A PHILOSOPHICAL ANALYSIS OF THE BIOLOGICAL ACCOUNTS OF MORALITY AND ALTRUISM

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ABSTRACT

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The main purpose of my thesis is to show that morality is not unique to humans and it does not separate humans from nature. To that end I first discuss the issue of emotions to emphasize that biological accounts are more significant than cultural ones. Then, I focus on the notion of altruism that I find central to morality. In this part, I examine different approaches to altruism and try to reveal that the emotion of empathy is the main motivation behind altruistic behavior. I touch upon the mechanisms underlying empathy and defend a multilayered structure for empathy. Also by appealing to evidence of altruistic behavior in other animal species, I present that there is a continuity of morality between humans and other animals.

The phenomenon of morality is about how we get in touch with our environment. Here, the environment is the other individuals with which we

interrelatedly constitute a social structure. This structure provides us a less distressed life time compared to a solitary lifestyle. The way such a social structure works is not coincidental or arbitrary. It relies on the emotions that motivate social and moral behavior, and they are the result of a long evolutionary history. Accordingly, the concept of altruism seems to be the most pivotal element of morality because the structure can continue to exist only in an interrelated manner, and this interrelation requires altruistic characteristics.

Keywords: Morality, altruism, emotions, empathy, continuity

Öz

AHLAKIN BİYOLOJİK AÇIKLAMALARI VE ALTRUİZMİN FELSEFİ BİR ANALİZİ

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Tezimin temel amacı ahlakın insanlara özgü olmadığını ve insanları doğadan ayırmadığını göstermektir. Bu amaçla ilk olarak, biyolojik açıklamaların kültürel olanlardan daha önemli olduğunu vurgulamak için duygular meselesini tartışacağım. Daha sonra ahlakın merkezinde gördüğüm altruizm kavramına yoğunlaşacağım. Bu bölümde, altruizme yönelik farklı yaklaşımları inceleyeceğim ve empati duygusunun altruistik davranışın arkasındaki temel motivasyon olduğunu ortaya koymaya çalışacağım. Empatinin altında yatan mekanizmalara değineceğim ve empati konusunda çok katmanlı bir yapıyı savunacağım. Ayrıca, diğer hayvan türlerinde görülen altruistik davranış bulgularına başvurarak, insanlar ve diğer hayvanlar arasında ahlakın bir süreklilik arz ettiğini ileri süreceğim.

Ahlak fenomeni çevremizle nasıl temas kurduğumuzla ilgilidir. Buradaki çevre karşılıklı ilişki içerisinde birlikte sosyal bir yapı kurduğumuz diğer bireylerdir. Bu yapı bize yalnız bir yaşam tarzına kıyasla daha az sorunlu bir yaşam süresi sağlar. Böylesi bir sosyal yapının işleyiş biçimi tesadüfi ya da gelişigüzel değildir. Bu işleyiş biçimi sosyal ve ahlaki davranışı motive eden duygulara dayanır ve bu duygular uzun bir evrimsel geçmişin sonucudur. Bu doğrultuda, söz konusu yapı sadece karşılıklı ilişkili bir tarzda var olmaya devam edebileceği ve bu karşılıklı ilişki altruistik nitelikler gerektirdiği için altruizm kavramı ahlakın en merkezi unsuru şeklinde görünmektedir.

Anahtar Kelimeler: Ahlak, altruizm, duygular, empati, süreklilik

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CHAPTER 1

INTRODUCTION

In the first quarter of the 21st century, more than two and a half millennia after Thales turned his face to earth, there are still big questions in the pockets of philosophy. I say *still* because compared to philosophy, science has made more progress on its big questions, or at least it has been finding promising routes to answer them. And, for me, philosophy needs to adapt to new conditions for its survival.

When we look at the history of philosophy, we see that it has formed a ground for branches of science, and released them when they had matured enough. To me, ethics is the next candidate for such a branching out. Edward Wilson's offer to "consider … the possibility that the time has come for ethics to be removed temporarily from the hands of the philosophers and biologicized" (1978, p. 562) may sound as if it is too rigid or radical, but we should not fail to notice that he suggests a temporary perspective change, in other words a transition process. With this perspective, I defend that we should renew our toolset that we employ when approaching morality, and we should greet this brand new science: the science of morality.

It is possible to argue that morality is about the relations between some living organisms, i.e. individuals. Relations between living organisms and non-living elements of nature such as soil, rocks, water, air etc. may also

fall under the domain of morality just like we see in environmental ethics, but, appreciating the importance of it, I exclude this area when talking about morality. I assert that at the core of moral relations between individuals, there are emotions. I think most of the practical moral cases involve emotions. Moreover, emotions are a crucial part of the psychological processes related to moral behavior, and they seem to be the main motivator behind the mechanisms that are included in such processes.

I argue that the greatest common denominator in moral behavior is altruism. I see an altruistic behavior or attitude in most kinds of moral phenomena. The existence of an altruistic element in a behavior can place it under moral domain. Relations between parents and offspring, siblings, friends, partners, neighbors, etc., require caring for other at the cost of reduced fitness. Although altruism seems to be an evolutionary problem we observe that kind of behavior in many socially living animal species. I think, for some species, it is a common psychological tendency that makes it possible to form highly social structures that facilitate survival. Even Adam Smith who is at first glance expected to object to altruism as a theoretician of capitalism states that he finds altruistic characteristics in human moral behavior:

> How selfish soever man may be supposed, there are evidently some principles in his nature, which interest him in the fortune of others, and render their happiness necessary to him, though he derives nothing from it except the pleasure of seeing it… That we often derive sorrow from the sorrow of others, is a matter of fact too obvious to require any instances to prove it… (2002, p. 11)

In the second sentence above, Smith opens up the subject of empathy without naming. I argue that deriving an emotion from the emotional state the other is the main motivator of altruistic behavior. Empathy is a complex emotion compared to some basic ones like fear, disgust, sadness, etc. And, this complexity comes from the multilayered structure of it. In each layer

there are different mechanisms operating behind, and they provide an evolutionary track for us to follow backwards. On the basis of these mechanisms and altruistic behaviors observed in some other species, I offer a continuity of morality between humans and other animals. I think the morality that stems from altruism is a common ground for many social species including us.

Without underestimating the power of culture on morality, I give preference to biological accounts. Culture is able to manipulate the conditions of selection, and have an impact upon biological evolution, but, for me, the main source of moral behavior is psychological mechanisms that are a result of biological evolution. Accepting that cultural evolution has a strong but an indirect influence on it, I defend that morality is substantially based on biology, and altruism motivated by the emotion of empathy is the most distinctive factor of it.

CHAPTER 2

A DEFENSE OF NATURALISTIC ACCOUNTS OF MORALITY

In this part, I critically review the aspects that will be treated in the body of my thesis. First, I examine the idea that human behavior and psychological mechanisms underlying moral behavior are the result of evolutionary processes. According to this idea, evolution of the human mind which has produced the culture and morality, is not very different than evolution of physiological characteristics in humans. Second, elaborating the first step I suggest that ethical behaviors can be explained by adaptive mechanisms, and moral phenomena are adaptations in social animals, especially in humans which have the most complex minds and social lives among all animals. In doing so, I also point out the objections raised by defenders of the views that emphasize cultural accounts regarding morality. Lastly, I will very briefly touch upon the continuity of morality between humans and other animals.

2.1. Biological and Cultural Approaches to Morality

On the relation between morality and biology we can find several different aspects. When one side is taking human social behavior as largely based on biology and biological evolution, and regarding morality as non-unique to humans, the other side, without completely denying the role of biology in

human social behavior, takes culture and cultural evolution as the most significant factor of morality.

In his book *Philosophy of Biology*, Godfrey-Smith (2014) investigates the facts of cooperation and altruism which are social behaviors that have positive effects on the fitness of other organisms. He treats the issue as aspects of social lives of animals, and as features of interactions between organisms. He examines the problems of cooperation (or mutualism) in which the interaction benefits both sides, and altruism in which "some individuals give away fitness" (Godfrey-Smith, 2014, p. 121). The evolution of altruism (behaviors that drop fitness) seems to be an important evolutionary problem. Godfrey-Smith points out three mechanisms that explain the evolution of those prosocial behaviors: group selection (altruism can evolve because of benefits at the group level and an altruism gene is assumed), kin selection (an organism can be altruistic as an individual but still behaves in a way that benefits the individuals who are likely to carry the same genes), and reciprocity (an organism can gain long-term benefit by making short-term sacrifices).

One side of the morality debate defends biological accounts. Proponents of this view assert that humans, with respect to their moral lives, are ordinary members of the living world, and the culture and especially the morality humans have do not make them superior to nature, or "world-forming"[1].

[1] In his book *The Fundamental Concepts of Metaphysics*, Heidegger (1995) makes a metaphysical inquiry on world and asserts three theses: "the stone is worldless, the animal is poor in world, man is world-forming". For him, such a separation, especially that of animal and human, does not require to be evaluated hierarchically, but since he considers animals as bound to their environment and humans as beyond this environment, we may state that Heidegger suggests a strict ontological difference between humans and other constituents of nature. For this reason, I argue that Heidegger's metaphysical consideration of world, and other similar thoughts in philosophical tradition are, from many aspects, in contradiction with naturalistic perspectives of morality.

They say moral behavior is just an adaptation that may provide greater fitness (i.e. greater chance to survive and reproduce).

Human mind may sound as if it were an intangible entity, but for those who emphasize biology it stands for the nervous system in which intellectual activities take place. They maintain that neither any field of science nor any philosophical view should approach the human mind as a transcendent faculty of human beings. It is the source of human behavior and the basic components of it, with a significant contribution of cultural evolution, arose as a product of biological evolution. In other words, the roots of human behavior that are generated by human psychology can quite likely be found in biological evolutionary processes.

The most rigid advocates of the biological explanations of morality are evolutionary psychologists who employ the principles of evolutionary biology when approaching human behavior. For them, neural structure of the basic components of "the human mind were designed by natural selection to solve adaptive problems faced by our hunter-gatherer ancestors, and to regulate behavior so that these adaptive problems were successfully addressed" (Cosmides & Tooby, 2000). According to Starratt and Shackelford (2010), every evolved psychological mechanism is formed to solve a particular adaptive problem, just like every physiological adaptation is for a particular problem. They state that a psychological mechanism which produces an emotion, just reacts to a stimulus which is relevant to this emotion. The aforesaid psychological mechanism, then, motivates some psychological or physiological responses. And as a consequence of these, the behavior occurs.

In evolutionary psychology, every behavior, including moral behavior, is an adaptive response to environment. The ultimate causes behind this response are rooted in our psychological mechanisms that evolved by natural selection

in order to solve the adaptive problems which our ancestors encountered. Environmental circumstances also play a role in shaping a behavior but they are proximate causes and their function might be drawing the paths between psychological mechanisms and stimuli. "Ultimate causes of behavior are responsible for people's inherent biases. Proximal causes of behavior serve as the catalysts that trigger those biases to motivate certain behaviors" (Starratt & Shackelford, 2010, pp. 237–238).

It does not work very differently in the case of morality. Inherent biases are the main source of people's moral behaviors. It can be asserted that cultural evolution gives a more explanatory description to morality than biological evolution, but such an assertion is to approach the human mind as an exception of natural world. Given that culture is a product of human mind, an attempt to consider morality as substantially an output of culture adds an exceptional constituent to morality account. Culture centered perspectives rely on the distinction between animal social behavior and human moral behavior. Thus, the separation is between humans and all other animal species. Animal sociality is taken as a whole. This superficial view can be challenged by making comparisons between some animals. For instance, the difference in sociality between insects and some complex-brained animals like apes, dolphins, elephants, magpies, etc. is greater than that between humans and these animals with high cognitive skills. In other words, social lives of humans and chimpanzees show much more similarity than that of chimpanzees and ants does. Cultural accounts seem to sustain the conventional view that animals have just instincts while humans have a mind. For such perspectives, morality, that is fundamentally different from the sociality of other animals, is a product of culture, a phenomenon not seen in non-human species. So, it implies that such a phenomenon can only be produced by an exceptional mind that nature brings out.

To place culture in a proper position, we may define the role of culture in originating moral behavior as linking stimuli up with psychological mechanisms. We may argue that culture establishes the connection between stimuli and mechanisms underlying moral behavior, but these mechanisms seem to be the origin or constitutive element of such behaviors.

Let us say that there is a woman who is wearing a short skirt in public and there is another person who thinks that wearing a short skirt represents sexuality and exhibiting one's sexuality in public is immoral. That is to say, she thinks that the woman is doing something morally wrong. It could be argued that this judgement completely depends on culture or learned moral norms and if the person who made this judgement had been born and grown up in an Amazon tribe in which the members do not usually wear any clothes, she would not think that the woman's behavior is wrong. This argument seems to be valid but it excludes the role of psychological mechanisms. In the second situation the stimulus (to see a woman wearing a short skirt in the aforesaid Amazon tribe) does not motivate any psychological mechanism. In other words, this situation does not fall under the domain of morality. Let us suppose that in this imagined Amazon tribe, if a woman fiddles with her hair, it means that she has a potential to cheat [cheating may have also genetic roots (Walum et al., 2012)] on her partner. So, with the involvement of psychological mechanisms related to sexual competition, fiddling with hair becomes something morally wrong. Thereby, for both cases, psychological mechanisms get involved in the job and the relation between human mind and biology becomes apparent. What we call culture is memory to a large extent. Thus, we may assert that it is a psychological mechanism, or more precisely a network of mechanisms, as well, and its function in originating moral behavior is to cooperate with the other psychological mechanisms that are evolved by natural selection. In

other words, it is a kind of router in the case of morality. It manipulates psychological mechanisms underlying moral behavior.

Biology and other natural sciences approach the human species as an ordinary part of the animal world. But in the case of morality, some biologists, keeping a distance from the idea that morality is a product of biology, attempt to interpret human moral behavior with some presumptions that are in the scope of culture. For instance, Francisco J. Ayala brings forward a fundamental distinction between "the capacity for ethics – the proclivity to judge human actions as either right or wrong", and the "codes of ethical norms accepted by human beings" (1987, p. 236). Briefly, he separates the biological side that is the ability to judge and the cultural side that is deciding how to judge human behavior. This separation also comes to mean another separation between biological evolution and cultural evolution. He suggests that the capacity for ethics is a product of biological evolution and the codes of ethical norms are determined by cultural evolution. To defend his view, he appeals to a pattern in language and finds a similar distinction between the capacity for a symbolic language and particular languages we speak. He finds his distinction central and claims that the source of controversy between biological and cultural determination of ethics is the absence of this distinction (Ayala, 2010).

Here we may argue that Ayala's assertions have an ambiguous characteristic, because when presenting those ideas, he does not seem to clarify from what distinctive mental mechanisms and in what ways this distinction emerges. The claims he made push him to accept human morality as an exception and propound a speculative concept of "evolutionary threshold" (Ayala, 2010, p. 326) for ethical behavior. I find this suggestion speculative because the interpretation of such an uncertain concept does not contain any obvious indicator which makes clear when the threshold was passed and let ethical behavior come about. He, too, accepts this uncertainty

and states that "we may not be able to determine when the threshold was crossed" (Ayala, 2010, p. 326). Then, to defend his argument he appeals to some facts from biology and physics to use analogically. He mentions the thresholds in transitions from unicellularity to multicellularity, and from asexual reproduction to sexual reproduction, but he ignores that in these kinds of transitions there are obvious qualitative and fundamental changes such as being composed of many cells instead of just one cell, and having also germ cells in addition to somatic cells. In case of a transition to the state of having a mental capacity adequate for ethical behavior, Ayala does not present a qualitative change which is that much obvious. Beside those analogies from biology, he also refers to a weaker one from physics and says that in transition of water from liquid state to gaseous state there is a threshold, as well. Such an attempt of clarification is far from being descriptive for our discussion. As a result of his considerations of the case, he puts himself in a position of being obligated to draw a distinctive line between ethical behavior of humans and social behavior of animals (Ayala, 2010).

In *The Descent of Man* Charles Darwin says: "The difference in mind between man and the higher animals, great as it is, certainly is one of degree and not of kind" (1871, p. 101). This statement claims that, with respect to morality, a fundamental distinction cannot be made between humans and animals. Even though Darwin was not a neuroscientist to make an entirely consistent assumption about human mind, he was principally right from a naturalistic perspective. And accordingly, without an evident proof showing that humans have different kinds of psychological mechanisms than other animals, we may not assert that ethical behavior of humans are not related to the social behavior of animals.

At the end of his work, Michael Ruse, with reference to David Hume's thought, says that morality is "a matter of psychology rather than a reflection

of non-natural objective properties" (2009, p. 313). He sees morality as a direct result of our biological evolution instead of a by-product of evolutionary processes we went through. Ruse mentions recent works (Gibbard, 1990; Skyrms, 1998; Sober & Wilson, 1997; Wright, 1994) that show how Darwinism explains ethics in the sense of showing the origins of it. He defends the idea that helping others provides a Darwinian advantage to the individual for survival and reproduction, and sees kin selection, reciprocal altruism, and the like as a kind of enlightened self-interest on the part of the gene. According to Ruse, there is a motivation of self-interest that underlies altruistic behavior and all kinds of selections in which altruistic behavior is performed. This aspect of altruism does not exclude adaptations for the individual, on the contrary, it approaches those kinds of adaptations as the substantive part of altruistic behavior and fills the gap between biological side and moral side of human. By all these explanations, Ruse means that, with respect to morality, "natural selection of some kind is the chief casual force" (2009, p. 299).

Ruse gives a simple example that shows the connection between our self-interest and moral behavior: "We love our neighbors as ourselves because, paradoxically, it is in our interests to do so. That is all there is to be said. That is how we feel" (2009, p. 299). Here, he means that we are also neighbors of our neighbors and by loving our neighbors as ourselves, in the altruistic (moral) society we live in, we would guarantee to be loved by our neighbors. Childhood sexual abuse is given by George E. Vaillant, as an example of altruism. He says that,

> altruistic victims of child abuse might work in shelters for battered women and in support groups or hotlines for abuse victims. Often altruism is an adaptive outgrowth of the defense of reaction formation, a mechanism that can maladaptively make the person's desires all bad and the needs of others all good. (Vaillant, 2000, p. 92)

Marriage could be asserted as another example for this case. Marriage corporation is one of the most solid constructions in human morality. It may seem to be a cultural fact and formed by learned ethical norms, but at the base, under the image of dedication it is a reflection of self-interests. It is an adaptation for the individual that provides getting rid of the difficulty of finding a mate to reproduce and food to eat; and it makes child care easier. All these are Darwinian advantages for the individual in the sense of survival and reproduction. If we speak from the viewpoint of our androcentric culture, to men, marriage means free sex, the food prepared for free, free child care and housework. In terms of social sciences, it is an economic cooperation and this economy stands for survival in terms of biological sciences.

Behaviors like cooperation, reciprocal altruism, group altruism, and kin selection which can be observed in social lives of the other animals might be the main source of moral behaviors of human. To reveal this, it would be very helpful to evaluate the sociality that is seen in animals. In spite of the fact that animals do not seem to possess moral behavior, all socially living animals have been in the position of altering their behaviors for the benefit of the group that they have lived within. Such a behavioral alteration can be viewed in ant and bee colonies. Cooperation in those kinds of colonies is very significant, because the colony can only survive within a social structure that contains a strictly made division of labor, while a single member of the colony does not have a chance for long term survival and reproduction. Living in groups provides better opportunities for survival and reproduction than living as an individual, and that is why social animals sustain their cooperative life styles and adapt their social behaviors to their environment.

To get closer to moral behavior of human, we may need to have a look at the sociality in primates which share a common ancestor with humans. While our body tissues have a common root with that of other primates, why

should our mind and behaviors differ distinctively from theirs? In evolutionary process, what could have happened that would bring about a different kind of mental mechanism which makes humans an exception in nature? Does nature need an exception? Humans' closest living relatives, chimpanzees and bonobos display some features that potentially share a common origin with human morality, such as the ability for symbolic language (Haghighat, 2012), self-awareness (G. G. Gallup, 1970), and sharing (Hockings et al., 2007). Shermer mentions some traits that humans and other animals (close to humans in sociality) possess in common like:

> attachment and bonding, cooperation and mutual aid, sympathy and empathy, direct and indirect reciprocity, altruism and reciprocal altruism, conflict resolution and peacemaking, deception and deception detection, community concern and caring about what others think about you, and awareness of and response to the social rules of the group. (2004, p. 16)

He also states that, like Darwin said about mind (1871, p. 101), "Species differ in the degree to which they express these sentiments, and with our exceptionally large brains (…) we clearly express most of them in greater degrees than other species" (Shermer, 2004, p. 16).

2.2. The Issue of Normativity

Pointing out naturalistic or biological facts with respect to moral behavior of humans, in other words employing scientific works when approaching morality that is one of the last castles remaining in the hands of old school philosophy, may raise some questions about the normativity of morality. How do we explain moral norms in terms of natural facts and derive them from scientific data? Moral norms claim to show what we should do, while scientific facts are related to what the world is like, i.e. the immanent

processes within the physical entities and the causality relation between those entities. These two seem to belong to two totally different domains.

Ever since Hume (1896, pp. 469–470) asserted that we cannot reach to an *ought* moving from an *is*, taking scientific facts into consideration in morality debate has become a risky attitude. Anyone who gives emphasis to facts about moral behavior and wants to make use of them in the explanation of morality faces with this kind of objections. This controversial point is later called "naturalistic fallacy" by Moore (1903) who is a non-naturalist intuitionist, and thinks that the moral good is irreducible to natural properties. He is not a subjectivist about morality, but in his view, to recognize what is good we have innate moral intuitions that cannot be reduced to scientific facts.

In this discussion I will draw on Sober's (2000) point of view. He notes some questions in regards to morality. One is about why we follow the norms. If the moral thoughts are the same in all cultures, then biology can contribute to account for the reasons of the universality of these thoughts. Biology can give explanations also when the moral assessments differ in different cultures. Sober argues that we should not reject any of these, and that our attitude, in each case, should be in the direction of employing particular considerations that rely on particular evidence.

Sober's primary method is to partition the morality off. Putting the broad question about the relationship between evolution and morality aside, we need to concentrate on particular moral cases. Accepting that biology contributes to account for the ethical codes mentioned by Ayala (1987), he suggests to consider the role of biology in explaining the particular cases discretely. Instead of coming up with a universal explanation for the phenomenon of morality, he offers to approach step by step.

Sober, referring to different approaches to scientific and ethical facts, considers ethical subjectivism that excludes objective and scientific facts from ethics, and ethical realism that involves facts besides opinions. He states that moral judgments are not objectively true in ethical subjectivism, while ethical realism takes ethics as including truths independent from opinions. Sober discusses some arguments that defend subjectivism, and asserts that they are not convincing.

In line with Sober's general perspective on this issue, I think, to be able to bring the connection between naturalistic facts and moral norms into view, we may employ a two winged approach. One is to consider norms as having broader contexts than assumed. That is to say, by expanding the scope of what we call norm, we should consider some principles or principle-like tendencies as norms because, for me, such tendencies lie behind moral behavior, and their relevance to naturalistically explainable facts is more explicit. We can describe these tendencies as some behavioral and mental attitudes towards any moral case. Let us take the expression of "help your friend" that can be asserted as a moral norm. One can argue that it is a subjectively generated norm and cannot be associated to naturalistic facts. It does not have to be true of all cases since there can be some in which you are supposed to behave otherwise. For example, your friend may ask you for help to rob a bank, and you may refuse this request because you do not want to put yourself and your friend in jeopardy, or just because you think that robbery is wrong. When we apply our approach to this situation, the tendency of behaving altruistically, for example, may take the place of the norm that says help your friend. This way the tendency that operates behind moral behavior involves both helping and rejecting the friend. Helping situation is coherent with the tendency of behaving altruistically. And, refusing situation is also coherent since we consider the benefit of our friend while not accepting the request. Such a consideration and refusal

would probably be based on the emotions of empathy and fear. In short, the actual norms that give way to moral behavior are those more general attitudes that can be explained by making use of natural facts. The more specific ones are the adapted versions of these principles. When we analyze the norms that have subjectivist appearance we can find principle-like attitudes that can be supported by naturalistic facts. Such principle-like attitudes, as families of norms, provide us an intermediary step to explain the connection between natural facts and moral norms. This approach may help reduce the ambiguity of subjectivity in ethics.

For the other side of our approach, we may call these principle-like tendencies intuitions. Intuition is a confusing concept, but I describe it as a coactivation of some fast and automatic psychological mechanisms that operate behind moral behavior (they will be presented in detail in further sections). I argue that in a moral behavior or judgment, first these fast and automatic mechanisms get activated, and justification by reasoning follows them. When assuming that we are making reasoning in moral behaviors and judgements, we may actually be justifying what had already happened in our psychological mechanisms related to emotions and morality. We like something or not, and then we justify the reason why we like it or not. In interactions with our social environment we need fast responses that take their source from our evolutionary history. Thus, I argue for a moral reasoning that is based on moral intuitions. With this perspective we may describe moral norms as a direct result of emotional processes in our brain. And, by naturalizing intuitions this way, we can present a response to non-naturalist intuitionists like Moore.

2.3. Chapter Summary

In my view, morality is an adaptation to the environment for increasing the chance for survival and reproduction and it is a direct product of human

mind that is formed by natural selection. The cultural part of morality helps biological mechanisms operate but what substantially operates is the psychological mechanism.

In the 21st century, I think we have to consider morality within the context of science. Because of the approaches that ignore naturalistic perspectives, philosophy seems to stand in an ineffective position. Since we use our brains when we are morally thinking, morally judging and morally behaving, it must be biology and its sub-branches like psychology, genetics, neurosciences, anthropology, and etc. to which we appeal to understand and explain what morality is. So, in this part, I aimed to make an introduction to the most prominent positions in the literature on the relation between morality and biology. All these aspects are exhibited from a naturalistic point of view to contribute to the effort to naturalize ethics and to understand the human in a completely scientific way.

CHAPTER 3

MORALITY AND EMOTIONS

In this part, I attempt to make an elucidative study of emotions with respect to morality. The problem at this point is to decide whether emotions that are the result of biological evolution produce and regulate values, moral judgments and behaviors or culture plays a significant role in generating emotions. In this nature vs. nurture debate, I take sides with naturist accounts and try to put forward that emotions are central to morality. Of course, nurturists do not completely deny the role of emotions in moral judgments and behaviors; rather, they attempt to find a compromise between two sides to make room for culture in explanations of morality. I also do not ignore the powerful impact that cultural conventions may have on moral lives of humans since culture may possess the quality of being able to repress and canalize the emotions. But I argue that emotions are strictly associated with neural structures of animals, and they give rise to morality. To provide a justification for this argument, first, I try to disclose what emotions are, and in what ways they have been approached in different perspectives. Then, I seek for a possible answer to the question of whether we can distinguish some more complex emotions from more basic ones and call them moral emotions. The main concern in this case is to try to find out if there are uniquely human emotions, and thereby uniquely human morality. I will be looking from a viewpoint which defends that morality and the so-

called moral emotions are not unique to humans. To support those assertions, I will present some observations and neuroscientific studies on humans and other animals.

3.1. What are Emotions?

If we take a look at the discussions on emotions, we will probably see two main standpoints on the question of what emotions are. One is the appraisal theory and the other is the embodiment theory. The appraisal theory is preferred by nurturist accounts, and naturists go for the embodiment theory. The appraisal theory claims that emotions should be taken as intellectual things. For defenders of this theory, emotions are not feelings, instead, they are thoughts, judgments, and cognitions (Solomon, 2003) or, as Catherine A. Lutz states, "another mode of knowing" (1988, p. 40). They criticize scientific studies that approach emotions only as biological or physical events; so they do not appreciate isolating emotions within physiological structure and locating them in some parts of the brain (Lutz, 1988, p. 41). According to them "appraisal and evaluation … are necessary in emotion, even on the most basic neurological level" (Solomon, 2003). In those interpretations, emotions come to mean responses to appraisal judgments which are felt by humans. Anger, for example, includes an appraisal of attack, fear includes an appraisal of hazard, and sadness comprises an appraisal of loss. These theories argue that emotions can arise without any accompanying bodily component. For that matter, they are "purely cognitive" as Prinz (2003) says, and there are also some impurely cognitive theories (Scherer, 1984) which assert that emotions consist of appraisal judgments and some noncognitive constituents. Appraisal judgments can trigger feelings according to those kinds of explanations. Whether they let emotions involve noncognitive bodily components or not, they all consider judgments and thoughts to be fundamental while trying to answer the question of what emotions are.

There is the embodiment theory of emotions on the other side. In this theory, emotions do not amount to intellectual things; on the contrary, they are feelings that develop out of specific bodily changes. If suddenly a snake appears in front of us, for instance, our heartbeat and blood pressure increase, muscles get stretched, pupils dilate, and breathing becomes faster. These bodily changes make us ready to run away from the snake or attack it, or as a third option, do nothing and stand still for being unnoticed by the snake and waiting it to go. All these come together and constitute the emotion of fear. No judgment is involved at this stage. For evolutionary psychologists and adaptationists there are certain neural mechanisms for each of those kinds of situations, and they trigger certain emotions (Cosmides & Tooby, 2000). In case of fear, for example, amygdala has a significant role in connecting outer stimuli to defense reactions (LeDoux, 2003). Those structures are evolved long before and have provided survival for our ancestry. Thus, emotions are an outcome of our evolution (Ekman, 1992). A possible response of a nurturist to the snake example would be considering a snake dancer, who makes use of a snake while dancing. She probably has spent a lot of time with snakes, and she would not feel the emotion of fear in such an incident because she does not have any thought or appraisal judgment of danger about snakes. So, the main cause behind emotions are thoughts and judgments. Embodiment theory does not reject the contribution of appraisals. In the snake dancer example, what appraisals and thoughts do is to repress the emotion of fear by changing the domain of danger. Here, the thoughts of the snake dancer take the snake out of fear domain, and she does not appraise the snake as dangerous. It is not an object of fear for her anymore. For a naturist, this does not mean that thoughts originate emotions. Thoughts, judgments and appraisals, or culture as a whole can change what to be afraid of, but they do not bring fear into existence. There must be something (such as darkness, thunder, etc.), for the dancer, under the domain of danger, even if it is not snake. The

amygdala of the dancer may not be activated while the dancer is in interaction with snakes, but this does not change the fact that the emotion of fear is triggered by that part of the brain.

According to the embodiment theory, what the emergence of emotions necessitates is perceptions of bodily changes, not thoughts and appraisal judgment. Within this direction, the first defender of the embodiment theory William James, after considering nurturist approaches to the cases like shame, desire, regret, etc., asks, "if in these cases the bodily changes follow the ideas, instead of giving rise to them, why not then in all cases?" (1884). Bodily perceptions are both necessary and sufficient for having an emotion. Some research shows that imitating bodily expressions of emotions can make the imitator have those emotions (Zajonc, Murphy, & Inglehart, 1989). But what about the necessity of thoughts in emotions, or as Prinz asks, "If not sufficient, might thoughts at least be necessary for emotions?" (2007, p. 56). Even Prinz, as a nurturist from many respects, focuses his attention on naturist accounts when it comes to emotions. Considering some neuroscientific studies, he states that "cognitive requirements are too demanding" and "emotions can arise without judgments, thoughts, or other cognitive mediators" (Prinz, 2007, p. 57). Such a retreat of a nurturist shows that it is difficult to give explanations to emotions from a cultural perspective, and the main factor behind emotions is most likely the mechanisms of the nervous system in animals.

The nature vs. nurture debate on emotions has raised a problem as to the universality of emotions. The question is whether emotions diversify cross-culturally or, at least, some of them are universal and found in all cultures without any variation. The discussion develops out of Darwin's observations on the expression of emotions in species. He finds a strong relation between emotions and their expressions, and states that "Most of our emotions are so closely connected with their expression, that they hardly exist if the body

remains passive—the nature of the expression depending in chief part on the nature of the actions which have been habitually performed under this particular state of the mind" (Darwin, 2013, p. 249). The case of emotional expressions later is investigated by Paul Ekman who formerly aimed to show that emotions vary across cultures. The evidence he and his colleagues gathered in the influential work *Emotion in the Human Face* (Ekman et al., 1972) changed his perspective and he became a defender of evolutionary approach. He wanted to investigate whether the facial expressions of emotions are the same in different cultures, including an isolated group of New Guinean people called the Fore. He concentrated on a core group of emotions: joy, sadness, fear, anger, disgust, and surprise. This classical list of basic emotions has become known as the Big Six later on. As a conclusion of his research he asserts that "The same emotions were judged for the same facial behaviors by observers from different cultures, in experiments which had many different stimuli of many different stimulus persons, and many different groups of observers, from 14 cultures or nations. Similar results were obtained with visually isolated, preliterate, New Guinea observers" (Ekman et al., 1972, p. 166). Nevertheless, Ekman's findings face with some objections which suggest that there are no synonyms for the emotions on Ekman's list in some cultures (Lutz, 1988). His arguments are also opposed by some skeptical and speculative approaches which assert that the Big Six may not be basic emotions, but rather combinations of some more fundamental components, such as "aggression, helplessness, startle and wanting" (Prinz, 2012, p. 266). In spite of those oppositions, Ekman's conclusions represent a worthwhile start to be able to reveal that emotions are shared by humans and other animals, not a product of culture.

Wherever there are two edges, there is always someone who wants to tie those edges together. In the case of splicing naturist and nurturist views on emotions, Prinz attempts to do this. He asserts his arguments under the

name of the embodied appraisal theory. As it can be understood from the name of his theory, he appreciates the value of both sides and combines some aspects of them. He regards emotions as embodied since they are somatic signals. But, in addition to this, they also possess characteristics of appraisals (Prinz, 2004). He accepts that, like James, emotions are inner responses to bodily changes. But, on the other side, by defining "an appraisal as any mental state that represents an organism-environment relation that bears on well-being", he argues that they do represent "the core relational themes", such as danger and loss (Prinz, 2003).

To support his theory of embodied appraisals, he appeals LeDoux's snake instance and states that appraisals and thoughts do not play any role in the initial state of seeing a snake. It is a danger detection and does not contain any high cognitive process. What shows up initially is just bodily responses. However he adds that it is possible to acquire another danger concept that can be positioned in cases which could be recognized by judgments. At this acquiring situation, the bodily response expands its scope of application. Thus, in consequence of acquired concepts, appraisal judgments become capable of triggering fear, or emotions, in a broader sense. Nevertheless, Prinz emphasizes derivativeness of those cases and argues that appraisals pursue emotions that already exist. He does not regard judgments as a component of emotions since they are not essential to emergence of emotions. He thinks that the relation between a judgment and an emotion resembles the relation between a premise and a conclusion. For him judgments are not constituents of emotions, but they are causes of them (Prinz, 2003).

Prinz claims that the embodied appraisal theory proposes a solution to the problem of emotions by clarifying how emotions interact with thoughts. For him feelings and thoughts are constitutionally embodied states, but they also carry "the kind of information that full-blown cognitions can carry" (Prinz,

2003). He attempts to unify emotions and explain situations with regard to embodied appraisals. To him all emotions "have embodied form and appraisal content" (Prinz, 2003). He asserts that his theory provides unity both by combining emotions into a coherent category, and by reconciling naturist and nurturist approaches to emotions.

3.2. Are There Distinctively Moral Emotions?

The views that regard morality as uniquely human are also supposed to regard some emotions as uniquely human unless they are rejecting the relation between morality and emotions. And this opinion requires a new categorization or a new denomination of emotions. The result is the moral emotions. From a naturist perspective, this term may be involving a problem or it may be "something of a misnomer" as Prinz (2009) states. It is problematic because distinguishing emotions as moral and non-moral may give rise to making a qualitative distinction between humans and other animals. Thus, we may unwittingly find ourselves in a position that is scientifically difficult to defend. I believe that such a naming can be useful methodologically, but arguing that moral emotions are fundamentally different than basic emotions may bring about an objectionable outlook. Different parts of the brain and specific neural structures may get involved in moral cases, but determining the degree of complexity of an emotion and calling it as moral and the other as basic are not easy tasks and can lead to speculative aspects. However, I do not suggest that there are no moral emotions. Calling some of them moral can be beneficial practically, but we should not fail to notice that their distinction with the so-called basic ones is not so obvious and the border line in between is hardly visible.

Cultural approaches to morality propound that moral emotions, such as guilt, shame, love, and sexual jealousy, belong to humans, and the other animals

are lacking in them (Prinz, 2012, p. 248). But on the evolutionary side Darwin barges in and states that,

> Most of the more complex emotions are common to the higher animals and ourselves. Everyone has seen how jealous a dog is of his master's affection, if lavished on any other creature; and I have observed the same fact with monkeys. This shews that animals not only love, but have the desire to be loved. Animals manifestly feel emulation. They love approbation or praise; and a dog carrying a basket for his master exhibits in a high degree self-complacency or pride. There can, I think, be no doubt that a dog feels shame, as distinct from fear, and something very like modesty when begging too often for food. (1871, pp. 41–42)

After mentioning his observations on "the more intellectual emotions" in non-human animals, he argues that,

> It has, I think, now been shewn that man and the higher animals, especially the Primates, have some few instincts in common. All have the same senses, intuitions and sensations—similar passions, affections, and emotions, even the more complex ones; they feel wonder and curiosity; they possess the same faculties of imitation, attention, memory, imagination, and reason, though in very different degrees. Nevertheless many authors have insisted that man is separated through his mental faculties by an impassable barrier from all the lower animals. (Darwin, 1871, pp. 48–49)

Who is right in this sense? Are humans segregated by mental faculties, and especially moral emotions, from the other animals by an insuperable boundary? My suggestion is that there is no such a barrier between humans and other animals, as there is not a boundary between the mental and the bodily.

Recent neuroscientific and biological studies show that morality roots in the brain (Moll, De Oliveira-Souza, & Eslinger, 2003). They reveal that what lies behind the neuroscience of moral behavior is emotions. They, too, make a distinction between basic emotions and moral emotions. Neuroscientific

approach takes Ekman's basic emotions as the limbic emotions that arise from the limbic system of the mammalian brain (MacLean, 1990). On the other side, the moral emotions, such as shame, guilt, jealousy, pride, and altruism, are produced by the social brain network, and emerge later in evolution and development (Adolphs, 2003). Their function is regulating moral behavior in the long term benefit of a group, while limbic emotions provide a short term benefit for the individual (Shoemaker, 2012). In spite of their differences in function, those systems should not be regarded as distinct because the social brain network is structured onto the neural network of the limbic system (Decety, 2011).

In the case of regulating social behaviors of mammals, recent scientific studies focus on two crucial elements, *oxytocin* and *vasopressin*. These nonapeptides are secreted by the hypothalamus, and trigger some series of events so that an attachment between the mother and the offspring gets established (Heinrichs, von Dawans, & Domes, 2009). So, it is thought that moral behavior takes its source from the evolution of the mammalian brain. During this period, the self-care system that provides survival for the individual modifies into an infant-care. Then its scope extends to mates, kin, and friends. Thus, moral behaviors that require other-care can occur. Oxytocin and vasopressin are also related with the reward system of the brain. In prairie voles, some regions of the reward system (the *nucleus accumbens* and *ventral pallidum*) have a higher density of receptors for oxytocin and vasopressin (Churchland, 2014). In rodents, it is shown that oxytocin downregulates the neural activity of the amygdala, a brain region that regulates fear responses (Panksepp & Biven, 2012). At the genetic stage, a research asserts that there is an association between variation in the oxytocin receptor gene and pair-bonding and other moral behaviors in humans (Walum et al., 2012). So, it should not be surprising that we feel relaxed and happy when we are with our partners, friends, and family

members, if we have relatively sufficient number of oxytocin receptors in our related neural structures. If one asks what culture contributes to morality at this point, Churchland argues that,

> The neural mechanisms supporting social behavior are tuned up epigenetically by social interactions and by learning the social practices of the group, and by figuring out how to best deal with new social problems. (2014)

Another way to show that morality arises from the neural mechanisms of sociality is to reveal the effects of sex differences and impairments of brain regions to moral behavior. Sex differences refer to physiological differences to some degree. So, we are supposed to see different moral behaviors in different sexes. Scientific evidence supports this suggestion. Males and females cooperate differently (Baker et al., 2016), and the neural mechanisms underlying emotional processes work differently in different sexes (Whittle et al., 2011). Sex differences in empathy have ontogenetic and phylogenetic[2] origins (Christov-Moore & Iacoboni, 2016). Males and females also exhibit different neural and behavioral responses to oxytocin and vasopressin during social interaction (Rilling et al., 2014). And another study suggests that testosterone is not just associated with aggression and dominance, but also with cooperation during intergroup competition by enhancing parochial altruism (Reimers & Diekhof, 2015). This evidence is also related to sex differences in moral behavior, since testosterone levels differ in males and females. Beside sex differences, showing how brain impairments affect social behaviors helps us reveal that those behaviors may have specific regions in the brain. People with autism spectrum disorder (ASD), for example, have an impairment of reciprocal socialization, and impairments in communicating. A defect in the development of empathy is

[2] Ontogeny is the study of developmental processes observed in a lifespan of an individual organism, while phylogeny is about the evolutionary history of common characteristics of different groups of organisms like species and populations. (see, for instance, Gould (1977)).

a sign of ASD. Some studies display that people with ASD have function disorder of the mirror neurons that are responsible for unifying action detection and action performing (Rizzolatti et al., 2009), learning by observing, and perception of the emotions of others (Critchley et al., 2000). They also have anomalies in the fusiform face area that is responsible for identifying faces (Hubl et al., 2003). And people with prosopagnosia also have a functional deficit of recognizing faces and emotions of others. They have less cells in the fusiform face area (Dinkelacker et al., 2011). In addition to these, scientific research finds a serious volume loss in prefrontal gray matter in criminal psychopaths and people with antisocial personality disorder (Raine et al., 2000).

If we turn to the problem of altruism that occupies a significant place in morality, a pair of recent studies can be illuminating for us. In the first study (Christov-Moore & Iacoboni, 2016), 20 subjects were shown a video of a hand getting poked with a needle, and asked to imitate photographs of different faces expressing some emotions, such as sadness, happiness, anger, and excitement. Subjects' brains were scanned simultaneously with functional magnetic resonance imaging (fMRI) technique, to analyze the amygdala, somatosensory cortex, and anterior insula that are responsible for perception of pain and emotion, and imitating others. Two other regions of the prefrontal cortex (the dorsolateral prefrontal cortex and the dorsomedial prefrontal cortex), which is associated with regulation of behavior and decision making, were also scanned. In another activity, subjects played the dictator game. They were given $10 per trial for 24 trials, and said to select an amount of money to be given to a player. Players were represented with photographs of neutral faces, and their names and yearly incomes were written on the right side of the photographs. After subjects finalized the game, researchers compared the outcomes with brain scanning results, and found out that subjects who had more responses in the

prefrontal cortex were more selfish, giving an average of $1 to $3 for each trial. On the contrary, the subjects who had the most activity in the areas of the brain that are responsible for experiencing pain and emotion, and imitating others, were more generous, sharing 75 percent of the money. Researchers suggest that this prosocial inclination may be the essential mechanism behind the emotion of empathy and altruistic behavior. Findings also exhibits that empathy may be composed of the perception of pain and emotion, and imitating others.

In the second study (Christov-Moore et al., 2017), researchers wanted to find whether it is possible to increase generosity by blunting prefrontal cortex. They had 58 subjects in the dictator game, and applied a non-invasive procedure called theta-burst Transcranial Magnetic Stimulation on them to dampen activity in certain regions of the brain. In 20 subjects of the control group, a region of the brain that is associated with sight, not with generosity, was dampened. In the test group, either the dorsolateral prefrontal cortex or the dorsomedial prefrontal cortex was weakened. The results show that, the subjects with dampened activity in the brain's behavior and response control center were 50 percent more generous than the control group subjects. Also subjects with dampened dorsomedial prefrontal cortex were more generous, and those with dampened dorsolateral prefrontal cortex were inclined to be more generous to players with higher incomes. Those findings assert that the mammalian brain may be containing some specific regions that are responsible for empathy and altruistic behavior. As a crucial part of morality, altruism may find its roots in somewhere in the brain. There are, of course, some opponent views arguing that damages to the prefrontal cortex increase utilitarian moral judgments (Koenigs et al., 2007), but either this or that way, centrality of biology for morality is obvious.

3.3. Chapter Summary

There is no doubt that we, as humans, have the largest brains among all primates (Passingham, 1973), and the most complex brain structures among all animals. This gives us a huge power to change our environment, and even ourselves. We can observe outer galaxies, see and split atoms, travel faster than sound, and build massive buildings. But what do these mean with respect to morality? Did we invent morality? Can we generate emotions? Arguing that morality is based upon culturally constructed moral emotions is in contrast with scientific approach. To regard some emotions as uniquely human leads us to defend a view on synthetic emotions, a mixture of innate emotions that synthesized by culture. But at which point in evolutionary history did we start generating culture and emotions? Is there such an explicit evolutionary threshold? How many neurons must we have to be peerless and superior? Answering those questions ambiguously leaves us in a speculative position. Like de Waal (2009), I also defend a continuity between humans and other primates. It is clear that we caused the extinction of some very close species. We also incorporated some other species (e.g. Neanderthals) into ours throughout our evolutionary history. But the idea of a "transition from the nonhuman to the human" is "pure speculation" (Strum, 2008).

CHAPTER 4

ALTRUISM AND THE CONTINUITY OF MORALITY BETWEEN HUMANS AND OTHER ANIMALS

As a common naturalist, I will start with a quotation from Darwin: "Besides love and sympathy, animals exhibit other qualities which in us would be called moral" (1871, p. 75). If there is to be a continuity of morality between humans and other animal species that are the end-members on a hypothetical line, it should be demonstrated by means of a common phenomenon (some kind of behavior in this context) that can be observed in both end-members and continuously in-between, perhaps in different degrees. Altruism is probably the best candidate for this commonality.

At first look at the literature on altruism, one probably encounters with frighteningly many different terms before the altruism term, such as evolutionary altruism, biological altruism, psychological altruism, reciprocal altruism, vernacular altruism, group altruism, kin altruism, directed altruism, intentional altruism, empathy-based altruism, strong altruism, weak altruism etc. Such an abundance of concepts inevitably leads to confusion and denotes that there is a great number of viewpoints, but not a consensus on this issue.

Without pronouncing altruism or empathy, Darwin emphasizes the importance of those phenomena for the evolution and social lives of animals:

> In however complex a manner this feeling may have originated, as it is one of high importance to all those animals which aid and defend each other, it will have been increased, through natural selection; for those communities, which include the greatest number of the most sympathetic members, will flourish best and rear the greatest number of offspring. (1871, p. 82)
>
> … an instinctive impulse, if it be in any way more beneficial to a species than some other or opposed instinct, would be rendered the more potent of the two through natural selection; for the individuals which had it most strongly developed would survive in large numbers. (1871, p. 84)

Interest in altruistic behavior in animals has a long history, but there is not a consensus on it yet. While survival of the fittest is the most naked motto of evolutionary thoughts, enhancing the fitness of another individual at the expense of one's own fitness seems problematic. To begin with, I like to offer the following rather loose and encompassing definition: the doer loses, the other gains. This is not an explanatory description; in the literature, there are different approaches attempting to give an elucidative account of altruism. There are two main kinds of it, in other words, two different perspectives towards it. One of them is biological altruism. It is a view that attempts to explain it from an evolutionary perspective. It investigates how such a behavior could evolve throughout the long natural history. Biological altruism explanations are about ultimate causes. They take reproductive fitness into account when approaching altruism, and call a behavior altruistic if it increases the number of offspring, thus the frequency of genes (See Sober & Wilson, 1997; D. S. Wilson, 1992; E. O. Wilson, 2005). But, I will not be looking from this perspective. My standpoint will be psychological altruism.

I argue that altruism is the most significant concept in morality because when we analyze morality by dividing it into pieces, we encounter with altruism in each part. I divide it as circles of relationships of which the moral

subject stands at the center. These circles are entities like family, friendship, sexual partnership, neighborhood, etc., and altruistic behavior is, in varying degrees, a constitutive element for each of them. Such behavior is a crucial point because when we remove it from the aforesaid entities, they tend to deteriorate. Think that you are out with your friends and you are the only one that has a car. At the end of the day if you do not offer to drop your friends that stay in your neighborhood home, your friendship relationships start to go bad. And, this situation is valid for every kind of social relation that stands at the domain of morality. It is difficult to imagine a moral phenomenon that excludes altruistic behavior as a building block. It may look I am underestimating morality with soft examples from daily life, but I think that morality is a combination of such everyday life situations. We do not have to approach it with big questions like Plato did with his "what is …?" (*ti estin*) questions.

4.1. Empathy and Altruism

The issue of altruism seems to need a renewed approach that separates motivational and functional contexts. While the defenders of the biological aspects are interested in what an altruistic behavior causes, the ones from psychological side underline how it arises. Instead of the motivation underlying a behavior, the thought that selection sees only the result of a behavior is at the center of evolutionary accounts. The problem comes up when we see evolutionary explanations as if they take motivational content into account when approaching the fundamental notions like altruism and selfishness. Such an opinion may give evolutionary accounts a teleological look. For them, a behavior is identified as selfish without considering if the performer wittingly goes after its own interest or not. In the same way, a behavior is specified as altruistic without considering if the performer intentionally aimed to favor the recipient or not.

Here, we should evaluate motivation without appealing to evolutionary accounts. This differentiation stems from the famous methodological strategy in the philosophy of biology which asserts that we need to make a distinction between proximate and ultimate causes (Mayr, 1961). When ultimate causes are about why an altruistic behavior evolves through the evolutionary history of species, proximate causes are related to how certain mechanisms that have evolved work in each case. I do not mean to say that these different perspectives are banded together, but they clearly enlighten each other.

Well-favored views about altruism are that altruism may have evolved by favoring close kin and the ones who are likely to pay back the favor (Hamilton, 1964; Trivers, 1971). Herein, it is easy to recognize that ultimate explanations emphasize future benefits. But, how those postponed benefits motivate the altruist is not explicit. To make it apparent we should pay more regard to the motivation behind the altruistic behavior. By motivation, I mean the activation of some mechanisms that triggers certain behaviors in animals that have complex nervous systems. Intrinsic reward systems, just like oxytocin mechanisms activated due to lactating that provide a basis for child care, can be examples of the motivations behind altruistic behavior. As will be explained in detail below, the type of altruism that is triggered by empathy also carries the possibility of having an innate reward system in such a way that the performer gains an emotional benefit from the other's welfare. But, an external reward does not seem to find a place for itself in motivational analysis, because altruistic behavior has an immediate cost, and a favorable outcome may just rise after a certain time.

Altruistic behavior in a reciprocal way implies anticipating from the other to pay back the benefit. Even though the number of studies on reciprocal altruistic behaviors of animals is not excessive, most of them show that such a behavior is observable in many species. The general idea is that humans

can exhibit so-called real (non-reciprocal, mere) altruistic behavior while non-human animals are interested in only future benefits. This idea is inaccurate from two aspects because we can find out a reciprocal context when we analyze non-reciprocal appearance of altruistic behaviors of humans, and non-human animals do not seem to be aware of possible profits. Such a view regards non-human animals as if they get involved in reciprocity with the awareness of a prospective favor. Generous behaviors in recognition of instant acquisition are prevalent, but such an awareness seems beyond the mental capacities of non-human animals. They probably cannot comprehend the relationship between altruistic behavior and the postponed benefit that will result from it.

Considering these uncertainties, one can object the continuity of morality from humans to non-humans and argue that human morality is totally different in case only humans can perceive the future benefit of an altruistic behavior, and the non-reciprocal altruist behavior of humans distinguishes them from non-human animals. Accepting that humans can see the potential interest in favoring others, I disaffirm this objection, for reciprocal altruistic behavior in humans, like in other animals, is not motivated by consciously expected future benefits. For instance, when driving in the traffic you are overtaking a car, and seeing that its door is not closed properly. If you overtook it already, you probably slow down to stay next to it and try to explain this insecure condition with gestures. Here, the motivation behind this behavior is not the thought that you behaved this way and that driver or anyone else in the traffic will do the same when you are in a similar situation. When you face such a dangerous condition you do not think about contributing to a traffic system that will take your security into consideration as well. What triggers your behavior is the emotional distress you feel when you see someone in jeopardy. By the way of empathic mechanisms you get into the status of the other and obtain the relevant emotion. So, in this

example, altruistic behavior serves to alleviate the distressed mood and such an alleviation seems to be the benefit gained in reciprocity.

With respect to behavior, ultimate causes are not directly related with motivation. Sex is an explanatory sample for this. Sex emerged to profit reproduction, but non-human animals do not seem to be conscious of the tie between breeding and sex. Just like unpredicted results do not motivate sex, unpredicted benefits do not trigger altruism.

Empathy gives the opportunity to make fast connections with the emotional condition of other individuals. With regard to social life, this fastness provides empathy an advantage in comparison with cognitive processes. The ability to establish fast links may have evolved in association with offspring-care before the evolution of humans (Maclean, 1985). Babies exhibit their emotional condition by means of sounds and facial expressions, so that mother can take an action. Similar processes are seen in species in which the offspring needs intensive care.

After empathic ability evolved, it may have exceeded its original limits and have other functions in sociality. Distress calls in adult mammals may be the mark of an ongoing behavior that serves to arouse empathy. Cleaning and licking the wounds of other individuals are so important in primates (Boesch, 1992). We, humans, also tend to take our fingers to our lips when we prick our fingers with a needle or touch a hot object. And, it would not be surprising if a mother had such behavior towards her child. This can be a simple example of an empathic behavior common in humans and other animals.

In the explanations of empathy, emotional contagion holds an important place. Roughly, emotional contagion happens when one obtains, through some automatic mechanisms, the emotional state of the other

unintentionally and rapidly. This approach to empathy may provide us to see the continuity between non-human animals and humans along with between infants and adult humans. Many research results show that emotional attachment in humans begins at a very early age (Davidov, Zahn-Waxler, Roth-Hanania, & Knafo, 2013; Zahn-Waxler and Radke-Yarrow, 1990). It also displays some psychological and neural connections. There are some other studies showing that (via brain imaging methods and measuring body temperature) humans and chimps give common responses to images that reflect some emotions (Parr and Hopkins, 2001).

Just like one bird in a flock gets frightened and causes others to take off in panic, human infants start crying in chorus, detecting the distressed feeling, if they hear another cry (Hoffman, 1975). This situation may be described as taking over the emotional condition of the other, shortly emotional contagion (Hatfield, Cacioppo, & Rapson, 1993). It can also be activated intentionally by some individuals, just as human juveniles make their parents feel distressed in order to take advantage of them.

Such an adoption of the emotion of the other individual is frequently observed in non-human animals. Darwin also touches upon this issue mentioning that "many animals, however, certainly sympathize with each other's distress or danger" (1871, p. 74). As an example, a study shows that mice give enhanced response to pain when they notice that another mouse is suffering (Langford et al., 2006). More than that, an experiment reveals that monkeys, in the case of causing an electroshock and pain in another, stop pulling a chain by which they get food (Masserman, Wechkin, & Terris, 1964). It is not explicit if this altruistic behavior amounts to a concern for another, but it is a strong example of emotional contagion.

Another layer of the explanations of empathy is sympathetic concern. It is the evaluation of the condition of the other and the effort to comprehend

the motives behind the emotions of that individual. Sympathy is thought to be different from personal distress since they have contrasting consequences. While sympathy can be described as an emotional reaction which includes concerning for another distressed individual, personal distress that is reflected from the other individual leads the subject to try to relieve that distress.

The most illustrative instance for sympathetic concern may be consolation behavior observed in non-human animals. It is described "as reassurance provided by an uninvolved bystander to one of the combatants in a previous aggressive incident" (de Waal, 2008). As an example, an individual who witnesses a fight between other individuals gets closer to the beaten one, and kindly touches its back with an arm. Many observations (de Waal & Aureli, 1996; Romero et al., 2010) display that individuals who behave consolatory generally prefer to get in touch with the beaten one instead of the one who defeats. When considering consolation, we should not ignore that it is observed in just apes, humans, and rooks (Seed, Clayton, & Emery, 2007), and not in any other species, including monkeys (Schino, Geminiani, Rosati, & Aureli, 2004).

Perspective taking can be asserted as another component that constitutes the multilayered mechanisms of empathy. As a general definition, it is to look from the viewpoint of the other, or more intensely, to read the mind of the other. It may look a bit distant from empathy this way, but it is in close relationship with emotional processes.

A classical study initiates discovery efforts on this subject by investigating whether chimps can understand others (Menzel, 1974). In our times, such theory of mind research in other animals suggests that only apes give us a sign of perspective taking (de Waal, 1996, 2007a; B. Hare, Call, & Tomasello, 2001; Shillito, Shumaker, Gallup, & Beck, 2005).

Targeted help is one of the most prominent indicators of perspective taking. It can be described as the help based upon a mental approval of the particular condition of the other (de Waal, 1996). Many studies on primates, especially on apes, show us that targeted help can be frequently observed in our close relatives. A female chimp who turns back to help a juvenile in need of passing between trees, by standing like a bridge means just more than concern for others. Emotional contagion is probably included in her behavior, but she also evaluates the particular cause of the distress and aim of the juvenile.

Perspective-taking seems to need a move from concerning for the other to an explicit other-directedness. Emotional condition stimulated in the subject by the object requires being attributed to the object. The coemergence hypothesis has a potential to elucidate how this requirement is met. It proposes "that mirror self-recognition (MSR) and advanced expressions of empathy appear together in both development and phylogeny" (de Waal, 2008).

We can see that the connection between perspective taking ability and mirror self-recognition is still valid when the findings related to age differences are considered (Bischof-Köhler, 1991). Drawing from his observations, Gallup (1982) suggests that such a coemergence reveals a disparity between apes and monkeys. He argues that intentional altruistic behavior, mirror self-recognition, and consolation behavior are found in just apes.

Besides apes, recent research shows that intentional help behavior and consolation can be observed in elephants and dolphins. Gallup's (1983) estimation about the existence of mirror self-recognition in these species has now evidence verifying that they can pass a relevant mark test. In this test, animals try to recognize a mark placed on their bodies, and they can see it

only by means of a mirror (Reiss & Marino, 2001). It is thought that the ability of mirror self-recognition does not exist in other species (Anderson & Gallup, 2004) except magpies (Prior, Schwarz, & Güntürkün, 2008).

On the other hand, in some species, self-recognition seems to be an ability that is acquired through development. The view suggesting that self-recognition arises in a gradual manner (Rochat, 2003) can refer to phylogeny. Without adopting a view arguing that in a species self-recognition is either present or not, we can state that a species can exhibit a midlevel recognition, just as humans in the early stages of their lives (de Waal, Dindo, Freeman, & Hall, 2005).

The connection between perspective taking and mirror self-recognition does not show solid characteristics. Recent works reveal that some non-human animals may possess the ability of perspective taking while seemingly being deprived of mirror self-recognition (Bugnyar & Heinrich, 2005; Virányi, Topál, Miklósi, & Csányi, 2006). Those observations are about food obtaining and storing, so may not be counted as perspective taking based on empathy. It seems we need reliable neuroscientific studies to indicate the distinction between the self and the other.

I support the moral continuity between humans and other animals, especially primates. Altruism is probably the best concept to make this continuity visible. And, empathy seems to be the main motivation behind altruistic behavior. Accordingly, personal distress may be asserted as a basic example of empathy. Emotional contagion can make animals frightened by the danger call of others to run away. A mother can be distressed by the distress of her infant, and make them both calmed down by embracing it. Such basic empathic responses can favor both sides, the performers and the others around them. Behavioral imitation also can generate adaptive consequences. In an animal community in which each individual hunts, eats,

cares infants by itself and sleeps alone, the cost would be much more than it is in an empathic and altruistic community.

For altruistic behavior to occur, the emergence of emotions needs to turn into other-directedness. In primates, the most widely observed concern for others is to defend the other in case of aggression. Such a behavior necessitates a highly emotional status since the performer is in a risk of injury while defending the other. The coalitions of female chimps against males can be an example for this. Jumping into the water to rescue another individual despite being unable to swim is a behavior observed very frequently, too (Goodall, 2010).

In those kinds of behaviors, predicted future-benefits do not seem to be the motivation. Grooming may be counted as a behavior that predicts a future-benefit (de Waal, 2007a), but to make a chimp who is afraid of water jump into the water there is a need of intense emotional motivation.

About the altruistic behavior of primates such as food sharing, defending the other against attackers, and cooperation, there are many illustrative observations. Some do not put food sharing under altruism for its cause is social oppression, but de Waal reports that in primate groups the individuals who are at the top of the hierarchy are the most open-handed ones about food sharing (de Waal, 1989).

Empathy is probably the best device for ensuring a complete motivational account for a diverse range of conditions in which favor is distributed with respect to needs. In humans and other animals, underlying mechanisms seem to be comparatively uncontrolled. For that reason, empathy may extend across its initial function. It can make some people donate for needy children in Africa, some primates look after parentless infants (Thierry &

Anderson, 1986), and an ape saves a bird fallen from its nest (de Waal & Lanting, 1997).

Even though altruistic behavior that originates from empathic perspective taking is the most disputable side of the topic, there are eye-opening findings in the literature. Sea mammals, for instance, display many behavior samples of targeted help. Dolphins keep unhealthy individuals at the surface of the water not to let them drown. Whales stand between hunting ships and wounded individuals. Orcas accept disabled individuals excluded from other groups to their groups, and feed them even if they could not participate in the hunting (Caldwell & Caldwell, 1966; Connor & Norris, 1982).

Famous for their strong memories, elephants are also assertive about solid social bonds. Many complex moral phenomena can be observed in their relatively long lifecycles. A recent study shows that consolation behavior in elephants is quite common. The bystander individuals who are not affected by the stressor, reassure the distressed ones vocally and by forming a protective circle around her. Getting close to her, they also give physical caresses in mouth and on genitals (Plotnik & de Waal, 2014).

In addition to scientific work, a footage from India reveals how empathetically non-human animals can concern for others, and how intentionally they help. In the footage, a monkey endeavors to save the life of another monkey that had lost its consciousness after touching the power lines in a train station. Unconscious monkey lies on rails, and the other monkey toils to revive it for more than twenty minutes, by hitting, shaking, biting, and immersing it in water. Finally, its efforts yield results, and the fainted monkey can move away from the rails after awakening (News Hour India, 2014).

De Waal (2005) reports one of his observations from the Arnhem Zoo. One evening, the keeper calls the chimpanzees in, but two of them (adolescents) do not follow this call. According to the rule, the chimps get food only if all of them get inside the building. These rebellious adolescents upset others. After a few hours, they get in and the keeper places them into a different room to avoid a possible violent reaction. The next day, when they are all out again, the group expresses its tension to the rule-breakers with a forceful attack after a vehement chase. In the evening of the day, two stubborn young chimps go in before everyone else.

This example emphasizes the importance of altruism by showing how social relations can deteriorate in the lack of an altruistic attitude. The absence of the youngster is punished because sociality is directly related to altruism and social benefit requires altruistic behavior. We can easily imagine an equivalent situation from human morality. Let us say, there is an employee shuttle waiting to depart and take people to their homes. And, the rule is that the shuttle moves only if everyone is on the shuttle. But, there are two people missing, and the ones in the shuttle know that these two are drinking coffee and talking about how beneficial for the public the recent highway and bridge investments are. When they got on the bus, or in the next workday, the reaction of the waiting employees to them would probably be expressing their discomfort, due to some delay in arriving home after a strenuous workday, verbally or in body language. The punishment, in this case, is the state of being ostracized. It can be asserted that this example relates to a social norm that should be evaluated in a broader context than a moral one. The rule may have been laid down by an authority instead of the employees themselves, but the emotions that are most likely to rise in our late-comers are shame and guilt. Moreover, these emotions may awaken the emotion of empathy that would conceivably lead to a more altruistic attitude. I mean that, here we see a chain of emotions, from shame and

guilt to empathy, causing an altruistic behavior. Thus, there is too much emotional content to make the situation just a social one. So, I argue that, rather than social, this situation can be put into a moral domain.

There are many brain regions that are not unique to humans. They all are present at the mammalian brain. A research displays that there are similarities in form and function of the hippocampus in rodents, monkeys, and humans (Clark & Squire, 2013). Another research reveals that synaptogenesis and development of pyramidal neuron dendritic morphology in the chimpanzee neocortex resembles humans. Prolonged synapse and neuronal maturation are thought to make contribution to improvement "of social learning during development and transmission of cultural practices" (Bianchi et al., 2013). And a further study exhibits that the concepts of justice and fairness do not belong only to human culture. We share them with other primates (Brosnan, 2013). Another study, within this context, shows that humans and other primates possess common biological specializations with regard to social life (Chang et al., 2013). In the light of this information, the complex moral behaviors can be observed in other animals. They cooperate, resolve conflicts (Brosnan, 2011; de Waal, 2000, 2007a), reject unequal pay (Brosnan & de Waal, 2003), have compassion (Goetz, Keltner, & Simon-Thomas, 2010), and exhibit aggression, and violence (de Waal, 2004). A female leopard called Legadema takes care of the infant of the baboon she just killed (Joubert & Joubert, 2006). A lioness saves a newborn wildebeest from hyenas and spends some time with it before letting it go and find its herd (*Lioness saves calf from hyenas*, n.d.). Another lioness adopts an infant antelope (*The Lioness and the Oryx*, n.d.). The mental mechanisms that may be underlying these patterns of behavior are discussed in the next section.

4.2. Mechanisms Underlying Empathy

Besides being a faculty of sharing and comprehending the emotions of others, empathy seems to appear as a multilayered phenomenon in which cognitive mechanisms and emotions operate concurrently. As the most basic layer, emotional contagion may be working upon an action-perception mechanism. Yawning, for example, is so evidently contagious in many primates and occurs more frequently between individuals that have closer relationships (Palagi, Leone, Mancini, & Ferrari, 2009). Thus, it can be asserted that there is a correlation between emotional connectedness and emotional contagion.

Such evidence propounds that the ability for mimicking the behaviors of another is one of the key components of empathy. The automaticity of such behavior is possibly based on mental mechanisms which enable some common motor processes. Thus, they can provide an emotional relatedness between the individuals of animals.

There are also some other behavior samples observed in social relationships. For instance, we can see baboons imitating each other's facial expressions in a play. Moreover, behavior is repeated more, and the reaction is faster in between the individuals with closer relationships like females and their offspring (Mancini, Ferrari, & Palagi, 2013). So, the studies on humans and other animals agree on a correlation between social proximity, mimicry, and emotional contagion. As de Waal suggests "even though we and other social animals occasionally assist others without thinking of ourselves, I would still argue that these tendencies originate from mutuality and the assistance of kin" (de Waal, 2005).

The faculty of imitating the emotions and behaviors of others may be found in early primate evolution. For instance, monkey, ape, and human newborns can mimic facial expressions of a human they see in front of them (Ferrari

et al., 2006; Meltzoff & Moore, 1977). This faculty provides both mother and the newborn to adjust their behaviors according to each other, and promotes mother-offspring connection. Such findings support the views that find the core components of empathy in the early stages of mother-offspring relationship (Decety, 2014). In humans and other primates postnatal period involves extensive emotional exchange between adult individuals and neonates. Infants show high attention to their social environment, and can mimic facial gestures although their nervous system is not well developed. Those circumstances imply that the brain has precocious skills of getting adjusted with environmental effects, and detecting emotional attitudes of mothers by action-perception mechanisms that inwardly impersonate the emotional conditions of others (Gallese, 2003).

Automatically copied emotional situations of the others are linked to the embodied channel mechanism "i.e., the use of shared representations to directly experience and interpret others' behaviour" (Ferrari, 2014). The rest of the mechanisms related to empathy are thought to be grounded on that core. They are in charge of giving a chance for perspective taking.

The mechanisms involved in action perception seem to be induced by mirror neurons, neurons "that fires both when an individual performs an action and when the individual observes the same action performed by another individual" (Stemmer, 2008). Since motor neurons are found in cortical areas relevant to motor control, it is argued that the behaviors of others "can be translated into a motor code exploiting the inner knowledge, in terms of cortical motor representations of the individual" (Ferrari, 2014). Such a conversion provides an individual to plot the emotions and behaviors of others on interior motor representations of those emotions and behaviors. These characteristics of motor neurons make us think them as probable first level mechanisms behind empathy and altruistic behavior.

In addition to the first description of motor neurons as a visiomotor system that discharges for hand movements, they have new descriptions since some classes of motor neurons discharge for mouth gestures. Some fMRI studies on humans showed that motor neuron systems are active during mimicking and witnessing the emotional facial expressions (Carr, Iacoboni, Dubeau, Mazziotta, & Lenzi, 2003). So, we can argue that some mental mechanisms that are related to emotions carry mirror characteristics.

Encountering an emotional facial expression causes a specific emotion in the subject. Activated motor neurons awakes the emotion related with this expression by way of embodied mimicry (Gallese, 2003). In humans and other primates, the adoption of the emotion of the other occurs in this manner.

While operating, mirror neurons may be imitating the encountered action by making a contact with brain areas related to emotions, and activating them to awake corresponding emotion. When encountering with emotional facial expressions brain areas like amygdala, the inferior frontal gyrus, the anterior insula, and the ventral premotor cortex are activated. And, the studies on the correlation between behavior and brain shows that activation in those brain regions is in correlation with measures of social competence and empathy (Pfeifer, Iacoboni, Mazziotta, & Dapretto, 2008).

Those findings suggest that individuals have the capacity to empathize with the others by processes of interior mimicry (Iacoboni, 2009). Notions like emotional contagion, facial imitation, and underlying mechanisms presented so far are self-acting responses which do not necessitate complex cognitive skills. However, there are some higher-level mechanisms by which the individuals assess the social condition without adopting the other's emotional status. In some cases, considering some other aspects, like an appropriate

appraisal of benefits and costs, might be advantageous besides understanding others' emotions.

In decisions about social interactions, the brain is to combine different kinds of data concerning previous knowledge about another individual, consisting of the benefits and costs of a behavior. Thus, it can designate value to the behavior of the other, and its own reactions. Recent studies reveal that the prefrontal cortex has some regions related with the food value and the effort required to gain the food. For example, in a study, the orbitofrontal cortex activation is measured when a monkey is considering options that require an assessment of the type and quality of the food, the possibility of gaining the food, and necessary time for reaching the food (Padoa-Schioppa, 2009). According to the results, different number of neurons of this region display activity in each case, asserting that in monkeys, the orbitofrontal cortex is responsible for subjective values. It is essential in behavioral exchanges. While assessing the rewards, and comparing the object values, the same region is in charge (Morrison & Salzman, 2009).

Also in humans, the orbitofrontal cortex and the medial prefrontal cortex are responsible for assessing the type of the food, the delay in time, and the amount of money (Padoa-Schioppa, 2009). In addition, impairments in those regions disrupt decision processes related to values (Machado & Bachevalier, 2007). Another study reveals that, in monkeys, the degree of activation in the orbitofrontal cortex varies in different social preferences concerning giving rewards, i.e. who to reward (Azzi, Sirigu, & Duhamel, 2012).

Such work investigating social lives of primates suggests that particular social interactions follow particular mental mechanisms in primates. It is possible to see the evolutionary path from automatic emotional imitation to evaluation of the others, and from shared emotions to empathic and altruistic behavior.

With respect to the source of empathy, prosocial behavior seems to contain emotional association at its center whether it is linked to the prefrontal cortex or not. By disregarding the emotion-related constituent, it is not easy to understand why animals concern for others. With this perspective, we can see that humans do not have much control over the motivation power of empathy. We tend to close our eyes if we expect to see a scary scene in the cinema, or a dangerous situation of another person, such as a kid riding a bike madly, or someone working on the roof of a building without security equipment. In such circumstances, we identify ourselves with the other person. For example, as a person with a fear of heights, I fear more when I see someone standing in a high place unsafely than the same situation in which I would be. Suppressing these kinds of identifications might be a method for controlling empathy deliberately. There can be some cases that no empathy exists. In chimps, for instance, one can kill another savagely (de Waal, 2007a). This shows that it is possible to repress the motivation capacity of empathy when treating others. Other motivations may be prevailing over empathy in such cases. But, whether voluntary filters and contextual assessment can manipulate empathic brain reactions is an open question (de Vignemont & Singer, 2006).

We can assert that the degree of the resemblance between a performer and a recipient is influential in the way of the emergence of empathy. Social proximity, resemblance, appropriate and favorable memories with others strengthen empathy-generated reactions. Research on humans indicates that they empathize with the ease and distress of others when the relationship is collaborative. But, on the other hand, they exhibit antipathetic reactions when the connection is competitive (Lanzetta & Englis, 1989). There are also some fMRI studies supporting those opinions. Witnessing pain in a loved one causes activation in brain regions relevant to pain, but, on

the other hand, witnessing pain in a disliked one causes activation in brain regions related to reward (Singer et al., 2004).

We can observe such findings also in rodents. In this species, emotional contagion does not occur between those who do not know each other while it is effective for close individuals (Langford et al., 2006). Empathic reaction to the negative emotions of the other is heightened by acquaintanceship between individuals in monkeys (Masserman et al., 1964). Thereby, it can be argued that empathy arises with reference to beneficial relationships. On the other side, it can be repressed with regard to strangers. This repressing case, or even affirmation and appreciation of the negative situation of the other, can be a form of reprisal, and it is observed in social lives of chimps very frequently. Beside paying the benefit back to the loved ones, they also strike back to the ones who had misbehaved them before (de Waal & Luttrell, 1988).

Forming long-dated relationships is a way to gain mutual benefits. Such a reciprocal system is widely seen in all primates (de Waal & Brosnan, 2006). It also can be suggested regarding the relationships among humans. Social associations, such as marriage and friendship, can promote personal benefits by constituting an enduring social fitness-based solidarity motivated by correlative empathy. Thus, no one has to keep a profit and loss account. Each side gains physiological and psychological profit from both taking help and doing favor.

4.3. Perception Action Mechanism and the Russian Doll Model

On the underlying mechanisms of empathy, Preston and de Wall (2002) suggest a mechanism called perception action mechanism (PAM). It "provides an observer (the subject) with access to the subjective state of another (the object) through the subject's own neural and bodily representations" (de Waal, 2008). According to this approach, with the

observer's attempt to attain the condition of the other, observer's mental representations of analogous conditions get enabled involuntarily. The achievement of the observer to identify with the other is directly proportional with the degree of the familiarity between individuals. This familiarity promotes the self-directed reactions of the observer. Thus, the observer can walk in the other's shoes, by undertaking its demands and emotions. This can motivate the subject to sympathize and favor the object. Preston and de Waal argue that this model is also compatible with the mirror neuron mechanisms that reveal a connection between action and perception (Preston & de Waal, 2002).

We can find a common groundwork under the physiologies of experiencing and witnessing the emotions (Adolphs, Cahill, Schul, & Babinsky, 1997). This emotional association provides paired physiological conditions for the observer and the other. Works on the neuroscientific ground of the emotion of empathy seem to verify perception action model by suggesting a resemblance between mediated and self-produced emotions (Singer et al., 2004). It is revealed that both the condition of being disgusted and observing someone exhibiting a disgust behavior activate the anterior ventral insula (Wicker et al., 2003).

The common physiological substrates of action and perception are known from previous research. Empathy is a fast mechanism, and relevant findings show that facial muscles contract as a reaction to facial expression images which displayed so quickly that subjects are not able to recognize them consciously (Dimberg, 1982; Dimberg, Thunberg, & Elmehed, 2000; Hess, Philippot, & Blairy, 1998). Cognitive explanations of empathic mechanisms seem to omit those self-acting responses that are so quick for intentional control.

In empathy, the emotional condition of an individual is affected by others'. There are basic mechanisms at the center, and more complex ones related to the capacities of perspective taking at outer levels. Considering this gradual structure of empathic abilities, de Waal offers a model called the Russian doll model. According to this, complex cognitive layers are constructed on a solid, embedded ground like perception action mechanism (de Waal, 2007b). He does not assume that perception action mechanism gives a complete account of perspective taking and sympathetic concern for the other. He thinks that it forms a basis for those more complex steps, and functions to trigger the behavior. Such an emotional association allows us to explain what can underlie upper steps related to altruistic behavior.

Beside underpinning emotional identification, perception action mechanism also seems to be present at the center of unconscious imitation. So, it signifies that the Russian doll model is associated with behaving like the other does, such as facial mimicry, emulation, and bodily coordination. When we see perception action mechanism as included in both empathic situations and mimicry, a connection between those abilities can be supposed. A study shows that the individuals showing high empathy tend to imitate others unconsciously more than the ones with low empathy (Chartrand & Bargh, 1999). It is also revealed that people with ASD (autism spectrum disorder), in addition to lacking empathy, also do not have the ability of imitating others (Charman, 2002). Accordingly, some fMRI works link automatic imitation, like contagious yawning, with mental state attribution (Platek, Critton, Myers, & Gallup, 2003).

Yawning as response to seeing another individual yawning is observed very frequently in primates (Paukner & Anderson, 2006), and even in wolves (Romero, Ito, Saito, & Hasegawa, 2014). More broadly, imitating the behavior of another, i.e. aping, is so common in primates. Studies exhibit that primates start to eat if they see another eating although they are not

hungry (Addessi & Visalberghi, 2001), scratch their bodies while others are scratching themselves (Nakayama, 2004). They also display newborn mimicry just like human newborns (Bard, 2007). In apes, original behaviors are also imitated. For instance, young chimps mimic the odd walking styles of the other chimps (de Waal, 2007a), and body movements of humans (Custance, Bard, & Whiten, 1995).

Physical resemblance seems to promote identification, and it can have a foundational role in mimicry, just like observed in apes. The inclination of non-human animals to imitate others, like their empathic reactions, is self-generated. So, mirror neurons are activated by themselves when the action and purpose are witnessed.

In line with the perception action mechanism, motivations behind empathy and mimicry involve common representations and identification with other individuals. This identification is predicated on social proximity, previous knowledge, bodily resemblance, and automaticity. The whole construction gets in touch with the most basic mechanism that emerges in mutual affection with social world, but more advanced levels do not come into play mandatorily.

When altruism is defined as the outcome of empathic mechanisms that generate an identification with the emotional state of others, it is legitimate to ask whether benefiting the other amounts to benefiting oneself. It may mean so, but that does not provide a basis for counting altruism that is motivated by empathy as selfish. A pure selfish person can easily pass by someone who is asking for help, while empathy puts one into the condition of another. For the empathic mechanisms bring an internal reward just by means of the other, they are completely other-directed. Also, it is useless to attempt to filter the self out of the entire phenomenon, since, in this explanation, the other is contained in the self. To what extent altruism is

altruistic seems to be a controversial conceptual discussion. But, the link between empathy and altruism has a fruitful side for our understanding of behavior. Individuals find a benefit in other's well-being.

Extensive scientific research reveals that many animal species show empathy towards others by means of an unmediated physiological channel that include the mirror neuron mechanisms and some other brain areas related to self-generated reactions of the individual. While this basic mechanism stands at the core, some other more complex and cognitive mechanisms form the multilayered structure of empathy. Such a differentiation of empathy is also presented by the studies on the impairments associated with the ventromedial prefrontal cortex and the inferior frontal gyrus. When people that have the inferior frontal gyrus related problems exhibit deficits in the recognition of emotion, the ones that have the ventromedial prefrontal cortex related problems exhibit failure in the cognitive side of the empathy (Shamay-Tsoory, Aharon-Peretz, & Perry, 2009).

Even if there is a neurobiological distinction in those layers of empathy, altruistic behavior needs a more emotional component, since such a component provides a basis for identifying the values of the actions of others. Works on psychopaths assert that they display deficits in both empathic abilities and capabilities to assess moral behavior (R. D. Hare, 2003). People with ASD (autism spectrum disorder) also are unable to recognize emotions, and to make moral judgments (Williams et al., 2006; Zalla, Barlassina, Buon, & Leboyer, 2011), and problems in their mirror neuron systems are reported (Dapretto et al., 2006).

Studies on non-human animals reveal that complex empathic capacities are based on more basic emotional mechanisms. Advanced social interactions of primates and some other complex-brained species, require a complex

structure that promotes emotional and cognitive reactions such as empathy. Altruism necessitates the ability to comprehend the emotions and intents of the other. There is also a need to recall the previous behaviors of other individuals for reciprocity. The mechanisms underlying empathy allow us to offer an elucidative account for altruistic behavior and morality.

4.4. Chapter Summary

Today, we have so many inspiring findings suggesting that social bonding has embedded constituents in the mind. Accordingly, humans and other animals may have common empathy-related mechanisms underlying altruistic behavior. The emotion of empathy carries the potential of being the major motivation that leads animals to go on interchanging favors just like they did before. Rather than suggesting acquired anticipations or considerations on forward gains, this aspect underlies a self-generated drive and a motivating function of emotional constituents. An evolutionary ungenerous explanation of altruistic behavior supposes a mechanism of motivation close to that explanation. Empathy seems to be a phylogenetically arisen faculty. When we exclude emotional association caused by empathy, we stay in an indefinite position in which we cannot see what is the motivation behind highly demanding altruistic behavior seen in humans and non-human animals. Empathy supports close and formerly beneficent ones, and is inclined to be prejudiced about former competitors. In integration with perspective taking capacities, self-acting motivators of empathy provide us a way to understand intended altruistic behavior in some animals with the most complex minds.

CHAPTER 5

CONCLUSION

Since morality stands at the core of our societies, it is one of the most disputed issues of the history of philosophy. The subject caused big wars between philosophy and science, for it led us to think about the nature of our social behavior which is definitely not a softball question. The critical questions are whether we can distinguish ourselves from other animals, and whether we can call our morality unique. Can our morality be a reflection of emotions that have evolutionary roots? Can altruistic behavior spring from the ability to adopt the emotion of the other?

Biology has the opportunity to give very useful and revolutionary accounts for the nature of our moral behavior. Recent studies on non-human animals carry the potential of changing our strict opinions about our privileged lives and worlds, but especially our superior selves.

I support that human morality is largely motivated by emotions. It enables our mammalian brain that leads us to care, share, and love. We are outfitted with intrinsic guides and capacities that orientate us on our map of behavior. Rationalization may be pursuing our designated responses. Concerning our behaviors, it may be the justification attempt that can be approved or disapproved, thus people may come to a mutual agreement on an ethical issue.

I argue that whether a behavior is good or bad depends largely on its relation to altruism. The notion of good is a social phenomenon; and altruism, as the most promising candidate for accounting the sociality, may decide whether a behavior will fall under that ambiguous notion of good. Thus, it may provide a more tangible perspective to anyone who endeavors to comprehend morality.

I find no reason to reject that non-human animals, especially apes, have morality. To me, the view that their social behavior cannot be called morality is a relic from conventional thinking. I do not suggest that we are the same. Sociality is a product of the mind, and we have different minds. But, there is a track to follow from non-human animals to human animals, and, altruism seems to be the most promising map of this track. We keep evolutionary links. The difference is in complexity, and as the evolutionary proximity increases, that complexity gap closes. The view that morality is completely human needs to come under review.

REFERENCES

Addessi, E., & Visalberghi, E. (2001). Social facilitation of eating novel food in tufted capuchin monkeys (Cebus apella): input provided by group members and responses affected in the observer. *Animal Cognition*, *4*(3–4), 297–303. https://doi.org/10.1007/s100710100113

Adolphs, R. (2003). Cognitive neuroscience of human social behaviour. *Nature Reviews Neuroscience*, *4*(3), 165–178. https://doi.org/10.1038/nrn1056

Adolphs, R., Cahill, L., Schul, R., & Babinsky, R. (1997). Impaired declarative memory for emotional material following bilateral amygdala damage in humans. *Learning & Memory*, *4*(3), 291–300. https://doi.org/10.1101/lm.4.3.291

Anderson, J. R., & Gallup, G. G. (2004). Self-recognition in nonhuman primates: Past and future challenges. In M. Haug & R. Whalen (Eds.), *Animal models of human emotion and cognition.* (pp. 175–194). Washington: American Psychological Association. https://doi.org/10.1037/10335-011

Ayala, F. J. (1987). The biological roots of morality. *Biology and Philosophy*, *2*, 235–252.

Ayala, F. J. (2010). What the Biological Sciences Can and Cannot Contribute to Ethics. In F. J. Ayala & R. Arp (Eds.), *Contemporary Debates in Philosophy of Biology*. Wiley-Blackwell.

Azzi, J. C. B., Sirigu, A., & Duhamel, J.-R. (2012). Modulation of value representation by social context in the primate orbitofrontal cortex. *Proceedings of the National Academy of Sciences*, *109*(6), 2126–2131. https://doi.org/10.1073/pnas.1111715109

Baker, J. M., Liu, N., Cui, X., Vrticka, P., Saggar, M., Hosseini, S. M. H., & Reiss, A. L. (2016). Sex differences in neural and behavioral signatures of cooperation revealed by fNIRS hyperscanning. *Scientific Reports*, *6*. https://doi.org/10.1038/srep26492

Bard, K. A. (2007). Neonatal imitation in chimpanzees (Pan troglodytes) tested with two paradigms. *Animal Cognition*, *10*(2), 233–242. https://doi.org/10.1007/s10071-006-0062-3

Baron-Cohen, S. (1995). *Mindblindness: an essay on autism and theory of mind*. MIT Press.

Bianchi, S., Stimpson, C. D., Duka, T., Larsen, M. D., Janssen, W. G. M., Collins, Z., … Sherwood, C. C. (2013). Synaptogenesis and development of pyramidal neuron dendritic morphology in the chimpanzee neocortex resembles humans. *Proceedings of the National Academy of Sciences*, *110*(Supplement_2), 10395–10401. https://doi.org/10.1073/pnas.1301224110

Bischof-Köhler, D. (1991). The development of empathy in infants. In M. Lamb & M. Keller

(Eds.), *Infant development: Perspectives from German-speaking countries* (pp. 245–73). Erlbaum.

Boesch, C. (1992). New elements of a theory of mind in wild chimpanzees. *Behavioral and Brain Sciences*, (15), 149–150. https://doi.org/10.1017/S0140525X00067959

Brosnan, S. F. (2011). A Hypothesis of the Co-evolution of Cooperation and Responses to Inequity. *Frontiers in Neuroscience*, *5*. https://doi.org/10.3389/fnins.2011.00043

Brosnan, S. F. (2013). Justice- and fairness-related behaviors in nonhuman primates. *Proceedings of the National Academy of Sciences*, *110*(Supplement_2), 10416–10423. https://doi.org/10.1073/pnas.1301194110

Brosnan, S. F., & de Waal, F. B. M. (2003). Monkeys reject unequal pay. *Nature*, *425*(6955), 297–299. https://doi.org/10.1038/nature01963

Bugnyar, T., & Heinrich, B. (2005). Ravens, Corvus corax, differentiate between knowledgeable and ignorant competitors. *Proceedings of the Royal Society B: Biological Sciences*. https://doi.org/10.1098/rspb.2005.3144

Caldwell, M. C., & Caldwell, D. K. (1966). Epimeletic (care-giving) behavior in Cetacea. In K. Norris (Ed.), *Whales, Dolphins, and Porpoises* (pp. 755–89). Berkeley: University of California Press. Retrieved from https://www.semanticscholar.org/paper/Epimeletic-(care-giving)-behavior-in-Cetacea-Caldwell/7ee8a4a67985e230a1b62905c84bd905892ec78a

Carr, L., Iacoboni, M., Dubeau, M.-C., Mazziotta, J. C., & Lenzi, G. L. (2003). Neural mechanisms of empathy in humans: A relay from neural systems for imitation to limbic areas. *Proceedings of the National Academy of Sciences*, *100*(9), 5497–5502. https://doi.org/10.1073/pnas.0935845100

Chang, S. W. C., Brent, L. J. N., Adams, G. K., Klein, J. T., Pearson, J. M., Watson, K. K., & Platt, M. L. (2013). Neuroethology of primate social behavior. *Proceedings of the National Academy of Sciences*, *110*(Supplement_2), 10387–10394. https://doi.org/10.1073/pnas.1301213110

Charman, T. (2002). Understanding the imitation deficit in autism may lead to a more specific model of autism as an empathy disorder. *Behavioral and Brain Sciences*, *25*(1), 29–30. https://doi.org/10.1017/S0140525X0231001X

Chartrand, T. L., & Bargh, J. A. (1999). The chameleon effect: The perception–behavior link and social interaction. *Journal of Personality and Social Psychology*, *76*(6), 893–910. https://doi.org/10.1037/0022-3514.76.6.893

Christov-Moore, L., & Iacoboni, M. (2016). Self-other resonance, its control and prosocial inclinations: Brain-behavior relationships. *Human Brain Mapping*, *37*(4), 1544–1558. https://doi.org/10.1002/hbm.23119

Christov-Moore, L., Sugiyama, T., Grigaityte, K., & Iacoboni, M. (2017). Increasing generosity by disrupting prefrontal cortex. *Social Neuroscience*, *12*(2), 174–181. https://doi.org/10.1080/17470919.2016.1154105

Churchland, P. S. (2014). The neurobiological platform for moral values. *Behaviour*, *151*(2–3), 283–296. https://doi.org/10.1163/1568539X-00003144

Clark, R. E., & Squire, L. R. (2013). Similarity in form and function of the hippocampus in rodents, monkeys, and humans. *Proceedings of the National Academy of Sciences*, *110*(Supplement_2), 10365–10370. https://doi.org/10.1073/pnas.1301225110

Connor, R. C., & Norris, K. S. (1982). Are Dolphins Reciprocal Altruists? *The American Naturalist*, *119*(3), 358–374. https://doi.org/10.1086/283915

Cosmides, L., & Tooby, J. (2000). Evolutionary psychology and the emotions. In M. Lewis & J. M. Haviland-Jones (Eds.), *Handbook of Emotions* (2nd ed.). New York: Guilford.

Craig, A. D. (2002). How do you feel? Interoception: The sense of the physiological condition of the body. *Nature Reviews Neuroscience*, *3*(8), 655–666. https://doi.org/10.1038/nrn894

Critchley, H. D., Daly, E. M., Bullmore, E. T., Williams, S. C. R., Van Amelsvoort, T., Robertson, D. M., … Murphy, D. G. M. (2000). The functional neuroanatomy of social behaviour: Changes in cerebral blood flow when people with autistic disorder process facial expressions. *Brain*, *123*(11), 2203–2212. https://doi.org/10.1093/brain/123.11.2203

Custance, D. M., Bard, K. A., & Whiten, A. (1995). Can Young Chimpanzees (Pan Troglodytes) Imitate Arbitrary Actions? Hayes & Hayes (1952) Revisited. *Behaviour*, *132*(11–12), 837–859. https://doi.org/10.1163/156853995X00036

Dapretto, M., Davies, M. S., Pfeifer, J. H., Scott, A. A., Sigman, M., Bookheimer, S. Y., & Iacoboni, M. (2006). Understanding emotions in others: mirror neuron dysfunction in children with autism spectrum disorders. *Nature Neuroscience*, *9*(1), 28–30. https://doi.org/10.1038/nn1611

Darwin, C. (1871). *The Descent Of Man And Selection in Relation To Sex*. New York: D. Appleton & Company.

Darwin, C. (2013). *The Expression of the Emotions in Man and Animals*. Cambridge: Cambridge University Press. https://doi.org/10.1017/cbo9781139833813

Davidov, M., Zahn-Waxler, C., Roth-Hanania, R., & Knafo, A. (2013). Concern for Others in the First Year of Life: Theory, Evidence, and Avenues for Research. *Child Development Perspectives*, *7*(2), 126–131. https://doi.org/10.1111/cdep.12028

de Vignemont, F., & Singer, T. (2006). The empathic brain: how, when and why? *Trends in Cognitive Sciences*, *10*(10), 435–441. https://doi.org/10.1016/j.tics.2006.08.008

de Waal, F. B. M. (1989). Food sharing and reciprocal obligations among chimpanzees. *Journal of Human Evolution*, *18*(5), 433–459. https://doi.org/10.1016/0047-2484(89)90074-2

de Waal, F. B. M. (1996). *Good natured : the origins of right and wrong in humans and other animals*. Harvard University Press.

de Waal, F. B. M. (2000). Primates - A natural heritage of conflict resolution. *Science*, *289*(5479), 586–590. https://doi.org/10.1126/science.289.5479.586

de Waal, F. B. M. (2004). Evolutionary Ethics, Aggression, and Violence: Lessons from Primate Research. *The Journal of Law, Medicine & Ethics*, *32*(1), 18–23. https://doi.org/10.1111/j.1748-720X.2004.tb00444.x

de Waal, F. B. M. (2005). *Our inner ape: a leading primatologist explains why we are who we are*. Riverhead Books.

de Waal, F. B. M. (2007a). *Chimpanzee politics : power and sex among apes*. Johns Hopkins University Press.

de Waal, F. B. M. (2007b). The 'Russian Doll' model of empathy and imitation. In Bråten

S. (Ed.), *Advances in consciousness research: Vol. 68. On being moved: From mirror neurons to empathy* (pp. 49–69). Amsterdam: John Benjamins Publishing Company. https://doi.org/10.1075/aicr.68.06waa

de Waal, F. B. M. (2008). Putting the Altruism Back into Altruism: The Evolution of Empathy. *Annual Review of Psychology*, *59*(1), 279–300. https://doi.org/10.1146/annurev.psych.59.103006.093625

de Waal, F. B. M. (2009). *Primates and philosophers: how morality evolved*. (S. Macedo & J. Ober, Eds.). Princeton, N.J.: Princeton University Press.

de Waal, F. B. M., & Aureli, F. (1996). Consolation, reconciliation, and a possible cognitive difference between macaques and chimpanzees. In A. E. Russon, K. Bard, & S. T. Parker (Eds.), *Reaching into thought: the minds of the great apes* (pp. 80–110). Cambridge, MA: Cambridge University Press.

de Waal, F. B. M., & Brosnan, S. F. (2006). Simple and complex reciprocity in primates. In *Cooperation in Primates and Humans* (pp. 85–105). Berlin, Heidelberg: Springer Berlin Heidelberg. https://doi.org/10.1007/3-540-28277-7_5

de Waal, F. B. M., Dindo, M., Freeman, C. A., & Hall, M. J. (2005). The monkey in the mirror: Hardly a stranger. *Proceedings of the National Academy of Sciences*, *102*(32), 11140–11147. https://doi.org/10.1073/pnas.0503935102

de Waal, F. B. M., & Lanting, F. (1997). *Bonobo : the forgotten ape*. University of California Press. Retrieved from https://www.ucpress.edu/book/9780520216518/bonobo

de Waal, F. B. M., & Luttrell, L. M. (1988). Mechanisms of social reciprocity in three primate species: Symmetrical relationship characteristics or cognition? *Ethology and Sociobiology*, *9*(2–4), 101–118. https://doi.org/10.1016/0162-3095(88)90016-7

Decety, J. (2011). The neuroevolution of empathy. *Annals of the New York Academy of Sciences*, *1231*(1), 35–45. https://doi.org/10.1111/j.1749-6632.2011.06027.x

Decety, J. (2014). The Neuroevolution of Empathy and Caring for Others: Why It Matters for Morality. In *Research and Perspectives in Neurosciences* (pp. 127–151). https://doi.org/10.1007/978-3-319-02904-7_8

Di Pellegrino, G., Ciaramelli, E., & Làdavas, E. (2007). The regulation of cognitive control following rostral anterior cingulate cortex lesion in humans. *Journal of Cognitive Neuroscience*, *19*(2), 275–286. https://doi.org/10.1162/jocn.2007.19.2.275

Dimberg, U. (1982). Facial Reactions to Facial Expressions. *Psychophysiology*, *19*(6), 643–647. https://doi.org/10.1111/j.1469-8986.1982.tb02516.x

Dimberg, U., Thunberg, M., & Elmehed, K. (2000). Unconscious Facial Reactions to Emotional Facial Expressions. *Psychological Science*, *11*(1), 86–89. https://doi.org/10.1111/1467-9280.00221

Dinkelacker, V., Grüter, M., Klaver, P., Grüter, T., Specht, K., Weis, S., … Fernandez, G. (2011). Congenital prosopagnosia: Multistage anatomical and functional deficits in face processing circuitry. *Journal of Neurology*, *258*(5), 770–782. https://doi.org/10.1007/s00415-010-5828-5

Ekman, P. (1992). Are there basic emotions? *Psychol Review*, *99*(3), 550–553. https://doi.org/10.1037/0033-295X.99.3.550.

Ekman, P., Friesen, W. V., & Ellsworth, P. (1972). *Emotion in the human face: guide-lines*

for research and an integration of findings. Pergamon Press.

Ferrari, P. F. (2014). The neuroscience of social relations. A comparative-based approach to empathy and to the capacity of evaluating others' action value. *Behaviour*, *151*(2–3), 297–313. https://doi.org/10.1163/1568539X-00003152

Ferrari, P. F., Visalberghi, E., Paukner, A., Fogassi, L., Ruggiero, A., & Suomi, S. J. (2006). Neonatal Imitation in Rhesus Macaques. *PLoS Biology*, *4*(9), e302. https://doi.org/10.1371/journal.pbio.0040302

Gallese, V. (2003). The Roots of Empathy: The Shared Manifold Hypothesis and the Neural Basis of Intersubjectivity. *Psychopathology*, *36*(4), 171–180. https://doi.org/10.1159/000072786

Gallup, G. G. (1970). Chimpanzees: Self-Recognition. *Science*, *167*(3914), 86–87. https://doi.org/10.1126/science.167.3914.86

Gallup, Gordon G. (1982). Self-awareness and the emergence of mind in primates. *American Journal of Primatology*, *2*(3), 237–248. https://doi.org/10.1002/ajp.1350020302

Gallup, Gordon G. (1983). Toward a Comparative Psychology of Mind. In S. G. E. & P. A. VROON (Eds.), *Advances in Psychology* (Vol. 13, pp. 473–510). North-Holland. https://doi.org/10.1016/S0166-4115(08)61806-3

Gibbard, A. (1990). *Wise Choices, Apt Feelings: A theory of normative judgment*. Cambridge, MA: Harvard University Press.

Godfrey-Smith, P. (2014). *Philosophy of Biology*. Princeton University Press.

Goetz, J. L., Keltner, D., & Simon-Thomas, E. (2010). Compassion: An Evolutionary Analysis and Empirical Review. *Psychological Bulletin*. https://doi.org/10.1037/a0018807

Goodall, J. (2010). *Through a window: my thirty years with the chimpanzees of Gombe*. Mariner Books.

Gould, S. J. (1977). *Ontogeny and phylogeny*. Harvard University Press.

Greene, J., & Haidt, J. (2002, December 1). How (and where) does moral judgment work? *Trends in Cognitive Sciences*. https://doi.org/10.1016/S1364-6613(02)02011-9

Haghighat, L. (2012). Baboons can learn to recognize words. *Nature*, (April 12th). https://doi.org/10.1038/nature.2012.10432

Hamilton, W. D. (1964). The genetical evolution of social behaviour. I. *Journal of Theoretical Biology*, *7*(1), 1–16. https://doi.org/10.1016/0022-5193(64)90038-4

Hare, B., Call, J., & Tomasello, M. (2001). Do chimpanzees know what conspecifics know? *Animal Behaviour*, *61*(1), 139–151. https://doi.org/10.1006/anbe.2000.1518

Hare, R. D. (2003). *The hare psychopathy checklist-revised* (2nd ed.). Toronto: Multi-Health Systems.

Hatfield, E., Cacioppo, J. T., & Rapson, R. L. (1993). Emotional Contagion. *Current Directions in Psychological Science*, (2), 96–99. https://doi.org/10.1111/1467-8721.ep10770953

Heidegger, M. (1995). *The Fundamental Concepts of Metaphysics: World, finitude, solitude*. (W. McNeill & N. Walker, Trans.). Indiana University Press.

Heinrichs, M., von Dawans, B., & Domes, G. (2009, October). Oxytocin, vasopressin, and human social behavior. *Frontiers in Neuroendocrinology*. https://doi.org/10.1016/j.yfrne.2009.05.005

Hess, U., Philippot, P., & Blairy, S. (1998). Facial Reactions to Emotional Facial Expressions: Affect or Cognition? *Cognition & Emotion*, *12*(4), 509–531. https://doi.org/10.1080/026999398379547

Hockings, K. J., Humle, T., Anderson, J. R., Biro, D., Sousa, C., Ohashi, G., & Matsuzawa, T. (2007). Chimpanzees Share Forbidden Fruit. *PLoS ONE*, *2*(9), e886. https://doi.org/10.1371/journal.pone.0000886

Hoffman, M. L. (1975). Developmental synthesis of affect and cognition and its implications for altruistic motivation. *Developmental Psychology*, (11), 607–622. https://doi.org/10.1037/0012-1649.11.5.607

Hsu, M., Anen, C., & Quartz, S. R. (2008). The right and the good: Distributive justice and neural encoding of equity and efficiency. *Science*, *320*(5879), 1092–1095. https://doi.org/10.1126/science.1153651

Hubl, D., Bölte, S., Feineis-Matthews, S., Lanfermann, H., Federspiel, A., Strik, W., … Dierks, T. (2003). Functional imbalance of visual pathways indicates alternative face processing strategies in autism. *Neurology*, *61*(9), 1232–1237. https://doi.org/10.1212/01.WNL.0000091862.22033.1A

Hume, D. (1896). *A Treatise of Human Nature*. (L. A. Selby-Bigge, Ed.). Oxford: The Clarendon Press.

Iacoboni, M. (2009). Imitation, Empathy, and Mirror Neurons. *Annual Review of Psychology*, *60*(1), 653–670. https://doi.org/10.1146/annurev.psych.60.110707.163604

Jabbi, M., & Keysers, C. (2008). Inferior Frontal Gyrus Activity Triggers Anterior Insula Response to Emotional Facial Expressions. *Emotion*, *8*(6), 775–780. https://doi.org/10.1037/a0014194

James, W. (1884). What is an Emotion? *Mind*, *9*(34), 188–205.

Koenigs, M., Young, L., Adolphs, R., Tranel, D., Cushman, F., Hauser, M., & Damasio, A. (2007). Damage to the prefrontal cortex increases utilitarian moral judgements. *Nature*, *446*(7138), 908–911. https://doi.org/10.1038/nature05631

Lamm, C., & Singer, T. (2010). The role of anterior insular cortex in social emotions. *Brain Structure & Function*. https://doi.org/10.1007/s00429-010-0251-3

Langford, D. J., Crager, S. E., Shehzad, Z., Smith, S. B., Sotocinal, S. G., Levenstadt, J. S., … Mogil, J. S. (2006). Social modulation of pain as evidence for empathy in mice. *Science*, (312), 1967–1970. https://doi.org/10.1126/science.1128322

Lanzetta, J. T., & Englis, B. G. (1989). Expectations of cooperation and competition and their effects on observers' vicarious emotional responses. *Journal of Personality and Social Psychology*, *56*(4), 543–554. https://doi.org/10.1037/0022-3514.56.4.543

LeDoux, J. (2003). The emotional brain, fear, and the amygdala. *Cellular and Molecular Neurobiology*, *23*(4–5), 727–738. https://doi.org/10.1023/A:1025048802629

Lovero, K. L., Simmons, A. N., Aron, J. L., & Paulus, M. P. (2009). Anterior insular cortex anticipates impending stimulus significance. *NeuroImage*, *45*(3), 976–983. https://doi.org/10.1016/j.neuroimage.2008.12.070

Lutz, C. A. (1988). *Unnatural emotions: everyday sentiments on a Micronesian atoll and their challenge to western theory*. Chicago: The University of Chicago Press.

Machado, C. J., & Bachevalier, J. (2007). The effects of selective amygdala, orbital frontal cortex or hippocampal formation lesions on reward assessment in nonhuman primates. *European Journal of Neuroscience*. https://doi.org/10.1111/j.1460-9568.2007.05525.x

Maclean, P. D. (1985). Brain Evolution Relating to Family, Play, and the Separation Call. *Archives of General Psychiatry*, (42), 405–417. https://doi.org/10.1001/archpsyc.1985.01790270095011

MacLean, P. D. (1990). *The triune brain in evolution: role in paleocerebral functions*. Plenum Press.

Maia, T. V., Cooney, R. E., & Peterson, B. S. (2008). The neural bases of obsessive - Compulsive disorder in children and adults. *Development and Psychopathology*. https://doi.org/10.1017/S0954579408000606

Mancini, G., Ferrari, P. F., & Palagi, E. (2013). Rapid Facial Mimicry In Geladas. *Scientific Reports*, *3*(1), 1527. https://doi.org/10.1038/srep01527

Masserman, J. H., Wechkin, S., & Terris, W. (1964). "Altruistic" behavior in rhesus monkeys. *American Journal of Psychiatry*, *121*(6), 584–585. https://doi.org/10.1176/ajp.121.6.584

Mayr, E. (1961). Cause and effect in biology. *Science*, *134*(3489), 1501–6. https://doi.org/10.1126/science.134.3489.1501

Meltzoff, A. N., & Moore, M. K. (1977). Imitation of Facial and Manual Gestures by Human Neonates. *Science*, *198*(4312), 75–78. https://doi.org/10.1126/science.198.4312.75

Mendez, M. F. (2009). The neurobiology of moral behavior: review and neuropsychiatric implications. *CNS Spectrums*, *14*(11), 608–620. https://doi.org/10.1017/S1092852900023853

Menzel, E. W. (1974). A Group of Young Chimpanzees in a One-Acre Field. *Behavior of Nonhuman Primates*, *5*, 83–153. https://doi.org/10.1016/B978-0-12-629105-6.50009-2

Moll, J., De Oliveira-Souza, R., & Eslinger, P. J. (2003, March 3). Morals and the human brain: A working model. *NeuroReport*. Lippincott Williams and Wilkins. https://doi.org/10.1097/00001756-200303030-00001

Moore, G. E. (1903). *Principia Ethica*. Cambridge: Cambridge University Press.

Morrison, S. E., & Salzman, C. D. (2009). The Convergence of Information about Rewarding and Aversive Stimuli in Single Neurons. *Journal of Neuroscience*, *29*(37), 11471–11483. https://doi.org/10.1523/JNEUROSCI.1815-09.2009

Motzkin, J. C., Newman, J. P., Kiehl, K. A., & Koenigs, M. (2011). Reduced Prefrontal Connectivity in Psychopathy. *Journal of Neuroscience*, *31*(48), 17348–17357. https://doi.org/10.1523/JNEUROSCI.4215-11.2011

Nakayama, K. (2004). Observing Conspecifics Scratching Induces a Contagion of Scratching in Japanese Monkeys (Macaca fuscata). *Journal of Comparative Psychology*. https://doi.org/10.1037/0735-7036.118.1.20

Neuhaus, E., Beauchaine, T. P., & Bernier, R. (2010, August). Neurobiological correlates

of social functioning in autism. *Clinical Psychology Review*. https://doi.org/10.1016/j.cpr.2010.05.007

Newman, L. A., & McGaughy, J. (2011). Attentional effects of lesions to the anterior cingulate cortex: How prior reinforcement influences distractibility. *Behavioral Neuroscience*, *125*(3), 360–371. https://doi.org/10.1037/a0023250

Ortega, L. A., Uhelski, M., Fuchs, P. N., & Papini, M. R. (2011). Impairment of Recovery From Incentive Downshift After Lesions of the Anterior Cingulate Cortex: Emotional or Cognitive Deficits? *Behavioral Neuroscience*, *125*(6), 988–995. https://doi.org/10.1037/a0025769

Ostrowsky, K., Magnin, M., Ryvlin, P., Isnard, J., Guenot, M., & Mauguière, F. (2002). Representation of Pain and Somatic Sensation in the Human Insula: a Study of Responses to Direct Electrical Cortical Stimulation. *Cerebral Cortex*, *12*(4), 376–385. https://doi.org/10.1093/cercor/12.4.376

Padoa-Schioppa, C. (2009). Range-Adapting Representation of Economic Value in the Orbitofrontal Cortex. *Journal of Neuroscience*, *29*(44), 14004–14014. https://doi.org/10.1523/JNEUROSCI.3751-09.2009

Palagi, E., Leone, A., Mancini, G., & Ferrari, P. F. (2009). Contagious yawning in gelada baboons as a possible expression of empathy. *Proceedings of the National Academy of Sciences*, *106*(46), 19262–19267. https://doi.org/10.1073/pnas.0910891106

Panksepp, J., & Biven, L. (2012). *The archaeology of mind: neuroevolutionary origins of human emotions*. W.W Norton.

Parr, L. ., & Hopkins, W. . (2001). Brain temperature asymmetries and emotional perception in chimpanzee. *Pan Troglodytes. Physiology & Behavior*, *71*(3–4), 363–371. https://doi.org/10.1016/S0031-9384(00)00349-8

Passingham, R. E. (1973). Anatomical differences between the neocortex of man and other primates. *Brain, Behavior and Evolution*, *7*(5), 337–359. https://doi.org/10.1159/000124422

Paukner, A., & Anderson, J. R. (2006). Video-induced yawning in stumptail macaques (Macaca arctoides). *Biology Letters*, *2*(1), 36–38. https://doi.org/10.1098/rsbl.2005.0411

Pfeifer, J. H., Iacoboni, M., Mazziotta, J. C., & Dapretto, M. (2008). Mirroring others' emotions relates to empathy and interpersonal competence in children. *NeuroImage*, *39*(4), 2076–2085. https://doi.org/10.1016/j.neuroimage.2007.10.032

Platek, S. M., Critton, S. R., Myers, T. E., & Gallup, G. G. (2003). Contagious yawning: the role of self-awareness and mental state attribution. *Cognitive Brain Research*, *17*(2), 223–227. https://doi.org/10.1016/S0926-6410(03)00109-5

Plotnik, J. M., & de Waal, F. B. M. (2014). Asian elephants (Elephas maximus) reassure others in distress. *PeerJ*, *2*, e278. https://doi.org/10.7717/peerj.278

Preston, S. D., & de Waal, F. B. M. (2002). Empathy: Its ultimate and proximate bases. *Behavioral and Brain Sciences*, *25*(1), 1–20. https://doi.org/10.1017/S0140525X02000018

Prinz, J. J. (2003). Emotion, Psychosemantics, and Embodied Appraisals. *Royal Institute of Philosophy Supplement*, *52*, 69–86. https://doi.org/10.1017/s135824610000789x

Prinz, J. J. (2004). *Gut Reactions: A Perceptual Theory of Emotion*. *British Journal of*

Aesthetics (Vol. 46). https://doi.org/10.1093/mind/fzl450

Prinz, J. J. (2007). *The emotional construction of morals*. Oxford University Press.

Prinz, J. J. (2009). The Moral Emotions. In P. Goldie (Ed.), *The Oxford Handbook of Philosophy of Emotion* (pp. 519–538). Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199235018.003.0024

Prinz, J. J. (2012). *Beyond Human Nature: How Culture and Experience Shape Our Lives*. New York, N.Y.: W. W. Norton & Company.

Prior, H., Schwarz, A., & Güntürkün, O. (2008). Mirror-Induced Behavior in the Magpie (Pica pica): Evidence of Self-Recognition. *PLoS Biology*, *6*(8), e202. https://doi.org/10.1371/journal.pbio.0060202

Raine, A., Lencz, T., Bihrle, S., LaCasse, L., & Colletti, P. (2000). Reduced prefrontal gray matter volume and reduced autonomic activity in antisocial personality disorder. *Archives of General Psychiatry*, *57*(2), 119–127. https://doi.org/10.1001/archpsyc.57.2.119

Reimers, L., & Diekhof, E. K. (2015). Testosterone is associated with cooperation during intergroup competition by enhancing parochial altruism. *Frontiers in Neuroscience*, *9*(MAY), 1–9. https://doi.org/10.3389/fnins.2015.00183

Reiss, D., & Marino, L. (2001). Mirror self-recognition in the bottlenose dolphin: A case of cognitive convergence. *Proceedings of the National Academy of Sciences*, *98*(10), 5937–5942. https://doi.org/10.1073/pnas.101086398

Rilling, J. K., DeMarco, A. C., Hackett, P. D., Chen, X., Gautam, P., Stair, S., … Pagnoni, G. (2014). Sex differences in the neural and behavioral response to intranasal oxytocin and vasopressin during human social interaction. *Psychoneuroendocrinology*, *39*(1), 237–248. https://doi.org/10.1016/j.psyneuen.2013.09.022

Rizzolatti, G., Fabbri-Destro, M., & Cattaneo, L. (2009). Mirror neurons and their clinical relevance. *Nature Clinical Practice Neurology*. https://doi.org/10.1038/ncpneuro0990

Rochat, P. (2003). Five levels of self-awareness as they unfold early in life. *Consciousness and Cognition*, *12*(4), 717–731. https://doi.org/10.1016/S1053-8100(03)00081-3

Romero, T., Castellanos, M. A., & De Waal, F. B. M. (2010). Consolation as possible expression of sympathetic concern among chimpanzees. *Proceedings of the National Academy of Sciences of the United States of America*, *107*(27), 12110–12115. https://doi.org/10.1073/pnas.1006991107

Romero, T., Ito, M., Saito, A., & Hasegawa, T. (2014). Social modulation of contagious yawning in wolves. *PloS One*, *9*(8), e105963. https://doi.org/10.1371/journal.pone.0105963

Ruse, M. (2009). The Biological Sciences Can Act as a Ground for Ethics. In F. J. Ayala & R. Arp (Eds.), *Contemporary Debates In Philosophy Of Biology*. Oxford, UK: Wiley-Blackwell.

Sarinopoulos, I., Grupe, D. W., Mackiewicz, K. L., Herrington, J. D., Lor, M., Steege, E. E., & Nitschke, J. B. (2010). Uncertainty during anticipation modulates neural responses to aversion in human insula and amygdala. *Cerebral Cortex*, *20*(4), 929–940. https://doi.org/10.1093/cercor/bhp155

Scherer, K. R. (1984). On the Nature and Function of Emotion: A Component Process Approach. *Approaches to Emotion*. https://doi.org/citeulike-article-id:6447472

Schino, G., Geminiani, S., Rosati, L., & Aureli, F. (2004). Behavioral and Emotional Response of Japanese Macaque (Macaca fuscata) Mothers After Their Offspring Receive an Aggression. *Journal of Comparative Psychology*, *118*(3), 340–346. https://doi.org/10.1037/0735-7036.118.3.340

Seed, A. M., Clayton, N. S., & Emery, N. J. (2007). Postconflict Third-Party Affiliation in Rooks, Corvus frugilegus. *Current Biology*, *17*(2), 152–158. https://doi.org/10.1016/j.cub.2006.11.025

Shamay-Tsoory, S. G., Aharon-Peretz, J., & Perry, D. (2009). Two systems for empathy: a double dissociation between emotional and cognitive empathy in inferior frontal gyrus versus ventromedial prefrontal lesions. *Brain*, *132*(3), 617–627. https://doi.org/10.1093/brain/awn279

Shermer, M. (2004). *The Science of Good and Evil*. New York: Times Books.

Shillito, D. J., Shumaker, R. W., Gallup, G. G., & Beck, B. B. (2005). Understanding visual barriers: evidence for Level 1 perspective taking in an orangutan, Pongo pygmaeus. *Animal Behaviour*, *69*(3), 679–687. https://doi.org/10.1016/j.anbehav.2004.04.022

Shoemaker, W. J. (2012). The Social Brain Network and Human Moral Behavior. *Zygon*, *47*(4), 806–821.

Singer, T., Seymour, B., O'Doherty, J., Kaube, H., Dolan, R. J., & Frith, C. D. (2004). Empathy for Pain Involves the Affective but not Sensory Components of Pain. *Science*, *303*(5661), 1157–1162. https://doi.org/10.1126/science.1093535

Skyrms, B. (1998). *Evolution Of The Social Contract*. Cambridge, UK: Cambridge University Press.

Smith, A. (2002). *The Theory of Moral Sentiments*. (K. Haakonssen, Ed.). Cambridge: Cambridge University Press.

Sober, E. (2000). *Philosophy of Biology*. *Philosophy of Biology* (2nd ed.). Westview Press. https://doi.org/10.1093/oso/9780190690649.003.0012

Sober, E., & Wilson, D. S. (1997). *Unto Others: The evolution of altruism*. Cambridge, MA: Harvard University Press.

Solomon, R. C. (2003). Emotions, thoughts and feelings: What is a 'cognitive theory' of the emotions and does it neglect affectivity. *Philosophy and the Emotions: Royal Institute of Philosophy Supplement: 52*, (2003), 1–18. https://doi.org/10.1017/CBO9780511550270.002

Starratt, V. G., & Shackelford, T. K. (2010). The Basic Components of the Human Mind Were Solidified During the Pleistocene Epoch. In F. J. Ayala & R. Arp (Eds.), *Contemporary Debates In Philosophy Of Biology*. Wiley-Blackwell.

Stein, M. B., Simmons, A. N., Feinstein, J. S., & Paulus, M. P. (2007). Increased amygdala and insula activation during emotion processing in anxiety-prone subjects. *American Journal of Psychiatry*, *164*(2), 318–327. https://doi.org/10.1176/ajp.2007.164.2.318

Stemmer, B. (2008). Neuropragmatics: Disorders and Neural Systems. In Brigitte Stemmer & Harry A. Whitaker (Eds.), *Handbook of the Neuroscience of Language* (pp. 175–187). Elsevier. https://doi.org/10.1016/B978-0-08-045352-1.00017-3

Strum, S. C. (2008). Perspectives on de Waal's Primates and Philosophers: How Morality Evolved . *Current Anthropology*, *49*(4), 701–702. https://doi.org/10.1086/588529

Thierry, B., & Anderson, J. R. (1986). Adoption in Anthropoid primates. *International Journal of Primatology*, *7*(2), 191–216. https://doi.org/10.1007/BF02692318

Trivers, R. L. (1971). The Evolution of Reciprocal Altruism. *The Quarterly Review of Biology*, *46*(1), 35–57. https://doi.org/10.1086/406755

Vaillant, G. E. (2000). Adaptive Mental Mechanisms Their Role in a Positive Psychology. *American Psychologist*, *55*(1), 89–98. https://doi.org/10.1037//0003-066X 55.1.89

Virányi, Z., Topál, J., Miklósi, Á., & Csányi, V. (2006). A nonverbal test of knowledge attribution: a comparative study on dogs and children. *Animal Cognition*, *9*(1), 13–26. https://doi.org/10.1007/s10071-005-0257-z

Walum, H., Lichtenstein, P., Neiderhiser, J. M., Reiss, D., Ganiban, J. M., Spotts, E. L., … Westberg, L. (2012). Variation in the oxytocin receptor gene is associated with pair-bonding and social behavior. *Biological Psychiatry*, *71*(5), 419–426. https://doi.org/10.1016/j.biopsych.2011.09.002

Whittle, S., Yücel, M., Yap, M. B. H., & Allen, N. B. (2011, July). Sex differences in the neural correlates of emotion: Evidence from neuroimaging. *Biological Psychology*. https://doi.org/10.1016/j.biopsycho.2011.05.003

Wicker, B., Keysers, C., Plailly, J., Royet, J.-P., Gallese, V., & Rizzolatti, G. (2003). Both of Us Disgusted in My Insula. *Neuron*, *40*(3), 655–664. https://doi.org/10.1016/S0896-6273(03)00679-2

Williams, J. H. G., Waiter, G. D., Gilchrist, A., Perrett, D. I., Murray, A. D., & Whiten, A. (2006). Neural mechanisms of imitation and 'mirror neuron' functioning in autistic spectrum disorder. *Neuropsychologia*, *44*(4), 610–621. https://doi.org/10.1016/j.neuropsychologia.2005.06.010

Wilson, D. S. (1992). On the relationship between evolutionary and psychological definitions of altruism and selfishness. *Biology and Philosophy*, *7*(1), 61–68. https://doi.org/10.1007/BF00130164

Wilson, E. O. (1978). *Sociobiology: The New Synthesis*. Cambridge, MA: Harvard University Press.

Wilson, E. O. (2005). Kin selection as the key to altruism: Its rise and fall. *Social Research*, *72*(1), 159–166.

Wright, R. (1994). *The Moral Animal: Evolutionary psychology and everyday life*. New York: Pantheon Books.

Zahn-Waxler, C., & Radke-Yarrow, M. (1990). The origins of empathic concern. *Motivation and Emotion*, *14*(2), 107–130. https://doi.org/10.1007/BF00991639

Zajonc, R. B., Murphy, S. T., & Inglehart, M. (1989). Feeling and Facial Efference: Implications of the Vascular Theory of Emotion. *Psychological Review*, *96*(3), 395–416. https://doi.org/10.1037/0033-295X.96.3.395

Zalla, T., Barlassina, L., Buon, M., & Leboyer, M. (2011). Moral judgment in adults with autism spectrum disorders. *Cognition*, *121*(1), 115–126. https://doi.org/10.1016/j.cognition.2011.06.004

APPENDICES

A. THE SOCIAL BRAIN NETWORK

Brain Region	Social Task Involved	Social Pathology
Inferior frontal cortex, including mirror neurons	Perceived similarity between the self and others; active during interactive social participation; responds during both observable action and intended action; responds during both behavioral and mental imitation.	Autism spectrum disorder (ASD) autism; Asperger's syndrome; also defective in antisocial personality disorder (AD) and psychopathy.
Fusiform gyrus of the temporal lobe (also known as the fusiform face area [FFA])	Mediates selective response to human faces; mediates social tasks such as recognition of identity and emotional expression of others (Baron-Cohen, 1995) .	Prosopagnosia; also defective in ASD and many cases of psychopathology.
Superior temporal sulcus (STS)	Processes socially relevant sensory information; sensitive to vocal and	Figures prominently in studies of socially deviant behaviors.

	speech sounds, but not to other nonsocial sounds. Interacts with the FFA in processing motion and emotion of body, eyes, and face of others.	
Prefrontal cortex (PFC), including ventromedial PFC (vmPFC), orbital frontal cortex, and dorsolateral PFC (dlPFC)	Involved with motivation, reward, emotion processing, evaluation of ongoing behavior, and planning; it enables future events and consequences; also activated by tasks involving empathy, theory of mind, and discrimination of emotional expression.	Deficits in prefrontal cortex are the most common finding in antisocial personality and/or psychopathy diagnoses. This is the case for both acquired psychopathy from accidental lesions to the frontal brain (e.g., head impact on windshield in auto accident) and congenital psychopathy with no lesion present.
Amygdala (although considered part of the basic limbic system, the amygdala plays a major role in the social brain network)	Involved in rapid assessment of reward/punishment value. Receives sensory information from FFA and STS regarding (J. C. Motzkin, Newman, Kiehl, & Koenigs, 2011)emotional and motivational value. Therefore, functions in face processing, identification of emotion,	Nearly all psychopaths have an aberrant connection between their vmPFC and their amygdala, accounting for their impaired decision-making (Motzkin et al., 2011).

	perspective taking, social judgments, empathy, and threat detection.	
Insula; anterior insular cortex	The insula is what tells the individual how he/she is feeling. All subjective feelings pass through the insula (Craig, 2002). Further, the insula is involved in the basic emotions of anger, sadness, and disgust, but is also involved in social emotions, especially social interactions and empathy (Jabbi & Keysers, 2008; Lamm & Singer, 2010; Lovero et al., 2009). The insula is also involved with feelings of inequity, playing a role in the neural coding of equity and efficiency (Hsu et al., 2008).	The insula shows aberrant activity in many pathologies, including failure to recognize faces, abnormal pain, or body sensations (Ostrowsky et al., 2002), increased anxiety (Stein et al., 2007) , and feelings of aversion and disgust (Sarinopoulos et al., 2010).
Anterior cingulate cortex (ACC)	The ACC has a more subtle effect on social behaviors. Decety (2011) suggests that the ACC is involved in the evaluation and regulation of emotions, as well as decision making.	diPellegrino et al. (2007) tested 8 patients with focal lesions of their rostral ACC (rACC pts), 6 patients with lesions outside their frontal cortex (non-FC pts), and 11 healthy controls. Using tests of high and

	The subtle effects of ACC lesions in animals make delineating its function difficult. Nevertheless, Ortega et al. (2011) found that ACC-lesioned rats had difficulty coping with their emotional responses to a negative situation. Newman and McGaughty (2011) put lesioned animals in a social situation with difficult and reversal learning paradigms. They report that ACC-lesioned animals had difficulty with sustaining their responses in the face of distractions and had difficulty maintaining sustained attention.	low conflicts, the non-FC patients and the controls reacted similarly to conflict test trials. The rACC patients displayed a failure to modify their performance to the contrasting tests. They were also slow in their reaction of all tests, indicating difficulty in regulating their cognitive control. Maia et al. (2008) published an interesting paper in which obsessive-compulsive disease patients (OCD) were tested using fMRI. They found that OCD patients, both adults and children, have hyperactivity of the ACC.

Portions of this table were adapted and compiled by Shoemaker (2012) from Greene and Haidt (2002), Mendez (2009), and Neuhaus et al. (2010).

B. TURKISH SUMMARY / TÜRKÇE ÖZET

21. yüzyılın ilk çeyreğinde, Thales yüzünü yere döndürdükten iki buçuk binyıldan fazla bir zaman sonra felsefenin cebinde bugün hala büyük sorular bulunmaktadır. Hala ifadesinin sebebi, felsefeye kıyasla bilimin kendi büyük soruları konusunda daha fazla ilerleme kaydetmiş ya da en azından bu soruları cevaplamak için ümit verici rotalar bulmuş olmasıdır. Bana göre felsefe hayatta kalabilmek için yeni koşullara uyum sağlamalıdır.

Tarihine baktığımızda felsefenin bilim dallarına bir zemin oluşturduğunu ve yeterince olgunlaştıklarında bu bilim dallarını serbest bıraktığını görürüz. Fikrimce bu tür bir dallanma için yeni aday etiktir. Bu çalışmada da ahlaka yaklaşımımız sırasında kullandığımız enstrümanları yenilememiz gerektiğini ve bu yeni bilimi, ahlak bilimini selamlamamız gerektiğini savundum.

Ahlakın canlı organizmalar, yani bireyler arasındaki ilişkilerle ilgili olduğunu öne sürmek mümkündür. Tıpkı çevre etiğinde olduğu gibi canlı organizmalar ile toprak, kayalar, su, hava vb. gibi doğanın cansız unsurları arasındaki ilişkiler de ahlakın alanına girebilir, fakat önemini yadsımadan, ahlaktan bahsederken bu alanı dışarıda tuttum. Bireyler arasındaki ahlaki ilişkilerin merkezinde duyguların olduğunu öne sürdüm. Duyguların etkin olmadığı pratik bir ahlaki durumu hayal etmenin zor olduğunu düşünüyorum. Dahası, duygular ahlaki davranışa ilişkin psikolojik süreçlerin hayati bir parçasıdır ve bu tür süreçlere dahil olan mekanizmaların arkasındaki esas harekete geçirici de duygular gibi görünmektedir.

Bu çalışma boyunca ahlaki davranış konusundaki en büyük ortak paydanın altruizm olduğunu ileri sürdüm. Her türlü ahlaki fenomende altruistik bir davranış ya da tutum bulmaktayım. Bir davranışta altruistik bir unsurun bulunması, bu davranışı ahlakın alanına sokabilir. Ebeveyn ve yavrular, kardeşler, arkadaşlar, partnerler, komşular vb. arasındaki ilişkiler, seçilim değerindeki bir kayıp pahasına da olsa ötekini dikkate almayı gerektirir. Altruizm evrimsel bir sorun gibi görünse de bu tür davranışları birçok sosyal yaşayan hayvan türünde gözlemleriz. Bana göre bu davranış bazı türler için, hayatta kalmaya yardımcı olan yüksek sosyal yapılar oluşturmayı mümkün kılan ortak bir psikolojik eğilimdir.

Altruistik davranışın temel tetikleyicisinin, ötekinin duygusal durumundan benzer bir duygu türetmek, yani empati duygusu olduğunu öne sürdüm. Empati duygusu, korku, iğrenme, üzüntü, gibi bazı temel duygulara kıyasla karmaşık bir duygudur. Bu karmaşıklık da çok katmanlı yapısından gelir. Her bir katmanda, arkada işleyen farklı mekanizmalar yer alır ve bu mekanizmalar bize geriye doğru takip edebileceğimiz evrimsel patikalar sağlar. Bu mekanizmalar ve diğer bazı türlerde gözlemlenen altruistik davranışlar temelinde, ahlakın insanlar ve diğer hayvanlar arasında bir süreklilik arz ettiğini ileri sürdüm. Bana göre altruizmde kaynak bulan ahlak biz de dahil birçok sosyal tür için ortak bir zemindir.

Kültürün ahlak üzerindeki gücünü hafife almadan, biyolojik açıklamalara öncelik verdim. Kültür, seçilim şartlarını değiştirebilme ve biyolojik evrim üzerinde etkili olabilme yeteneğine sahiptir, fakat bana göre ahlaki davranışın temel kaynağı biyolojik evrimin bir sonucu olan psikolojik mekanizmalardır. Kültürün ahlak üzerindeki güçlü fakat dolaylı etkisini kabul ederek, ahlakın esas olarak biyolojide temellendiğini ve empati duygusu tarafından harekete geçirilen altruizmin ahlakın en ayırt edici unsuru olduğunu savundum.

Girişten sonra ikinci bölümde tezimin gövdesinde ele aldığım görüşleri eleştirel bir şekilde gözden geçirdim. Öncelikle insan davranışı ve ahlaki davranışın altında yatan psikolojik mekanizmaların evrimsel süreçlerin sonucu olduğu fikrini inceledim. Bu fikre göre kültür ve ahlakı üreten insan zihninin evrimi insanlardaki fizyolojik özelliklerin evriminden çok da farklı değildir. Daha sonra ahlaki davranışların adaptif mekanizmalarla açıklanabileceğini ve ahlaki fenomenlerin sosyal hayvanlardaki, özellikle tüm hayvanlar arasında en karmaşık zihne ve sosyal yaşamlara sahip insanlardaki adaptasyonlar olduğunu öne sürdüm. Bunu yaparken ahlak konusunda kültürel açıklamaları vurgulayan görüşlerin savunucuları tarafından ileri sürülen itirazlara da dikkat çektim.

Ahlak ve biyoloji arasındaki ilişki konusunda birkaç farklı bakış açısı bulabiliriz. Bir taraf insanın sosyal davranışını büyük ölçüde biyoloji ve biyolojik evrimde temellendirirken ve ahlakın insana özgü olmadığını savunurken, diğer taraf biyolojinin insanın sosyal davranışındaki rolünü tamamıyla reddetmeden ahlakın en önemli unsuru olarak kültürü ve kültürel evrimi ele alır.

Biyolojik açıklamaları savunanlar insanların ahlaki yaşamları noktasında canlılar dünyasının sıradan üyeleri olduğunu, kültür ve özellikle ahlakın insanları doğadan üstün yapmadığını öne sürer. Ahlaki davranışın daha fazla seçilim değeri sağlayan bir adaptasyon olduğunu iddia ederler.

İnsan zihni kulağa maddi olmayan bir varlık gibi gelebilir fakat biyolojiye vurgu yapanlar için zihin entelektüel aktivitelerin meydana geldiği sinir sistemidir. Bu görüşü savunanlar herhangi bir bilim dalının ya da felsefi görüşün insan zihnine aşkın bir özellik olarak yaklaşmamamız gerektiğini öne sürer. İnsan davranışının kaynağı zihindir ve temel bileşenleri, kültürel evrimin önemli katkılarıyla, biyolojik evrimin bir ürünü olarak meydana gelmiştir. Başka bir deyişle insan psikoloji tarafından üretilen insan davranışının kökeni büyük olasılıkla biyolojik evrimsel süreçlerde bulunabilir.

Bazı biyologlar insanın ahlaki davranışını kültürün kapsamında yer alan bazı varsayımlarla yorumlamaya çalışır. Örneğin Francisco Ayala ahlaki kapasiteyle ahlaki normlar arasında temel bir ayrım olduğunu öne sürer. Yargılama yeteneği olarak biyolojik tarafla, insan davranışının nasıl yargılanacağına karar vermeye yarayan kültürel tarafı birbirinden ayrı görür. Bu ayrım aynı zamanda biyolojik evrimle kültürel evrim arasında bir ayrışma anlamına gelir. Bu bakış açısına göre ahlaki kapasite biyolojik evriminin bir sonucuyken, ahlaki normlar kültürel evrim tarafından belirlenmektedir. Ahlakın biyolojik ve kültürel belirlenimleri arasındaki anlaşmazlığın kaynağının bu ayrımın eksikliği olduğu iddia edilir. Böylesi bir görüş, bu görüşün savunucularını insan ahlakını bir istisna olarak görmeye ve ahlaki davranış konusunda evrimsel bir eşik fikrini savunmaya iter. Bu fikir de insanların ahlaki davranışıyla diğer hayvanların sosyal davranışları arasına ayırıcı bir çizgi çekme durumunu ortaya çıkarır.

Charles Darwin'in insan zihniyle diğer bazı hayvanların zihni arasındaki farkın niteliksel değil niceliksel, yani derece farkı olduğu görüşünü bu tartışmada oldukça faydalı bulmaktayım. Bu doğrultuda, diğer hayvanların sosyal yaşamlarında gözlemlenebilen işbirliği, karşılıklı altruizm, grup altruizmi, akraba seçilimi gibi davranışlar insanın ahlaki davranışının temel kaynağı olabilir. Hayvanların ahlaki davranışa sahip değilmiş gibi görünmelerine rağmen, tüm sosyal hayvanlar içinde yaşadıkları grubun yararına davranışlarını değiştirebilirler. Bu tür davranış değişiklikleri karınca ve arı kolonilerinde bile görülür. Bu kolonilerde işbirliği oldukça önemlidir çünkü koloni yalnızca sıkı şekilde yapılmış bir işbölümü içeren sosyal bir yapı içerisinde hayatta kalabilir. Koloninin tek bir üyesinin uzun vadede hayatta kalma ve üreme şansı yoktur. Grup içinde yaşamak hayatta kalma ve üreme konusunda birey olarak yaşamaktan daha iyi olanaklar sağlar. Sosyal hayvanların işbirlikçi yaşam tarzlarını sürdürmelerinin ve sosyal davranışlarını çevrelerine uydurmalarının sebebi budur.

İnsanların ahlaki davranışları konusunda doğalcı ya da biyolojik olguları işaret etmek, bir başka deyişle ahlaka yaklaşırken bilimsel çalışmaları ele almak, ahlakın normatifliği noktasında bazı soru işaretleri oluşturabilir. Ahlaki normlar yapmamız gereken şeyi gösterdiğini iddia ederken, bilimsel olgular dünyanın nasıl olduğuyla, yani fiziksel varlıklar içerisindeki içkin süreçlerle ve bu varlıklar arasındaki nedensellik ilişkisiyle bağlantılıdır. Bu tartışma David Hume'un meşhur *olan*'dan ve *olması gereken*'i çıkaramayız düşüncesine dayanır. Daha sonra George Edward Moore tarafından *doğalcı yanılsama* olarak adlandırılan bu olgu-değer ikiliği ahlakın açıklanmasında bilimsel olgulardan faydalanma gerekliliği duyan herkesin karşısına bir itiraz olarak çıkmıştır.

Bu itirazlara karşı, öncelikle normları varsayılandan daha geniş bağlamlara sahip şekilde değerlendirmeyi önerdim. Yani norm dediğimiz şeylerin kapsamını genişleterek, bazı ilke ya da ilke benzeri eğilimleri norm olarak değerlendirmeliyiz. Çünkü benim açımdan ahlaki davranışın arkasında bu tür eğilimler yer alır ve bunların doğalcı şekilde açıklanabilir olgularla olan ilintileri daha belirgindir. Bu eğilimleri ahlaki bir duruma yönelik bazı davranışsal ve zihinsel tutumlar olarak tanımlayabiliriz. Önerimin ikinci kısmı ise bu ilke benzeri eğilimleri sezgiler olarak adlandırmak oldu. Sezgi kafa karıştırıcı bir kavramdır, fakat onu ahlaki davranışın arkasında işleyen bazı hızlı ve otomatik psikolojik mekanizmaların eş çalışması olarak tanımladım. Ahlaki bir davranış ya da yargıda ilk olarak bu hızlı ve otomatik mekanizmaların etkinleştiğini, akıl yürütme yoluyla meşrulaştırmanın bunları izlediğini öne sürdüm. Ahlaki davranış ve yargılarda akıl yürütme yaptığımızı varsaydığımızda, aslında duygular ve ahlaka ilişkin psikolojik mekanizmalarımızda meydana gelen şeyleri meşrulaştırıyor olabiliriz. Bir şeyi sever ya da sevmeyiz, daha sonra onu sevip sevmeme nedenimizi meşrulaştırırız. Sosyal çevremizle olan etkileşimlerimizde kaynağını evrimsel geçmişimizden alan hızlı tepkilere ihtiyaç duyarız. Bu yüzden ahlaki

sezgilerde temellenen ahlaki bir akıl yürütme öne sürdüm. Bu bakış açısıyla ahlaki normları beynimizdeki duygusal süreçlerin doğrudan bir sonucu olarak tanımlayabiliriz. Sezgileri bu şekilde doğallaştırarak Moore gibi doğalcı olmayan sezgicilere de bir yanıt sunabiliriz.

Tezimin üçüncü bölümünde ahlak ve duygular arasındaki ilişkiyi ele aldım. Bu noktadaki sorun, biyolojik evrimin sonucu olan duygular mı değerleri, ahlaki yargıları ve davranışları üretip düzenler, yoksa kültür mü duyguları üretmede önemli bir rol oynar ona karar vermektir. Bu doğa ve yetişme tartışmasında doğalcı açıklamaların yanında yer aldım ve duyguların ahlakın merkezinde olduğunu öne sürmeye çalıştım. Elbette yetişmeciler de duyguların ahlaki yargı ve davranışlardaki rolünü tamamen reddetmez, onun yerine ahlakın açıklamalarında kültüre bir yer açmak için iki taraf arasında bir uzlaşma sağlamaya çalışırlar. Kültür duyguları bastırabilme ve kanalize edebilme niteliğine sahip olabileceği için kültürel geleneklerin insanların ahlaki yaşamları üzerinde sahip olabileceği güçlü etkiyi reddetmedim. Fakat duyguların hayvanların sinirsel yapılarıyla sıkı şekilde ilişkili olduğunu ve ahlakı meydana getirdiğini öne sürdüm.

Duygular konusundaki tartışmaya göz attığımızda duyguların ne olduğu konusunda iki temel bakış açısına rastlarız. Biri değerleme diğeri cisimleşme teorisidir. Değerleme teorisi yetişmeci açıklamalar tarafından tercih edilirken, doğalcılar cisimleşme teorisini savunur. Değerleme teorisi duyguların entelektüel şeyler olarak görülmesi gerektiğini iddia eder. Bu teorinin savunucularına göre duygular hisler değil düşünceler, yargılar ve bilişlerdir. Duygulara yalnızca biyolojik ya da fiziksel olaylar olarak yaklaşan bilimsel çalışmaları eleştirir ve duyguları fizyolojik yapılar içinde izole etmeyi ve beynin bazı bölümlerine yerleştirmeyi takdir etmezler. Bu yorumlamalarda duygular insanlar tarafından hissedilen değerleme yargıları anlamına gelir. Örneğin öfke duygusu bir saldırı değerlemesi taşır. Korku bir tehlike değerlemesi, üzüntü ise bir kayıp değerlemesi içerir. Bu teoriler duyguların

eşlik eden bedensel bir bileşen olmadan meydana gelebileceğini öne sürer. bu tür açıklamalara göre değerleme yargıları değerleme yargıları hisleri tetikleyebilir. Yani yargılar ve düşünceler duyguların temelini oluşturur.

Diğer tarafta ise cisimleşme teorisi vardır. Bu teoriye göre duygular entelektüel şeyler anlamına gelmez. Aksine belirli bedensel değişimlerden meydana gelen hislerdir. Örneğin karşımıza aniden bir yılan çıkarsa kalp atışımız ve kan basıncımız artar, kaslarımız gerilir, göz bebeklerimiz büyür ve nefes almamız hızlanır. Bu bedensel değişimler bizi yılandan kaçmak ya da ona saldırmak için hazır hale getirir. Tüm bunlar bir araya gelerek korku duygusunu oluşturur. Bu aşamada herhangi bir yargı sürece dahil olmamıştır. Cisimleşme teorisine göre duyguların meydana gelmesi için gereken şey düşünceler ya da değerleme yargıları değil, bedensel değişikliklerin algılarıdır. Bedensel algılar bir duyguya sahip olmak için hem gerekli hem de yeterlidir.

Ahlakı yalnızca insanlara özgü gören bakış açılarının, ahlakla duygular arasındaki ilişkiyi reddetmiyorlarsa bazı duyguları da insana özgü görmeleri beklenir. Bu görüş duyguların yeni bir sınıflandırmasını ya da yeni bir isimlendirilmesini gerektirir. Sonuç da ahlaki duygulardır. Doğalcı bir bakış açısından bu terim bir yanlış isimlendirilme olarak görülebilir çünkü duyguları ahlaki ve ahlaki olmayan şeklinde ayırmak insanlar ve diğer hayvanlar arasında niteliksel bir ayrım yapmaya yol açabilir. Böylece kendimizi istemeden bilimsel olarak savunulması zor bir durumda bulabiliriz. Böyle bir isimlendirmenin yöntem olarak faydalı olabileceğini düşünüyorum fakat ahlaki duyguların temel duygulardan esas olarak farklı olduğunu öne sürmek itiraz edilebilir bir görüntü oluşturabilir. Beynin farklı bölümleri ve belirli sinirsel yapılar ahlaki durumlarda işe dahil olabilir, fakat bir duygunun karmaşıklık derecesine karar vermek ve birini ahlaki diğerini temel olarak adlandırmak kolay bir iş değildir ve spekülatif taraflara yöneltebilir. Bazı duyguları ahlaki olarak adlandırmak pratik olarak yararlı olabilir fakat

bunların temel olanlarla ayrımının çok açık olmadığını ve aradaki sınırın zar zor fark edilebildiğini gözden kaçırmamalıyız.

Sinirbilim ve biyoloji alanında yakın zamanda yapılan çalışmalar ahlakın beyinde temellendiğini gösterir. Ahlaki davranışın sinirbiliminin arkasında yatan şeyin duygular olduğunu ortaya koyarlar. Bu çalışmalar da temel ve ahlaki duygular arasında bir ayrım yapar. Temel duygular memeli beyninin limbik sisteminden meydana gelen limbik duygular olarak görülür. Diğer taraftan utanma, suçluluk, kıskançlık ve gurur gibi ahlaki duygular sosyal beyin ağı tarafından üretilir. Evrimde ve gelişimde daha sonra ortaya çıkar. Limbik duygular bireye kısa vadeli bir fayda sağlarken, ahlaki duyguların işlevi bir grubun uzun vadeli yararları doğrultusunda ahlaki davranışı düzenlemektir. Sosyal beyin ağı limbik sistemin sinirsel ağının üzerinde yapılandığı için işlevsel farklılıklarına rağmen bu duygular bağımsız olarak düşünülmemelidir.

Tezin dördüncü bölümünde altruizm ve ahlakın insanlarla diğer hayvanlar arasındaki sürekliliği konusunu incelemeye çalıştım. İnsanlarla diğer hayvanlar arasında ahlakın bir sürekliliği olacaksa, bu süreklilik belki farklı derecelerde ama her iki tarafta da görülen ortak bir fenomen yoluyla gösterilmelidir. Bu ortaklık için de en güçlü adayın altruizm olduğunu öne sürdüm.

Hayvanlardaki altruistik davranışa olan ilgi uzun bir geçmişe sahiptir fakat bu konuda henüz bir fikir birliğine varılamamıştır. En güçlü olanın hayatta kalması evrimsel düşüncenin en yalın ifadesiyken kendi seçilim değeri pahasına başka bir bireyin seçilim değerini arttırmak sorunlu bir durum olarak görülmektedir. Altruizm için önerdiğim geniş ve kapsayıcı tanım *yapan kaybeder, öteki kazanır*'dır. Bu, fazla açıklayıcı bir tanım değildir fakat literatürde altruizmin aydınlatıcı bir açıklamasını vermeye çalışan farklı yaklaşımlar bulunur. Bu yaklaşımlar iki türlüdür. Birincisi, evrimsel bir perspektiften açıklama getirmeye çalışan biyolojik altruizmdir. Böyle bir

davranışın uzun doğa tarihi boyunca nasıl evrimleşebildiğini araştırır. Biyolojik altruizm açıklamaları nihai nedenlerle ilgilidir. Altruizme yaklaşırken üremeyle ilgili seçilim değerini hesaba katar ve bir davranışı yavru sayısını böylelikle de gen frekansını arttırırsa altruistik olarak adlandırır. Benim bakış açım ise psikolojik altruizm tarafından olmuştur.

Altruizm meselesinin motivasyonel ve işlevsel bağlamları ayıran yenilenmiş bir bakış açısına ihtiyaç duyduğunu savundum. Biyolojik bakış açısını savunanlar altruistik bir davranışın neden olduğu şeyle ilgilenirken psikolojik taraf nasıl meydana geldiğinin altını çizer. Bir davranışın altında yatan motivasyon yerine seçilimin bir davranışın sadece sonucunu gördüğü düşüncesi evrimsel açıklamaların merkezinde yer alır. Evrimsel açıklamaları, altruizm ve bencillik gibi temel kavramlara yaklaşırken motivasyonel içeriği hesaba katıyorlarmış gibi düşündüğümüzde sorun oluşur. Böyle bir görüş evrimsel açıklamalara teleolojik bir görünüm verebilir. Bu açıklamalara göre bir davranış, sergileyen bireyin istemli şekilde kendi çıkarını kovalayıp kovalamadığına bakılmaksızın bencil olarak tanımlanır. Aynı şekilde bir davranış, eyleyen bireyin alan bireye istemli şekilde mi fayda sağladığına bakılmaksızın altruistik olarak adlandırılır.

Bu noktada motivasyonu evrimsel açıklamalara başvurmadan değerlendirmemiz gerektiğini öne sürdüm. Farklılaşmanın kaynağı biyoloji felsefesindeki, yaklaşık ve nihai nedenler arasında bir ayrım yapmamız gerektiğini söyleyen ünlü stratejidir. Nihai nedenler altruistik bir davranışın türlerin evrimsel tarihi boyunca neden evrimleştiği ile ilgiliyken, yaklaşık nedenler evrimleşen belirli mekanizmaların her bir durumda nasıl çalıştığını konu edinir.

Empati diğer bireylerin duygusal durumuyla hızlı bağlantılar kurma olanağı verir. Sosyal yaşamla ilgili olarak bu hızlılık empatiye bilişsel süreçlere kıyasla bir avantaj sağlar. Hızlı bağlantılar kurma yeteneği insanların evrimlerinden önce yavru bakımıyla ilgili olarak evrimleşmiş olabilir. Bebekler duygusal

durumlarını sesler ve yüz ifadeleri yoluyla sergiler, böylece anne eyleme geçebilir. Benzer süreçler yavrunun fazla bakıma ihtiyaç duyduğu diğer türlerde de görülür.

Altruistik davranışın temel motivasyonu olduğunu öne sürdüğüm empati konusunda duygusal bulaşma önemli bir yer tutar. Genel bir ifadeyle, duygusal bulaşma bir birey bazı otomatik mekanizmalar yoluyla ötekinin duygusal durumunu istemsiz bir şekilde ve hızlıca edinirse gerçekleşir. Empatiye böylesi bir yaklaşım bebekler ve yetişkin insanlar arasındaki sürekliliğin yanı sıra insan dışı hayvanlarla insanlar arasındaki sürekliliği de görmemizi sağlayabilir. Birçok araştırma sonucu duygusal bağlanmanın insanlarda çok erken yaşlarda başladığını gösterir. Diğer bazı çalışmalar da insanlarla şempanzelerin bazı duyguları yansıtan görsellere ortak tepki verdiklerini ortaya koyar.

Empati açıklamalarının bir başka katmanı da sempatik kaygıdır. Bu katman ötekinin durumunun değerlendirilmesi ve duygularının arkasındaki güdüleri kavrama çabası anlamına gelir. Sempati çelişen sonuçları olduğu için kişisel sıkıntıdan farklı olarak düşünülür. Sempati sıkıntılı bir bireye dönük kaygı içeren duygusal bir tepki olarak tanımlanabilirken, diğer bireyden yansıyan kişisel sıkıntı özneyi bu sıkıntıyı hafifletmeye yöneltir.

Bakış açısı edinme empatinin çok katmanlı mekanizmalarını oluşturan başka bir bileşen olarak ileri sürülebilir. Genel bir tanım olarak, ötekinin bakış açısından bakmak ya da daha güçlü bir şekilde ötekinin zihnini okumaktır. Bu şekilde empatiden biraz uzakmış gibi görünebilir fakat duygusal süreçlerle yakın ilişki içerisindedir. Bakış açısı edinme öteki için kaygılanma basamağından belirgin şekilde ötekine yönlenmişlik aşamasına bir geçişe ihtiyaç duyar gibi görünür. Öznede nesne tarafından uyarılan duygusal durum nesneye atfedilmeyi gerektirir.

Ahlakı, onu parçalara ayırarak analiz ettiğimizde her bir parçasında altruizm ile karşılaştığımız için altruizmin ahlak konusunda en önemli kavram olduğunu ileri sürdüm. Parçalara ayırma yöntemim ise ahlaki öznenin merkezde durduğu ilişki çemberleri şeklinde olmuştur. Bu çemberler aile, arkadaşlık, cinsel partnerlik, komşuluk vb. gibi olgulardır ve altruistik davranış değişen derecelerde her biri için kurucu bir unsurdur. Böyle bir davranışı çıkardığımız zaman bu olgular bozulmaya eğilimli hale geleceği için altruistik davranışın can alıcı bir kavram olduğunu savundum. Yapı taşı olarak altruistik davranışı dışarıda bırakan ahlaki bir fenomeni hayal etmek zordur.

Özetlemek gerekirse, insanlar ve diğer hayvanlar özellikle primatlar arasında ahlaki sürekliliği savundum. Bu sürekliliği görünür kılmak için muhtemelen en iyi kavram altruizmdir. Altruistik davranışın arkasındaki temel motivasyon empati gibi görünmektedir. Bu doğrultuda, kişisel sıkıntı temel bir empati örneği olarak öne sürülebilir. Duygusal bulaşma hayvanları ötekilerin tehlike çağrılarıyla korkmalarını sağlayabilir. Bir anne çocuğunun sıkıntısından sıkıntı duyabilir ve ona sarılarak iki tarafı da sakinleştirebilir. Bu tür temel empatik tepkiler her iki tarafa da, hem yapana hem de etrafındaki ötekilere yarar sağlayabilir. Davranışsal taklit de adaptif sonuçlar doğurabilir. Her bireyin kendi başına avlandığı, yediği, yavrulara baktığı ve yalnız uyuduğu bir hayvan topluluğunda, bedel empatik ve alturistik bir toplulukta olacağından çok daha fazla olur.

Tezimin sonuç bölümünde de tüm bu düşüncelerimi toparlayıp, aktarmak istediğim görüşlerin esaslarını vurgulamaya çalıştım. Ahlak toplumlarımızın çekirdeğinde yer aldığı için felsefe tarihindeki belki de en ihtilaflı meselelerden biri olmuştur. Bu alan bizi, asla kolay bir soru olmayan sosyal davranışımızın doğası hakkında düşünmeye ittiği için felsefe ve bilim arasında büyük savaşlara neden olmuştur. Kendimizi diğer hayvanlardan ayırabilir miyiz ve ahlakımızı özgün olarak tanımlayabilir miyiz soruları kritik sorulardır.

Ahlakımız evrimsel kökleri olan duyguların bir yansıması olabilir mi? Altruistik davranış ötekinin duygusunu edinme yeteneğinden kaynaklanabilir mi?

Biyoloji ahlaki davranışımızın doğası konusunda oldukça yararlı ve devrimci açıklamalar verme olasılığına sahiptir. İnsan dışı hayvanlar üzerindeki son çalışmalar ayrıcalıklı yaşamlarımız ve dünyalarımız, fakat özellikle üstün benliklerimiz hakkındaki katı görüşlerimizi değiştirme potansiyelini taşımaktadır.

İnsan ahlakının büyük oranda duygular tarafından motive edildiğini savundum. Duygular bizi önemsemeye, paylaşmaya ve sevmeye iten memeli beynimizi devreye sokar. Davranış haritamızda bizi yönlendiren içkin rehber ve kapasitelerle donatılmışızdır. Rasyonelleştirme belirlenmiş tepkilerimizi takip ediyor olabilir. Davranışlarımızla ilgili olarak onaylanan ya da reddedilen şey meşrulaştırma çabası olabilir. Böylece insanlar ahlaki bir meselede ortak bir noktada buluşabilir.

Bir davranışın iyi ya da kötü olmasının büyük ölçüde altruizmle ilişkisine bağlı olduğunu öne sürdüm. İyi kavramı sosyal bir fenomendir ve sosyalliği açıklamak için en ümit verici aday olarak altruizm, bir davranışın bu muğlak iyi kavramının altına girip girmeyeceğine karar verebilir. Böylelikle ahlakı kavramaya çaba gösteren birine daha savunulabilir bir bakış açısı sağlayabilir.

İnsan dışındaki hayvanların, özellikle insansı maymunların ahlaka sahip olduklarını kabul etmemek için herhangi bir sebep görmüyorum. Bana göre bu ve diğer bazı türlerin sosyal davranışları ahlak olarak adlandırılamaz görüşü geleneksel düşünceden kalıntılardır. Aynı olduğumuzu ileri sürmüyorum. Sosyallik zihnin bir ürünüdür ve diğer hayvanlarla farklı zihinlere sahibiz. Ancak insan dışı hayvanlardan insanlara doğru takip edilebilecek bir yol vardır ve altruizm bu yol için en umut verici harita olarak göze çarpmaktadır. Evrimsel bağlarımız korumaktayız. Aradaki fark

karmaşıklık seviyesindedir ve evrimsel yakınlık arttıkça bu karmaşıklık boşluğu kapanmaktadır. Ahlakın tamamen insani olduğu görüşü yeniden bir gözden geçirmeye ihtiyaç duymaktadır.

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