection*. 513 pp. John Murray, London. Reprinted 1964. Harvard University Press, Cambridge, Massachusetts.
- Darwin, C. 1871. *The Descent of Man and Selection in Relation to Sex* 2 vols., 898 pp. John Murray, London.
- Dewey, J. 1898. Evolution and ethics. *The Monist* 8, 321–41.
- Dewey, J. 1930. *Human Nature and Conduct*. 330 pp. Random House, New York.
- Flew, A.G.N. 1967. *Evolutionary Ethics*. 70 pp. Macmillan, London.
- Hoffman, A. 1983. *Wokół Ewolucji*. 186 pp. Państwowy Instytut Wydawniczy, Warszawa.
- Huxley, T. 1894. *Evolution and Ethics*. 334 pp. London, Macmillan and Co.
- Lumsden, C.J. & Wilson, E.O. 1981. *Genes, Mind, Culture: The Coevolutionary Process*. 512 pp. Harvard University Press, Cambridge, Massachusetts.
- Moore, G.E. 1903. (Reprinted 1959). *Principia Ethica*. 232 pp. Cambridge University Press, Cambridge.
- Moore, G.E. 1912. *Ethics*. 160 pp. Oxford University Press, Oxford.
- Nitecki, M.H. (ed.) 1988. *Evolutionary Progress*. 354 pp. University of Chicago Press, Chicago, Illinois.
- Nitecki, M.H. 1993. Problematic worldviews of evolutionary ethics. In: M.H. Nitecki & D.V. Nitecki (eds) *Evolutionary Ethics*, 3–26. State University of New York Press, Albany, New York.
- Richards, R.J. 1986. A defense of evolutionary ethics. *Biology and Philosophy* 1, 265–293
- Richards, R.J. 1987. Darwin and the Emergence of Evolutionary Theories of Mind and Behavior. 688 pp. University of Chicago Press, Chicago, Illinois.
- Richards, R.J. 1988. The moral foundations of the idea of evolutionary progress: Darwin, Spencer, and the Neo-Darwinians. In: M.H. Nitecki (ed.) *Evolutionary Progress*, 129–148. University of Chicago Press, Chicago.
- Richards, R.J. 1993. Birth, death, and resurrection of evolutionary ethics. In: M.H. Nitecki & D.V. Nitecki (eds) *Evolutionary Ethics*, 113–131. State University of New York Press, Albany, New York.
- Russell, B. 1935. *Religion and Science*. 256 pp. Oxford University Press, London.
- Spencer, H. 1850. *Social Statics: or, the Conditions Essential to Human Happiness Specified, and the First of them Developed*. Reprinted 1896, as *Social Statics, Abridged and Revised; Together with the Man versus the State*. 431 pp. D. Appleton and Co., New York.
- Spencer, H. 1893. *The Principles of Ethics*. 2 vols., 1079 pp. D. Appleton and Co., New York.
- Williams, G.C. 1989. Sociobiological expansion of Evolution and Ethics. In: J. Paradis & G.C. Williams (eds) *Evolution and Ethics*, 179–214. Princeton University Press, Princeton, New Jersey.
- Williams, G.C. 1993. Mother nature is a wicked old witch. In: M.H. Nitecki & D.V. Nitecki (eds) *Evolutionary Ethics*, 217–31. State University of New York Press, Albany, New York.
- Wilson, E.O. 1975. *Sociobiology: The New Synthesis*. 697 pp. Harvard University Press, Cambridge, Massachusetts.
- Wilson, E.O. 1978. *On Human Nature*. 260 pp. Harvard University Press, Cambridge, Massachusetts.
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