

ANDRZEJ ELŻANOWSKI
Muzeum i Instytut Zoologii
Polska Akademia Nauk

THE ETHICAL SIGNIFICANCE OF EVOLUTION

Pp. 65-76 in: Stelmach, J., Soniewicka M., Załuski W. (ed.) *Legal Philosophy and the Challenges of Biosciences (Studies in the Philosophy of Law 4)*, Wydawnictwo Uniwersytetu Jagiellońskiego, Kraków 2010

Fifty years ago Morse Peckham¹ concluded his review of Darwin's impact on humanities with a rhetorical question: "Is it true that what Darwin said had very little impact, but that what people thought he said, that is, what they already believed and believed to have been confirmed by Darwin, had an enormous impact?" With respect to the ethical implications of the Darwinian revolution, the answer is a resounding yes. While the ideological reception of Darwin's discoveries has been dominated and biased by the ghost of social Darwinism, the genuine ethical implications of evolution have been overlooked and, to some extent, deliberately ignored in order to avoid a confrontation with the traditional, unconditional anthropocentrism, in particular in its religious rendition. 150 years after the publication of Darwin's *On the Origin of Species*, one of the most revealing scientific works ever, it is precisely this conflict with humans' sense of self-importance that explains the enduring strength of irrational opposition to the acceptance of the natural, evolutionary origins of *Homo sapiens*², the theory of natural selection, and even the very fact of evolution. However, while the denial of evolution is generally recognized as religion's frontal attack on science and a serious threat to Western civilization, the questioning of the evolutionary origin of the human psyche or the whole of human nature seems to be tolerated even in academia, as if a supranatural intervention in the evolution of one primate were more acceptable than, for example, in the origin of life even though the theory of biogenesis still poses serious problems while that of anthropogenesis does not.

Darwin's discovery of the natural origins of all life forms³ including humans⁴, has always had far-reaching but poorly known ethical consequences, both normative and meta-ethical. The direct normative implications relate to the permissible ways of treating non-human subjects because of the evolutionary continuity of human and non-human value-laden experience⁵ and thus the commonality of some so-called extra-moral values that are dealt with by the motivational system known as *moral agency*. The main meta-ethical implication of

¹ M. Peckham, *Darwinism and Darwinisticism*. [In:] *Darwin*. P. Appleman (ed.) W.W. Norton & Co., New York 1970, p. 385-393. [Excerpt from *Victorian Studies* 1959 vol. III, p. 3-40]

² According to a public opinion poll (TNS OBOP 2006), only 53% Poles accept the evolutionary origin of humans, 30% deny it and 17% are undecided.

³ C. Darwin, *On the Origin of Species by Means of Natural Selection or the Preservation of Favored Races in the Struggle for Life*. Murray, London 1859.

⁴ C. Darwin, *The Descent of Man and Selection in Relation to Sex*. D. Appleton, New York 1897 (1st ed. Murray, London 1871).

⁵ A. Elzanowski, *The moral career of vertebrate values*. [In:] *Evolutionary Ethics*. M. H. Nitecki & D. V. Nitecki (ed.). State University of New York Press, Albany, N.Y., 1993, p. 259-276.

evolution by natural selection is the abolition of the grounds for the justification of any norms by any received, evolved and in that sense natural (moral) order, since neither biological nor biocultural evolution is ethical. This meta-ethical consequence has straightforward normative implications inasmuch as it removes grounds to some injunctions that are followed mainly or exclusively because of the religious or lay tradition.

THE ETHICAL SIGNIFICANCE OF EVOLUTION BY NATURAL SELECTION

Ever since David Hume it has been recognized that *ought* does not follow from *is*, that is, no ethical norm can be justified by what has been in existence so far (“no *ought* from *is*”). However, as long as the world was believed to be a divine creation, Hume’s rule was limited essentially to the free will that humans were endowed with in order to have the choice to obey God or go astray and be judged accordingly. If nature were part of divine creation but devoid of free will, then the natural order could be expected to carry a moral message, hence the program of natural theology of studying nature for the sake of understanding God’s work. Darwin grew up with such a world view and ultimately destroyed it by replacing God with natural selection as the powerful generator of biodiversity that has no purpose and thus no ethical design, but does have ethical implications.

Unfortunately, except for Darwin himself, the ethical implications of evolution were misunderstood and/or misrepresented from the very beginning. Thomas Huxley, acting as “Darwin’s bulldog”, contradicted Darwin by rejecting any ethical implications of evolution and thus denied any moral status to nonhuman world. The Huxleyan “vener” model of morals⁶ as a thin layer superimposed on an ethically meaningless and worthless brute nature was readily embraced by Judaeo-Christian religions and is still widespread in the public sphere, including many members of academia. On the other hand, the deeply entrenched notion of deriving moral order from nature yielded social Darwinism. It was an eclectic, popular doctrine that promoted “the survival of the fittest” at the expense of the weak and poor as an ethical justification of ruthless 19th century capitalism. In fact, no such justification can possibly follow from the theory of natural selection nor from any other theory of evolution which, as every scientific explanation, is about what is and not about what should be. Contrary to its name, social Darwinism was inspired mainly by the philosophy of Herbert Spencer rather than Darwin’s theory. Spencer thought that all of the living world, including human societies, is ruled by the same laws that, in a nutshell, ensure progress, the thriving of

⁶ F. de Waal, *Primates and Philosophers / How Morality Evolved*. Princeton University Press. Princeton, N.J. 2006.

life, and happiness. Spencerian theory is Lamarckian rather than Darwinian⁷, as individual success in a society depends on the motivation to avoid poverty, which encourages anti-humanitarian attitudes that follow from reasoning of the sort that those who do not care about their future deserve failure. Spencer's attempts to derive ethics from his universal evolutionism evoked a massive response from E. G. Moore who argued that goodness is a *simple quality or entity*, an elementary term, not amenable to a definition or analysis, and that defining goodness in terms of empirical sciences commits the **naturalistic fallacy**⁸. However, values are definable in scientific terms⁹ even if they are not knowable without introspection and, as some philosophers have opined, Moore's naturalistic fallacy may come down to the violation of Hume's rule that has gained, under a new name, more significance owing to Moore's influence. Whatever the status of the naturalistic fallacy, Moore's philosophy discredited all social Darwinist-style justifications of ethical norms by emulation of the mechanisms and/or outcomes of evolution. Unfortunately, it also committed the error of throwing out the baby with the bathwater by cutting off the whole of ethics (including meta-ethics) from science¹⁰, and thus legitimizing the **moralistic fallacy**, that is, the notion that morality is inherently good.

Darwin as a scientist thought that the progress of civilization was dependent on a weakened form of selection within human societies as well as between races and nations. This view was part of his scientific theory. However, as a moral agent capable of ethical reflection, Darwin¹¹ acknowledged the obligation to minimize the ethical cost of progress: "Darwin hoped that the 'weaker and inferior' will marry less frequently to help 'check' this enfeeblement of society. But, ever a humanitarian, he still declared that we must bear the consequences of the weak surviving 'without complaining'. Indeed to curtail 'the aid which we feel impelled to give to the helpless' would no less cause a 'deterioration in the noblest part of our nature'"¹². Darwin was compassionate towards slaves, which is what motivated him, according to Desmond i Moore¹³, to write *The Descent of Man* where he called slavery "a great crime"¹⁴. In the same book, Darwin also showed compassion towards animals by

⁷ P. J. Bowler, *Evolution / The History of an Idea*. University of California Press, Berkeley 1989.

⁸ E. G. Moore, *Principia Ethica*, Cambridge University Press, Cambridge 1903.

⁹ A. Elzanowski, *Toward the scientific axiology of life*. Dial. Univers. 2008, vol. 19 (no. 11-12), p. 115-121.

¹⁰ J. Rachels, *Created from Animals / The Moral Implications of Darwinism*. Oxford University Press, Oxford and New York, 1991.

¹¹ C. Darwin, *The Descent...*

¹² A. Desmond A., J. Moore, *Darwin's Sacred Cause /How a Hatred of Slavery Shaped Darwin's Views on Human Evolution*. Houghton Mifflin Harcourt, Boston and New York. 2009: p. 368.

¹³ Ibid.

¹⁴ C. Darwin, *The Descent...*

referring to the pleasure that some savages derive from tormenting animals as “horrid”¹⁵. Darwin also found time to pen “a heart-feltplea against leg-hold traps”¹⁶ as an extremely inhumane technique that causes excruciating pain. Actually, Darwin is quite explicit about his ethical attitude toward animals, stating that “sympathy beyond the confines of man, that is, humanity to the lower animals, seems to be one of the latest moral acquisitions” and goes on calling humaneness one of the noblest virtues “with which man is endowed” and which “seems to arise incidentally from our sympathies becoming more tender and more widely diffused, *until they extend to all sentient beings*”¹⁷ (emphasis added).

The precept of respect for both human and nonhuman wellbeing exemplifies Darwin’s normative ethics, scientifically informed by the evolutionary continuity of emotional experience between all humans and nonhumans¹⁸ as well as consistent with the evolutionary origin of morality as initiated by sympathy¹⁹. In this light, the popular association of Darwinism with the social Darwinist ethics of ruthlessness is entirely groundless. True Darwinian ethics commands respect for the welfare of all sentient beings, whether human or not, thereby laying ground for the recent expansion of the circle of ethical concerns beyond our own species.

Likewise assaults on sociobiology, based on its social Darwinist interpretations, are unfounded. Ironically, while social Darwinism commits the naturalistic fallacy, the social Darwinist interpretations of sociobiology make a patently false assumption that itself commits the naturalistic fallacy. The false assumption (itself called moralistic fallacy) is that morality (or the whole of human nature) is good *by definition*, hence an explanation of an ethically wrong behaviour (e.g., infanticide) as part of morality legitimizes this behaviour. In fact, every received morality is an outcome of biocultural evolution and as such has flaws that are subject to ethical corrections. However, the received flaws can be effectively corrected only if properly understood as the outcomes of evolution rather than pathologies or the work of Satan. To name the largest scale problems, reciprocity and kin selection explain the origin of preferences for, respectively, one’s own group and one’s own family²⁰, which are common to

¹⁵ Ibid, p. 118.

¹⁶ C. Darwin, *Vermin and traps*. Gardener’s Chronicle and Agricultural Gazette 1863, no. 35 (29 August), p. 821-822.

¹⁷ C. Darwin, *The Descent*

¹⁸ C. Darwin, *The Expression of the Emotions in Man and Animals*, 3rd ed., Oxford University Press, New York Oxford 1998 (1st ed. Murray, London 1972)

¹⁹ C. Darwin, *The Descent*

²⁰ R. D. Alexander, *The Biology of Moral Systems*. Aldine de Gruyter, New York 1987; J. Alcock, *The Triumph of Sociobiology*. Oxford University Press, Oxford 2001.

all received morals but have the well known destructive potential for discrimination and nepotism.

Unfortunately, individual biologists who happen to extemporize on ethical subjects, as well as other people with “naturalistic” and “ecologicistic” attitudes²¹, every so often commit the naturalistic fallacy (of which they are usually unaware), and sometimes express outright social Darwinist views. This may well be an objective reason for the lasting fear of social Darwinism a century after it was discredited. The paramount misunderstandings surrounding the ethical meaning of evolution reveal a pressing need for an obligatory course of ethics in biology curricula that, in order to be effective, should be taught with a due understanding of evolutionary biology as well as cognitive animal psychology. The need is pressing as many biologists use vertebrates in their research with very little awareness of the evolutionary continuity of emotional experience as a source of our common vertebrate values²².

THE EVOLUTIONARY ORIGINS OF MORALITY

Despite a high-profile, dogmatic opposition to any scientific study of morality²³, which certainly does not help to obtain funding for research that is aimed at understanding ourselves as humans, significant progress has been achieved in the study of the moral agency in humans and other hominids including its brain substrates²⁴, motivational mechanisms²⁵, ontogenetic development²⁶ as well as its evolutionary origins²⁷. The resulting overall picture of moral agency is that of an innate mechanism operating primarily at the experiential rather than rational level of consciousness²⁸ and using ready, modal emotional reactions to (one’s

²¹ S. R. Kellert. *The Value of Life*. Island Press Washington D.C. 1996.

²² A. Elżanowski, *The moral career...*

²³ See e.g. F. Ayala, *Darwin’s Gift to Science and Religion*. Joseph Henry Press, Washington D.C. 2007.

²⁴ See, e.g., M. Koenigs, L. Young, R. Adolphs, D. Tranel, F. Cushman, M. Hauser, A. Damasio, *Damage to the prefrontal cortex increases utilitarian moral judgements*. *Nature* 2007, vol. 446, p. 908-911.

²⁵ J. Greene, J. Haidt, *How (and where) does moral judgment work?* *Trends in Cognitive Sciences* 2002, vol. 6, p. 517-523; J. Haidt, *The emotional dog and its rational tail: a social intuitionist approach to moral judgment*. *Psychological Review* 2001, vol. 108, p. 814-834; M.D. Hauser, *Moral Minds / How Nature Designed Our Universal Sense of Right and Wrong*. © Marc D. Hauser 2006 (distributed by HarperCollins Publishers, New York); J.P. Changeux, A. R. Damasio, W. Singer, Y. Christen (eds.), *Neurobiology of Human Values*. Springer, Berlin/Heidelberg 2005.

²⁶ J. C. Gibbs, *Moral Development and Reality / Beyond the Theories of Kohlberg and Hoffman*. Sage Publications, Thousand Oaks 2003; J.C. Gibbs, K. S. Basinger, R. L. Grime, J. R. Snarey, *Moral judgment development across cultures: revisiting Kohlberg’s universality claims*. *Developmental Review* 2007, vol. 27, p. 443-500.

²⁷ F. de Waal., *Good Natured / The Origins of Right and Wrong in Humans and Other Animals*. Harvard University Press, Cambridge, Mass. 1996; L. D. Katz (ed.), *Evolutionary Origins of Morality / Cross Disciplinary Perspectives*. Imprint Academic, Thorverton (UK) and Bowling Green (USA) 2000.

²⁸ See e.g. D. Kahneman & C. R. Sunstein, *Cognitive Psychology of Moral Intuitions*. [In:] *Neurobiology of Human Values*, Changeux J. P., Damasio A. R., Singer W., Christen Y. (red.). Springer, Berlin/Heidelberg 2005, p. 91-105.

own or others') intentional actions. Today's science tends to agree with the Humean theories of moral sentiments as innate elements of human nature, rather than the Kantian moral rationalism. The latter is applicable to the domain of ethical reflection that can at the most modulate rather than generate a moral judgment.

Reciprocity as the cornerstone of morality

While Westermarck²⁹ recognized morality as the work of "retributive emotions" (both punishing and rewarding), it was only following Gouldner's milestone paper³⁰ and the decline of behaviourism and cultural relativism that reciprocity has become broadly accepted as a universal principle of human morality³¹. Remarkably consilient in this respect is the picture which emerges from studies of the individual (ontogenetic) development of moral reasoning³² (Table 1). This research is based on verbal evaluations of imaginary moral dilemmas (originally that of Heinz who stole a medicine to save his dying wife because he could not afford to buy it) and has been criticized for its cognitive bias, but this gives even more weight to the consilience of its results with those of social psychology and neurobiology.

The first stage of human moral development is identified in small children who obey whoever is big and powerful in order to avoid punishment and follow momentary desires to get pleasure. Every cat or dog would be scored at that stage if she/he could report on her/his motivation but the motivation at this stage is not really moral as it does not consider anybody else's wellbeing or, as Gibbs³³ concedes, at this stage morality is "confused with egocentric biases and motives". So why is it consistently, ever since Jean Piaget, adduced as the first stage of moral development? It is because it brings about the apperception of basic, the so-called extra-moral values, that is, everything that feels good or bad no matter what anybody

²⁹ E. Westermarck, *The Origin and Development of the Moral Ideas*. 2 vols. 2nd ed. Macmillan, London 1912-1917.

³⁰ A. W. Gouldner, *The norm of reciprocity: a preliminary statement*. *American Sociological Review* 1960, vol. 25, p. 161-178.

³¹ R. M. Nesse & A. T. Lloyd, *The Evolution of Psychodynamic Mechanisms*. [In:] *The Adapted Mind / Evolutionary Psychology and the Generation of Culture*. J. H. Barkow, L. Cosmides, J. Tooby (ed.). Oxford University Press, New York and Oxford 1992, p. 601- 624; J. Q. Wilson, *The moral sense*. Free Press, New York 1993; J. Alcock, *The Triumph of Sociobiology*. Oxford University Press, Oxford 2001; E. Uehara, *Reciprocity reconsidered: Gouldner's 'moral norm of reciprocity' and social support*. *Journal of Soc. Pers. Relation*. 1995, vol. 12, 483-502.

³² L. Kohlberg, *Moral stages and moralization / The cognitive-developmental approach*. [In:] *Moral Development and Behavior*. T. Lickona (ed.). Holt, Rinehart and Winston, New York etc. 1976, p. 31-53; J. C. Gibbs, *Moral Development and Reality / Beyond the Theories of Kohlberg and Hoffman*. Sage Publications, Thousand Oaks 2003.; J. C. Gibbs, K. S. Basinger, R. L. Grime, J. R. Snarey, *Moral judgment development across cultures: revisiting Kohlberg's universality claims*. *Develop. Rev.* 2007, vol. 27, p. 443-500.

³³ J. C. Gibbs, *Moral Development...*

else thinks about it. Those are the ultimate existential values³⁴ that are traded at higher stages of moral development. There would be no morals without basic or “extra-moral” values³⁵ and their apperception early on in life. The very term “extra-moral” for basic values reflects the traditional idealistic bias of ethical thought that suffered from its programmatic detachment from science.

Moral agency appears at the second stage or the stage of bilateral (dyadic) pragmatic exchanges. This is the stage of direct immediate reciprocity, with partners considering each other’s interests only for the sake of gaining concrete expected benefits (“do for others as they did and will do for you”). Some adult humans may remain at this stage but most of them reach the third stage, the stage of good interpersonal relationships or *mutualities*, and pay attention to ideal reciprocity and potential interactions within their group by building mutual trust. The third party perspective appears at this stage together with the Golden Rule (“do for others as you would be done by them”). The fourth stage, the last stage of standard moral development, features the importance of fulfilling one’s duties and maintaining the social order with its institutions that all guarantee beneficial exchange of services.

Thus cross-cultural studies of the development of moral thinking confirm reciprocity as the organizing principle of an average human morality. At the mature stages 3 and 4 of moral development, reciprocity is executed in the Humean triad in which a spectator (an arbiter) that can be internal (conscience) or external (a third party) attributes responsibility to either an agent (or actor) or a receiver. This evokes a modal, negative or positive emotion that motivates a retributive or rewarding action or attitude, e.g., a moralizing aggression that is motivated by an agent’s malicious deed. The third party as an arbiter, a distinctive feature of human moral agency³⁶, may implement “moralistic blueprints” of a group and serve as the “leading moralist” to admonish or reprimand potential or actual deviants³⁷. The enforcement of common standards by a third party intervention clearly strengthens group cohesion but also opens up a way for imposing behaviours that do not serve either the group or its members, and may actually prove destructive to them. This often seems to be the case with the massive intervention of religions that use institutionalized “leading moralists” to manipulate innate moral agency to execute the virtual reciprocity between believers and their god(s). In

³⁴ A. Elżanowski *Toward the scientific...*

³⁵ See e.g. J. Narveson, *Morality and Utility*. The Johns Hopkins Press, Baltimore 1967.

³⁶ J. Haidt, *The emotional dog and its rational tail: a social intuitionist approach to moral judgment*. *Psych. Rev.* 2001, vol. 108, p. 814-834.

³⁷ C. Boehm, *Hierarchy in the Forest. The Evolution of Egalitarian Behavior*. Harvard University Press, Cambridge (Mass.) and London (UK) 1999.

exchange for the benefits (in fact the outcomes of evolution, human work or coincidence) that are portrayed as god's great gifts, a clergyman acting on behalf of this god can essentially make any demands even if they are evidently destructive for the believers (e.g., not using condoms despite the epidemic of AIDS).

As once observed by Westermarck³⁸, both the moral significance of reason and the role of moral motivation in the life of an average human are widely overestimated. The quoted research on development of moral reasoning³⁹ demonstrated that the level of universalizing ethical reflections (Kantian or otherwise, depending on culture) is reached by a low percentage of humans. Only a small minority of people think about the justification of their moral norms (and those westerners who do commonly end up with some sort of contractualism which is a doctrine of reciprocity) and even less people apply any truly universalizing ethics. The majority of humans are moral but not ethical apes.

Reciprocity evolved in many social vertebrates long before moral agency. The origin of reciprocity has been explained by sociobiology under the rather unfortunate name of reciprocal altruism⁴⁰ which diverted part of the discussion to the moot idea of altruism. Reciprocal altruism can possibly be mediated by various behavioural mechanisms that remain unknown (including the classic case of reciprocal altruism in the vampire bats *Desmodus rotundus*). In any case, reciprocal altruism alone does not imply any moral motivation to enforce reciprocity. Moral agency, as we are starting to understand it in primates, is a complex psychological mechanism that results from the assembly of several affective and cognitive abilities, in particular empathy (or affective role taking) and responsibility attribution. Some insights into the evolution of these faculties have recently been gained by the combined effort of social and personality psychology of humans and other primates⁴¹.

Early evolution of morality

In the book that demolished religious mythology about the origins of *Homo sapiens*, Darwin hypothesized that morality originated from "social instincts", primarily from

³⁸ E. Westermarck, *The Origin...*

³⁹ L. Kohlberg, *Moral stages...*; J. C. Gibbs, *Moral Development...*; Gibbs J. C., Basinger K. S., Grime R. L., Snarey J. R., *Moral judgment...*

⁴⁰ R. Trivers, *The evolution of reciprocal altruism*. Quarterly Review of Biology 1971, vol. 46, p. 35-57; R. Trivers, *Social Evolution*. The Benjamin/Cummings Publishing Co., Menlo Park, Ca. 1985.

⁴¹ S. F. Brosnan., N. E. Newton-Fisher, M. van Vugt, *A melding of minds: when primatology meets personality and social psychology*. Pers. Soc. Psychol. Rev. 2009, vol. 13, p. 129-147.

“sympathy with individuals of the same group”⁴². Darwin was right once again and in a double sense: he identified morality as an *intragroup* phenomenon and the ability to *sympathize with* others as the first step or at least a necessary condition for its evolutionary origin. In fact, the moral role of sympathy was well understood before by Adam Smith, whom Darwin quotes. The concept of empathy was introduced much later as a translation of *Einfühlung*, and today means active affective role taking⁴³ that is effected by mirror neurons⁴⁴. Aside from inevitable differences in psychological definitions, both Smith and Darwin had a remarkably good understanding of what is meant today by empathy.

Empathy was the key innovation in the evolution of moral agency. Moral agency cannot function without the empathy⁴⁵ that is necessary for the prediction of consequences of an intentional action directed at the wellbeing (interests) of the receiver as well as for the very detection of intentionality and thus for the attribution of responsibility for an action. Empathy evolved independently in at least three lineages of highly social and intelligent mammals, that is, in elephants, dolphins, and hominids⁴⁶. These mammals can be motivated by the visible suffering of companions and sometimes subjects from other species to help them, especially by supporting and feeding. Empathy may have a significant motivational power in some people, although it can be switched off for outsiders in both humans⁴⁷ and chimps⁴⁸. Empathy appears in human infants at the age of just above one year, long before the onset of moral agency, and motivates their attempts to help, as it does in chimpanzees of a corresponding age⁴⁹.

A major cognitive faculty that is necessary for the work of moral agency is the attribution of responsibility, that is, the identification of one's own or someone else's (intentional) action as the cause of its impact (as experienced empathically or directly) on another subject's wellbeing (interests). This very definition implies that attribution of

⁴² C. Darwin, *The Descent...*

⁴³ M. H. Davies, *Empathy / A social Psychological Approach*. Westview Press, Boulder 1994; M. L. Hoffman, *Empathy and Moral Development / Implications for Caring and Justice*. Cambridge University Press, Cambridge 2000.

⁴⁴ Mirror neurons generate vicarious sensations that simulate the feelings of the observed individual in her/his situation.

⁴⁵ M. L. Hoffman, *Empathy...*

⁴⁶ F. de Waal, *Primates and Philosophers...*; I. Douglas-Hamilton, S. Bhalla, G. Wittemyer, F. Vollrath, *Behavioural reactions of elephants towards a dying and deceased matriarch*. *Appl. Anim. Behav. Sci.* 2006, vol. 100, p. 87-102.

⁴⁷ M. L. Hoffman, *Empathy...*

⁴⁸ F. de Waal, *Primates and Philosophers...*

⁴⁹ F. Warneken, M. Tomasello, *Altruistic helping in human infants and young chimpanzees*. *Science* 2006, vol. 311, p. 1301-1303.

responsibility depends on the understanding of causality, both of agent causation and event causation⁵⁰, and on reflective self-consciousness. The understanding of (ultimately psychological) agent causation is necessary for realizing that an action is the result of an intention, and that of event causation for realizing that the observed state of the receiver is an outcome of the action. However, in order to know that one's intention is the cause of one's action, one has to be capable of looking upon oneself as an agent or actor, hence reflective self-consciousness is necessary for the attribution of responsibility for that action. The recognition of oneself as an agent is in turn necessary for the recognition of others' agency, that is, for the recognition that their intentions lead to their actions. Both cognitive faculties that are necessary for responsibility attribution are met by chimpanzees (*Pan troglodytes*) who display at least the self-attribution of responsibility for bite wounds that they attempt to close as a gesture of reconciliation⁵¹.

It is by now well established that chimpanzees use moral agency to enforce reciprocity as revealed by their moralizing aggression for betrayal in an alliance and rewarding former benefactors⁵². In terms of moral development (Table 1), chimpanzees meet the criteria of at least stage 2, i.e., of pragmatic exchanges⁵³ although some chimpanzees, especially males who benefit from and may promote their good reputation among females, may in fact approach stage 3. As in human children, chimpanzee morality, or protomorality according to Haidt⁵⁴, seems to function in dyads as there are no observations of norm enforcement by a third party. A pronounced sense of "egocentric fairness" has recently been demonstrated in capuchins (*Cebus apella*)⁵⁵ who are more likely to share food with those who helped secure it before. They learn to exchange tokens for food and show a strong negative emotional reaction, stronger than frustration evoked by not being given expected food, when given less than what a neighbour obtained for the same token⁵⁶.

Most probably more primate species will show at least some elements of moral agency. The evolutionary appearance of moral agency among primates turns out to be not unexpected as primates tend to be relatively fair toward their fellows *within a group*, in

⁵⁰ See e.g. F. Ricken, *Allgemeine Ethik*. W. Kohlhammer, Stuttgart 1983, paragraph 106.

⁵¹ J. Goodall, *The Chimpanzees of Gombe / Patterns of Behavior*. The Belknap Press, Cambridge, Ma. and London 1986; F. de Waal, *Good Natured / The Origins of Right and Wrong in Humans and Other Animals*. Harvard University Press, Cambridge, Mass. 1996.

⁵² F. de Waal, *Good Natured...*

⁵³ J. C. Gibbs, *Moral Development...* p. 74.

⁵⁴ J. Haidt, *The emotional dog...*

⁵⁵ F. de Waal, *Primates and Philosophers...*

⁵⁶ M. van Wolken, S. Brosnan, F.B.M. de Waal, *Inequity responses of monkeys modified by effort*. Proceedings of the National Academy of Sciences 2007, vol. 104, p. 18854-18859; S. F. Brosnan, N. E. Newton-Fisher, M. van Vugt, *A melding of minds:...*

particular they respect the possession of items, especially of food. Rather than simply taking away a food item from a subordinate, a dominant individual has to ask for it, hence the common habit of (voluntary) food sharing that may promote the sense of fairness.

Moral agency is a complex, possibly the most complex, motivational system that could not arise at once and evolved by the assembly of empathy, sense of fairness and attribution of responsibility, each of these mechanisms (or psychological modules) having an adaptive value of its own. The evolved combination of many affective and cognitive mechanisms of moral agency is reflected in the mosaic of brain centres involved in the generation of moral judgement⁵⁷. It is no surprise that there is no single moral module that distinguishes *Homo sapiens*.

THE ETHICAL STATUS OF MORALITY

The most important ethical consequence that follows from the increasing understanding of moral agency as a product of evolution is that every received morality is ethically flawed, none can be taken as a paragon of goodness, and each needs corrections by science-informed ethics.

The major flaw of moral agency is its in-group orientation. It evolved for the enhancement of cooperation and reduction of conflicts between group members rather than the promotion of universal good. The flip side of the adaptation to promote intra-group loyalty reveals the most tragic aspect of natural, received moralities, that is, the discrimination against out-group members, which is obviously conducive to intergroup conflicts. The greater the threat of a conflict, the more important intra-group loyalty and discrimination of potential enemies. “And so, the profound irony is that our noblest achievement – morality – has evolutionary ties to our basest behavior – warfare”⁵⁸.

Reciprocity as the organizing principle of every evolved morality makes it more or less pragmatic and contractarian rather than intrinsically good. It may well be that it pays off to obey your own moral agency, at least on average⁵⁹. Leaving aside the discussion of contractarian ethics, the pragmatic orientation of evolved morals may be responsible for the common underestimation of the harms of omission (inaction) compared to the harms of action when, e.g., a few deaths caused by a vaccine are perceived as worse than many more deaths

⁵⁷ J. Greene, J. Haidt, *How (and where)...*

⁵⁸ F. de Waal, *Primates and Philosophers...*p.55.

⁵⁹ R. H. Frank, *Passions within Reason / The Strategic Role of the Emotions*. W.W. Norton, New York and London 1988.

resulting from the failure to approve a vaccine⁶⁰. This may well be because an omission tends to be less threatened with retribution than an action.

The potential for the manipulation of specifically human moral agency lies in the reciprocal exchange with imaginary persons who may request (via their earthly proxies, of course) essentially anything, leading some populations to self-destruction⁶¹ and some to prosperity depending on the pragmatic rather than ethical value of the imposed standards. Even if some religious standards work well for the community of believers it does not mean that they are universally good.

Taking morality as intrinsically good and thus moral agents as categorically superior to other subjects proves to be wrong from the combined perspective of science and logic. As Peter Singer stated “if moral intuitions are the biological residue of our evolutionary history, it is not clear why we should regard them as having any normative force”⁶². As with any other outcome of evolution, every received morality needs ethical corrections, and accepting it as a paragon of what should be (the assumption called moralistic fallacy) leads in fact to another case of naturalistic fallacy.

To conclude with a broader outlook, Darwin gave us a worldview that is both scientific and ethical as it is based on the understanding of the living world including its values that only recently, in the geological time scale, have come to be traded by moral agents. In the evolutionary perspective, the most fundamental subdivision of the living world is into living objects, that is, mere (even if beautiful and fascinating) devices for self-replication, and living subjects, that is, sentient beings who, by definition, have individual interests. There is plenty of senseless suffering (experiential badness) but also of joy and excitement (experiential goodness) in the entire subjective world – whether human or not – and each deserves attention and respect of moral agents capable of genuine ethical reflection even though each in a different way. Subjective life generated moral agency that seems good for the here and now within a group but, as human history shows, does not seem to improve the balance of primary, experiential good and bad because of intergroup conflicts and parasitic ideologies. This balance can be, and at least in human affairs seems to be, improved by universalizing ethics that can evaluate every received morality with reference to genuine

⁶⁰ J. Baron, *Against Bioethics*. The MIT Press, Cambridge, Mass. 2006, p. 180-181.

⁶¹ J. Diamond *Collapse / How Societies Choose to Fail or Survive*. Penguin Books, London 2005; R. Dawkins, *The God Delusion*, 2006.

⁶² P. Singer, *Ethics and intuitions*. Journal of Ethics 2005, vol. 9, p. 331-352.

and thus ultimately experiential values⁶³, but certainly not by applying instead religious injunctions that are themselves subject to ethical scrutiny, and the rejection of some of them is long overdue.

⁶³ A. Elżanowski, *Toward the scientific...*

Table 1. Development of moral judgement, a simplified outline based on the work by L. Kohlberg and J.C. Gibbs.⁶⁴

Standard development

Immature (preconventional) stages: egocentrism, no consideration of the group/society. [Preschool and early school age.]

Stage 1 – Obedience to what is big and strong to avoid punishment and be rewarded. Following momentary desires.

Stage 2 – Pragmatic exchanges that have to be *fair*. Perspective taking in dyads: do for another if she/he did or will do it for you. [Probably the final stage for most chimpanzees. Also capuchins show the sense of egocentric fairness]

Mature (conventional) stages: taking a third party perspective and applying the Golden Rule within one's social environment: How would you wish to be treated by others? [Constructed during late childhood or early teenage through adolescence. Final for the majority of humans.]

Stage 3 – Mutualities or ideal (principled) reciprocity: building good interpersonal relationships and trust.

Stadium 4 – Law and order: systemic application of reciprocity through obeying rules, fulfilling one's duties, and respecting authority.

Existential (postconventional) development

Meta-ethical reflection, justification and/or revision of received norms [Develops only in some humans, from adolescence on.]

⁶⁴ L. Kohlberg, *Moral stages...*; J. C. Gibbs, *Moral Development...*; Gibbs J. C., Basinger K. S., Grime R. L., Snarey J. R., *Moral judgment...*