
NATURALISTIC ETHICS. IS THERE SUCH A THING?

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Not so long ago, a rather naive idea, namely that there is a lineal relationship between a given organism set of genes (the genotype) and the set of observable characters from such an organism (the phenotype), in such a way that the first set crucially determines the second set, was among the few dominant paradigms that guided and conditioned (in the Kuhnian sense) the progress in my field of research: cell and molecular biology. Indeed, such a notion was rooted in the fact that in rather simple biological systems such as viruses and bacteria there is an almost direct correlation between the coding (informational) content of the genome and the resulting phenotype. This led to a widespread suggestion that organismic complexity was directly related to genomic complexity, therefore knowing the genome was equal to knowing the organism. Thus, in the last twenty years a lot of effort and money was devoted to the sequencing of whole genomes from several micro and macro-organisms, including humans. It cannot be ignored that many of the supporters of the Human Genome Project had the reductionist hope that such a sequencing effort would reveal the key to our human condition: The genes we have that are lacking in other species, and so directly responsible for our human odd properties such as abstract thought or ethical concern ¹.

I presume that the search for a naturalistic ethics was also justified on the basis of the aforementioned paradigm suggesting that some specifically human genetic features, that evolved according to Darwinian natural selection, are behind our capacity for establishing sets of standards by which to regulate our behavior, so as to distinguish what is acceptable in pursuit of our aims from what is not. In other words, this is tantamount to the following line of reasoning: Given the evidence indicating that both flies and humans have genetic systems and that fly behavior is genetically determined to a high degree, would not be the case that human behavior is also genetically determined? And if so, then ethics is just a by-product from the workings of natural selection acting upon the genome through the ages of evolution as evidenced by the game of survival of the fittest. Furthermore, the more recent Chimpanzee Genome Project was justified

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on the basis that comparison with the already sequenced human genome would pinpoint human genes absent in the chimp's genome or at least specific mutations in some crucial genes that may explain our humanness^{1,2}, including issues such as why do chimps may kill other members of their species without showing any short or long-term remorse^{3,4}, while we humans may also do the killing but risk in the process to become tormented like Raskolnikov. However, now we know that the fly has 13 600 genes while a tiny, microscopic worm by the name of *Caenorhabditis elegans* has 19 000 genes and a very simple climbing weed known as *Arabidopsis thaliana* has some 25 000 genes. Mammals such as humans, chimps, rats and mice, are stuck at some 33 000 genes each^{5,6}. So there is no obvious correlation between actual gene number and organismic complexity, and certainly no correlation between gene number and organism behavior (just compare the fly active behavior with the typical passivity of the vegetal condition). In September 2005, the full draft of the chimp's genome was released⁶ and so it became clear, after comparing that information with the human genome, that there are no human-specific genes responsible for the obvious intellectual differences between humans and chimps. Indeed, it seems to be the case that humans have fewer genes than the chimps, and such human genetic losses are behind some typically human features such as lack of body hair or delayed sexual maturation⁷. Moreover, the current evidence indicates there will be no human-specific gene for greed or any other popular sin, nor genes for altruism or other unselfish behavior, and so our human capacities for sinning or self-immolation remain cultural features not based on genetics, thus the search for a naturalistic ethics would remain as a most unnatural project. As a rather skeptical observer of such efforts for linking gene evolution by natural selection with complex human cultural features, I must say that it has been a long time since I learned to ask the right level of questions to my experimental models: viruses, cells or rodents. So I feel quite comfortable asking to my biological models questions about the biochemical regulation of energy transfer, the molecular control of cell proliferation or the structural features of cellular ageing. However, I never thought reasonable to search for the roots of poetry by doing experiments with rats.

Thus I have always been baffled by scientists who claim to be studying the behavior of rats in a maze or termites in a mound so as to find the key to understand the complexity of human societies. Nor I give much credit to scientific papers claiming to describe animal models of Alzheimer disease, considering that as a physician I'm fully aware that the diagnosis of Alzheimer disease is not based on any specific biochemical or molecular criteria but is a diagnosis established on the basis of cognitive impairment manifested in various ways such as trouble in remembering recent events and conversations, or the progressive loss of reading, writing and arith-

metical abilities, things which cannot be evaluated neither in flies or mice. It is a fact, not worth of a specific research program to prove it, that the genius of Shakespeare is better understood in literary terms than in terms of the quantum mechanics of the ink used by the bard to pen his works. Thus, for the sake of intellectual economy I suggest that as scientists we should better stick to the principle of asking the right level of questions to the right kind of model. This may help us to stop wasting our time with bogus science and bogus problems. Otherwise we may spend ages working out the biochemistry of poetry or the moral dilemmas of ants.

Thus coming back to the issue of a possible naturalistic ethics it seems to me like pursuing a mirage. This do not means that I believe that ethical behavior is supernatural, transcendental or God-given. Nevertheless, as the evidence goes, humans are the only beings aware of being in the world as entities different from the world itself. This is the basic condition for having a personal history that goes from the very first moment of self-consciousness (which is by no means equal to the time of our animal birth) to the last at the time of our death. Such is the substrate of ethics: mortal beings with a personal history, that may give or take throughout their individual lives, that may destroy or respect nature, that may wage a war or let themselves to be killed in name of some abstract ideal. It is a fact that chimps can learn to recognize themselves when reflected by a mirror⁸, yet there is a long way to go from there to true self-awareness. Our cerebral cortex is orders of magnitude more complex than the cerebral cortex of the chimpanzee. Yet a careful reading of the relevant scientific papers shows (hype in the opposite sense notwithstanding), that human brain complexity is not the result of novel human genes absent in the chimp's genome, and the comparative survey of both human and chimp genomes indicates that no particular mutations in genes linked to neural development can explain the huge anatomical differences between the human and the chimp brains⁹. Leaving aside the genetic evidence, I concur with both Ludwig Wittgenstein and Kurt Gödel who suggested that there are not enough brain cells so as to explain the capabilities of the human mind, able to solve problems and puzzles not solvable by even the most powerful computers; just consider the proof of the first incompleteness theorem by Gödel or the proof of the non-solvability of the halting problem by Turing. Hence human minds are neither computers nor physically determined by the cellular components of the brain¹⁰. This do not means that the human mind is unnatural or divine, yet it points out that there is more in nature than genes or cells in order to explain our complex human features. This fact enlarges the scientific landscape and encourages a fresher outlook regarding the study of the human mind, instead of walking in circles around simpler models that are rather useless for that purpose.

Thus it happens that the human mind is quite a unique phenomenon upon this earth and so we have no parallel models available for its study, chimps notwithstanding. I think that the study of animal behavior is very interesting and rewarding in its own terms, yet is a kind of superstition to claim that from such a study we may conclude anything really meaningful about complex human behavior. Obviously when certain peptides and hormones discharge in the brain and the gut of all mammals, including humans, they cause a feeling of hunger, and in the same way some hormones are behind the basic sexual desire in all mammals, while drugs that mimic the action of endogenous molecular signals may modify human mood and behavior. Yet, it is foolish to think that from such well-known biochemical facts we may eventually reach the actual explanation for sexual fetishism or human gastronomy. So it would be rather absurd to analyze the chimpanzee's diet in order to find the roots of the French *nouvelle cuisine*!

Ethical concern is a phenomenon related to human minds, thus it seems to me that the investigation into the content of moral principles and virtues and their justification must remain within the realm of humanity and human minds. Such is classical normative ethics that has always approached the question in terms of the human condition.

Corollary. Given that the available scientific evidence indicates the futility of the search for a naturalistic ethics somehow sprouting from Darwinian evolution by natural selection, then we may conclude that moral action is a human feature that has no foundation in genetics and is only determined and conditioned by human will and ethical thinking rooted in human history and culture. Thus, sociobiology and Darwinian fundamentalism notwithstanding, we are free and fully responsible for our deeds.

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