



Original article

# The neurobiological and environmental origin of ethics: Analysis of biological, social and religious determinism

*El origen neurobiológico y ambiental de la ética: análisis del determinismo biológico, social y religioso*

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Received 1 February 2018; accepted 27 April 2018

Available online 1 June 2018

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## Abstract

There are different points of view regarding the origin of ethical decision-making. From a simplistic point of view, one can think that only the neurobiological characteristics of each person influence the functioning of morality. However, it is important to think about the sociocultural environment in which the person develops, including religion and psychological aspects not defined by the neurobiology that eventually determines the ethical decision-making pattern, and therefore each person's morality.

The origin of ethics and human morality takes place in various elements. Correct neurological functioning, cultural characteristics, spirituality, socio-economic environment, and life experiences are essential elements that determine the development of a moral judgment. All these elements provide the brain with characteristics that determine its functioning when making decisions to resolve dilemmas and further determine the pattern of moral positions. This article seeks to expose the different factors that constitute human morality, in order to analyze each one in detail for the further understanding of the origin and complexity of morals and ethics.

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**Keywords:** Ethics; Neuro-ethics; Determinism; Moral; Conscience; Neurobiology

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## Resumen

Existen diversos puntos de vista con respecto al origen de la toma de decisiones éticas. Desde un punto de vista simplista se puede pensar que en el funcionamiento de la moral solo influyen las características neurobiológicas de cada persona, sin embargo, es importante pensar que la persona está conformada por diferentes aspectos además de la neurobiología como el ambiente sociocultural donde se desenvuelve, religión y aspectos psicológicos no definidos aun por la neurobiología que determinan eventualmente el patrón de toma de decisiones éticas y por ende la moral de cada persona.

El origen de la ética y la moral humana que tiene lugar en diversos elementos. Es necesario tanto el funcionamiento neurológico como las características culturales de la persona como su espiritualidad y medio socioeconómico, las experiencias que ha vivido, etc. Todos estos elementos proveen al cerebro de características que determinan su funcionamiento al momento de tomar decisiones para resolver dilemas y determinan ulteriormente el patrón de posturas morales de cada persona. En este artículo se busca exponer los diferentes factores que constituyen la moral humana con el fin de analizar detalladamente cada uno y entender posteriormente el origen y la complejidad de la moral y la ética.

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*Palabras clave:* Ética; Neuroética; Determinismo; Moral; Conciencia; Neurobiología

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## Introduction

Ethics is the study of man's behavior and the moral norms that govern what is right and what is not, seeking to establish universal principles of behavior.

Since the establishment of the concept of natural law as the law that indicates good and evil, that is part of human nature and is an expression of man's ability to reason, it has been questioned, why is the human species the only one with such capacity? Where does the capacity to distinguish right from wrong come from? What does it mean to act in a good or evil way? Can there be a universal concept of good and evil?

There is controversy around theories of man's nature. Some, like the representatives of Catholicism, think that man is good and is corrupted throughout his life. Others, like the philosopher Hobbes, think that man is bad by nature and represents a "wolf" for his peers, understood as a constant threat and an eternal perpetrator of evil. All, finally, conclude that there is something that determines man to be or act as "good" or "bad".

Philosopher Jean Paul Sartre expresses from his humanist point of view that a man is but a set of actions. That is to say, his behavior and the decisions and actions he carries out, along the consequences and the responsibility for them, define each person. This is why he does not claim that man is good or bad in nature. Man, for Sartre, is neutral and according to his dominant behavior, the person will be judged as good or bad (Sartre, 1977).

From this position, many controversial ideas may arise, the main one being: what defines this dominance of good or bad behavior?

Neurosciences along with sociology have tried to define this. The neurological development plays an important role in determining a person's behavior. Just as a person with schizophrenia will behave differently from people who do not have this condition, due to anatomical, genetic or functional variants in the brain, the behavior can also be defined by anatomical, genetic, functional, and even environmental or social variables.

The objective of this article is to discuss the different positions on the origin of ethics: biological determinism, social determinism, and religious or spiritual determinism, in order to make an analysis and integrate all three positions.

### **Biological determinism of neuroethics**

Beyond the trend of using one of the most cited prefixes in international scientific literature: 'neuro', neuroethics emerges as a new epistemological perspective in neurosciences. It is an innovative paradigm aimed at analyzing and reflecting in a balanced way everything concerning the neuroscience of behavior, and the behavior in the neurosciences. Defined by Clausen, J., & Levy, N. as "[the] systematic and informed reflection on an interpretation of neuroscience, and related sciences of the mind (psychology in all its many forms, psychiatry, artificial intelligence, and so on), in order to understand its implications for human self-understanding and the perils and prospects of its applications" (Clausen & Levy, 2015). Consequently, it has more complex, valid and relevant elements than if it were only the bioethics of the brain or the bioethics of the neurological sciences (Ramos-Zúñiga, 2014). Given the nature of the concept, it is pertinent to note not only the dualistic phenomenon of neuroethics, but also a bidirectional one. That is, the neuroethics is the ethics of neurosciences and, at the same time, the neuroscience of ethics (Juncosa, 1990). This paper deals with the second way of interpreting the term since it seeks to expose the neurobiological foundations of ethics and moral.

Today, neuroethics will contribute, as in the past, bioethics, to maintain a balance between what can be done and what should be done, in order not to dismiss as a priority the rights of the individual, those of society in its specific context and those of our, not only biological, but behavioral evolutionary ecosystem (Roskies, 2002).

There are several currents neuroethics among which 3 stand out: neuroreductionism, neuroskepticism and neurocriticism (Álvaro-González, 2014).

Neuroreductionists base their theories looking for the explanation to the innate ethics in all the human beings in the functioning of the brain and neural networks in order to explain the universality of ethics in an objective way. Ethics involves the reasoning of dilemmas and the use of judgment to make moral decisions. The aforementioned requires the capacity of reasoning that distinguishes the human species from the rest. We can say that, therefore, ethics comes from the ability to reason that lies in the human brain. Given that all humanity is endowed with a brain and a capacity to reason, one can think that there could be universal ethical principles. Starting from the premise that ethics is universal, it could be stated that ethics is inherent to human nature. “Although it sounds risky for some, if there is a neurobiological basis that is the cause of ethical behavior, then we should accept the innateness of ethical judgments” (Álvaro-González, 2014).

Francis H. Crick, molecular biologist and neuroscientist who discovered the structure of DNA, turned his work interest in the seventies from biochemistry to the study of neurosciences. Crick, as the main expositor of neuroreductionism, proposes in his book “The Scientific Search for the Soul” that “«you», your joys and sorrows, your memories and your ambitions, your own sense of personal identity and your free will, represent no more than the behavior of a vast set of nerve cells and associated molecules” (Crick, 1995) clearly raising the foundations of neurobiological determinism. However, Crick was not the first to think this way, Hippocrates had already suggested this idea 25 centuries ago with the following text: “[. . .] our pleasures, joys, laughter and games do not come from another place but from there (from the brain), and the same the sorrows and bitterness, disappointments and tears. And for it, precisely, we reason and intuit, and we see and hear and distinguish the ugly, the beautiful, the good, the bad, the pleasant and the unpleasant, differentiating some things according to the customary norm, and perceiving other things in accordance with the convenience”.

Alexander Luria, Russian neuropsychologist, published since 1973, 3 laws of the structure and functioning of the brain. In brief, Luria determined that the cerebral

cortex can be functionally divided into 3 regions: primary cortex, secondary cortex, and tertiary cortex. This order determines the increase in the complexity of the functions carried out, being the tertiary cortex the most complex, which carries out the process of consciousness, identification of circumstances and generation of responses to these identified circumstances.

In the brain, there are three areas of tertiary cortex: the cingulum, the prefrontal cortex and Wernicke's area, the prefrontal cortex being the most developed in man than in any other species and the one that determines the executive functions, in other words, the one that dictates the behavior to be followed after a certain stimulus (Kostyanaya & Rossouw, 2013).

The development of the prefrontal cortex requires more time than the other cortical areas, thus giving rise to changes in its growth, myelination and interconnection with other brain structures, which will determine the functioning of this cortex and the individual pattern of behaviors that characterize each person.

The most recent review, which clarifies with functional magnetic resonance, how is the neuronal circuit related to ethics, concluded that there is a cortical center of integration related to morality in the ventromedial prefrontal cortex, with multiple connections to the limbic lobe, thalamus and brainstem (Álvaro-González, 2014).

In response to the previously developed neuroreductionist positions, neuroskepticism arises, which mainly seeks to affirm that neurobiology cannot replace ethics. Neuroskeptics such as Selim Berker (Berker, 2009) affirm that it is not possible to define norms of moral behavior according to neurofunctional findings in neuroscience research mainly because moral decisions and ethical behavior entail great variability according to each scenario and circumstance, and thus, it is difficult to standardize valid neuroscientific methods of study.

Neuroskepticism is also explained by John Searle in "The Rediscovery of the Mind", where he rejects the so-called "Six Unlikely Theories of Mind". His analysis begins with the first one of them, the idea that mental states do not exist at all; the second, the notion that some beliefs are better supported than others, implicating a subjective instinctive component to the mind; the third and fourth are explained through the supposed ubiquitous state of the *mental* variable in *mental-state*. The fifth criticized theory is the one which is about the mental "vocabulary" that we should use when talking about mental states, discarding the use of words such as, "belief, desire, fear, and hope", trying to emphasize the phenomena behind the naturalness

of the mind. Finally, rejecting the statement that consciousness as we know it (inner, private, subjective, qualitative phenomena of sentence or awareness) does not exist at all (Searle, 1992).

In response to the two postures of neuroethics mentioned above, neurocriticism emerges as an intermediate answer to the question that seeks to find the integration of both neuroscience and ethics without one predominating over the other. Neurocriticism is also based on psychological and not purely neurobiological understanding of decision processes and moral behavior (Álvaro-González, 2014; Feito, 2013).

If neuroethics was based only on the neuroreductionist theory that the brain activity defines the person, and its anatomical and functional variants are the ones that determine the moral behavior of people, then normativity would be based on the common or average way of acting (statistical normality) and pondering first if the common way of acting is a correct one, would be dismissed. If neuroethics only relied on the neuroskeptical theory, credibility and growth in the area of neuroscience applied to ethics would be eliminated. Moreover, the essence of neuroethics would be lost as a science that seeks to objectify the development of ethics.

### **Social determinism**

The 3 postures of neuroethics revolve around the biological determinism that the functioning of the brain may or may not confer on man. However, there are standpoints that look beyond neurobiology (perhaps because of the period of time in which they were developed) and give an explanation to the moral and ethical behavior of social nature, mainly about the role that society plays in defining the behavior of man and its influences his free will by social conditioning. These positions could explain the variability of moral decision-making according to the cultural environment where the moral dilemma takes place.

Nonetheless, this idiosyncrasy would imply that human rights, declared as universal, are a fallacy and that natural law does not exist since society and the historical epoch determine the behavior of people by modifying the values of what is good or right and what is considered bad or wrong. In addition, social determinism would also eliminate the objectivity of neuroethical studies that have not been carried out universally because cultural constraints could bias the population sample.

The philosopher Jean Paul Sartre generated a stance denying biological determinism in a certain way. According to Sartre, things are first essence and then existence.

That is to say, the man conceives an idea (as an architect develops a design) and therefore they may exist (when the architect finishes the construction). From an atheistic point of view, where there is no god who can think the essence of man (thus eliminating the possible religious determinism), one must think that man exists (at birth) and then creates his essence, unlike other things. “Man begins by existing, finds himself, emerges in the world and then defines himself” (Sartre, 1977). With this, Sartre explains that the person is the one who decides what is right or what is wrong. It is society responsible of subsequently labeling the individual as good or bad, considering a set of actions carried out by a person, however, no one is born neither good nor bad, that being, the qualities with which a human is endowed, do not determine whether a person is moral or immoral, it is the society that judges the pattern of behavior and moral decisions of a person, thus conceiving the concept of good or evil, moral or immoral.

Thomas Henry Huxley proposed that education and culture are the basis of morality. For Huxley, the human is not moral by nature, and does not know the proper behavior to live in society without falling into chaos. That is why, according to him, society must educate its moral rules in order to survive (Paradis, 2016).

## **Religious determinism**

Throughout the analysis of the relationship between ethics and religion, three fundamental positions have been developed, among others, the vision of the primacy of ethics over religion, the vision of the primacy of religion over ethics and the opening of the ethics to religion.

### **I. The primacy of ethics over religion**

This vision exalts the will of the human being and questions God’s will. The person is considered to be self-sufficient to do good, to be just and deserving of a reward before God from an ethical standing point. Stoicism, Pelagianism and Kant fall under these types of ethics that try to subordinate religion to morality.

### **II. The primacy of religion over ethics**

Within this vision the will of God is exalted and the reason and will of the human being is degraded, and in some cases, denigrated. The origin of ethical normativity refers to the will of God. “Good” is everything that goes along with God’s will. These ethics have been called “theonomies” because they consider that God is the author of moral norms, which are understood as immutable

and absolute. Some ethics that share this option are Okham's nominalism or voluntarism and some Protestant beliefs.

### III. The opening of ethics to religion

This third option is the recognition from the ethics perspective of the proper dimension of religion, and on its side, religion avoids manipulating ethics. According to this standing point the ethics open to transcendence since looking for transcendence is part of the human nature. Morality has to be opened to another new field, that of religion, if it wants to lead the human being to his destiny.

The Christian faith follows the Jewish tradition; however, it adds a deeper and wider sense of God as a loving Father. Jesus taught it this way: "Would any of you be able to give your child a stone when he asks for bread? Or give him a snake when he asks for a fish? For if you, who are evil, know how to give good things to your children, how much more will your Father, who is in heaven give good things to those who ask for them!" (Mt 7: 9–11). This love of God as a Father commits his children to be good to others and hence the golden rule: "So, do with others as you want others to do with you; for in that is summarized the law and the prophets" (Mt. 7:12).

According to Catholicism and other religious entities it is necessary to act in a certain way considered as "good" and to avoid the "bad" of the earthly world with the hope of achieving eternal life or a better life after death. This determines man to act in a certain way. It is well known that in few religions the person chooses freely, at a certain age with ability to decide, under what religion he wants to be educated, therefore the person is determined to grow with certain cultural formation.

It has been noted that, religious cults have been carried out in the small nomadic civilizations since the prehistoric era, which over the years were transformed into varieties as different exhibitors of religion emerged in societies, such as Jewish prophets, Muslim prophets, Hindus, etc. There are theories that state that the brain, because of its ability of self-consciousness and awareness of its environment is predisposed to think of a more powerful entity and therefore to create religions, as if it were part of man's nature. This theory comes from the study of epileptic activity in a well-localized brain region (temporal lobe), which produces religious experiences in people who suffer from them, a syndrome known as Gastaut Geschwind Syndrome; however, it is not enough to explain the sense of spirituality inherent in man that has been shown all throughout the history of humankind ([Dong & Zhou, 2016](#); [Ladino & Téllez-Zenteno, 2016](#); [Trimble & Freeman, 2006](#)).



## **Discussion**

In order to clarify some highlights previously described, a proposal for the resolution of issues will be discussed from “neutral” standpoints, where it is sought, ultimately, to determine that the origin of ethics can only be defined from multiple points of view, being man a large set of variables that make up a unique and functionally independent system.

From the point of view of quantum physics, through the so-called “Model-Dependent Realism”, it is said that “our brains interpret the data of the sensory organs elaborating a model of the world” (Hawking & Mlodinow, 2010), thus sustaining that the perspective from which acts are judged as good, or bad, depends on the observer, which in turn, is determined by its own unique biological conformation, sensory experiences, culture and social context. Likewise, as a historical antecedent in the context of human behavior, Thales of Miletus had already suggested the idea that nature follows consistent principles that could be deciphered by understanding the time in which the circumstances took place, thus adapting the judgment of the acts, at a certain time and space, thus acknowledging social determinism (Hawking & Mlodinow, 2010).

Another contemporary philosopher, Slavoj Žižek, reflects that the inconsistency of the great “other” gives place for acting (Slavoj Žižek, 2010), exposing man as a spiritual being, able to put his will aside to act according to what is considered “good”, but at the same time his “wrong” doing depends on his free will and personal freedom, therefore being in the midst of a divine and psychological duality. Man also defines his kindness or malice based on his beliefs and psyche.

Man has particular characteristics that make its definition impossible through a single rational explanation, the intervention of multiple areas of thought it is necessary in order to approach to the most appropriate definition. Ethics, under which human beings act and relate to our environment, will also depend on this set of variables that make up our existence.

## **Conclusion**

Of the three theoretical origins of ethical decision-making proposed in this article, it can be concluded that none can prevail on its own. The three postulations need some element of some other position to be able to give a complete explanation about the origin of ethics and morality.

There are philosophers who have already exposed a viewpoint that integrates social and cultural determinism with biological determinism. In Hobbes position, we can find an integration of biological determinism with social determinism. He says that totality is explained by the analysis of its parts. Therefore, thought and consciousness are not separated from the body of man, but are part of it and help explain its whole (man). Likewise, man can be taken as a part of society, and therefore the 'entire' is society. Man is not by himself, but is part of a society that determines his behavior. Studying only a fraction (neurobiology) does not explain the 'whole' (behavior in society), however it is necessary to study fractions to understand the 'entire', this being society.

Patricia Smith Churchland, one of the main exponents of the neurobiological origin of morality, has aimed to demonstrate that the brain and its genetic, biological, and functional characteristics have evolved to develop mechanisms of trust and attachment that ultimately engage social ties in order for our species to survive. She concludes that, "morality seems to me to be a natural phenomenon constrained by the forces of natural selection, rooted in neurobiology, shaped by the local ecology and modified by cultural development" ([Braintrust, 2012](#)).

The neurobiological development of a newborn goes hand in hand with social development. From the interaction with the environment outside the maternal womb, the brain of the newborn undergoes changes that will later determine its behavior, the brain has changes even before birth, and since the fetus is only a group of cells, biochemical variants and epigenetic modifications determined by the environment contribute to making it unique and different. As the person grows and has experiences (cultural as religious education, moral as social education, academic, emotional, physical) all contribute to the genesis of a person with reasoning or moral judgment. Therefore it can be concluded that the brain alone could not generate moral judgment and at the same time society would not exist without the human brain having certain characteristics, and religion and spirituality would not exist without society and without a determined capacity for reasoning, and thus we conclude that the origin of ethics and moral judgment comes from the integration of these three elements, giving rise to such diversity of thought and values that characterizes humankind.

### **Conflict of interest**

The authors have no conflicts of interest to declare.

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