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CURRENT CHALLENGES FOR NEUROETHICS

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On the normative implications of social neuroscience[1]

Sobre las implicaciones normativas de la neurociencia social

ARLEEN SALLES
Centro de Investigaciones Filosóficas - Buenos Aires

Resumen

En las últimas décadas, la neurociencia y la psicología cognitiva nos ha permitido comenzar a entender la relación entre procesos psicológicos diversos y hasta sobre las bases neurológicas de las creencias, las emociones, los juicios y las decisiones morales.

Pese a la aceptada distinción entre el carácter descriptivo de la ciencia y el normativo de la moralidad, algunos autores afirman que los resultados de los estudios neurocientíficos tienen implicaciones normativas. No es claro, sin embargo, qué significa esta afirmación, y no existe consenso al respecto. En este trabajo, identifico tres interpretaciones sobre las implicaciones o estatus normativo de la neurociencia. La primera se concentra en el papel que la neurociencia puede cumplir en explicarnos el origen de la moralidad y de los valores morales. La segunda interpretación apunta a mostrar que el conocimiento neurocientifico puede demostrar cuan plausible es la psicología moral que algunos enfoques éticos presuponen. Finalmente, una tercera interpretación sugiere que la neurociencia puede cumplir un papel más fuerte, determinando la plausibilidad moral de algunos enfoques éticos. Mi objeto es delinear cada interpretación y los temas que plantea. Sugiero es razonable aceptar que la neurociencia nos puede brindar conocimiento útil sobre la naturaleza del razonamiento moral, pero por el momento, su contribución se limita a eso.

Palabras clave: psicología cognitiva, normatividad, juicio moral, decisión moral.

Abstract

Within the last decades, brain science has been offering new insights into the relationship among diverse psychological processes and the neural correlates of our moral thought and behavior. Despite the distinction between the explanatory/descriptive nature of science and the normative nature of morality, some neuroethicists have claimed that neuroscientific findings have normative implications. In this paper, I identify three interpretations of this claim.

The first focuses on neuroscience's role in explaining the *origin of morality and of moral values* and how neurobiology is the bases of moral behavior. A second version is about the role that neuroscientific knowledge can play in showing the *psychological* plausibility of the moral psychology underlying some

1 Earlier drafts of this article were presented at Centro de Investigaciones Filosóficas and at the annual meeting of the American society for Bioethics and the Humanities, Washington DC, October 2012. I am grateful for the comments made in discussion there. I also want to thank Kathinka Evers, Inmaculada de Melo Martin and Maria Julia Bertomeu for helpful comments. I would also like to acknowledge the Argentine Agency for Scientific Advancement for their financial support of this project.

ethical approaches. Finally, a third version advances that neuroscience could play a role in determining the *moral* plausibility of some normative approaches.

My aim is to delineate each version and highlight the issues raised to suggest that while neuroscience might provide information regarding the nature of moral reasoning, its role in the normative discussion itself is still quite limited.

Keywords: neuroethics, cognitive psychology, normativity, moral judgement, moral decision.

1. Introduction

Within the last decades, brain science has been offering new insights into the relationship among diverse psychological processes and the neural correlates of our moral thought and social behavior. Although there is still much to be known about the brain and its multitasking nature, [2] lately a group of philosophers have claimed that the increased understanding of the neural and psychological processes involved in moral decision-making and moral thinking in general has normative significance. Yet, a review of the relevant literature shows that the surge of interest on the relationship between empirical studies and moral philosophy has not been accompanied by a convergence on how to understand the normative implications of neuroscience. In this paper, I identify three interpretations of the claim about the normative import of neuroscience.

The first interpretation focuses on neuroscience's role in explaining the *origin of morality and of moral* v*alues* and telling us how neurobiology grounds moral behavior. The second interpretation is about the role that neuroscientific knowledge can play in showing the *psychological* plausibility of the moral psychology presupposed by morality in general or specific ethical approaches in particular. Finally, a third interpretation suggests that neuroscience might actually play a crucial role in the normative discussion itself, sometimes even helping to determine the *moral* plausibility of some normative approaches.[3]

My aim in this paper is to separate and explain each of the different interpretations of the claim about the normative implications of neuroscience and what the authors think that follows from their version of the claim. I think that in most cases, each interpretation of the claim (as presented by the authors) can be challenged on the grounds of one of the following: a- the supporting evidence is not compelling enough, b- the existing evidence is compelling, but insufficient, or c- the evidence is compelling and sufficient but it supports a conclusion that is philosophically less

2 Current evidence strongly suggests that the neural substrates for moral thinking include a number of brain structures. There is consensus in that there is no moral center, different brain areas are activated in different ways. (Damasio, 1995; Greene and Haidt, 2002).

3 There is also an interesting controversy over whether the rise of neuroscience can not only shape but even undermine some foundational ethical concepts, for example, the concepts of personhood and autonomy (Farah and Heberlein, 2006; Kaposy 2010). I do not focus on these issues here.

interesting. Ultimately, I want to say that while neuroscience can give us important information regarding the nature of moral reasoning and morality, its normative import is still quite limited.

2. On neuroscience and moral philosophy

Since a richer understanding of how the brain works morally has been typically accompanied by the claim that such understanding has implications on ethical theory, it is legitimate to ask exactly what is at stake.

In general, the aims of moral philosophy are different from the explanatory aims of science. Science aims at explaining and describing the way things are. In the case of social neuroscience, its primary objective is to understand and analyze how humans think and know socially and morally, and how they judge accordingly. Neuroscientists generally do not have as a goal the creation of a moral philosophy based on science (Changeux et al., 2005; Damasio, 2007). [4] However, because social neuroscience is interested in understanding moral cognition and judgment, it often focuses on normative claims and studies them, trying to discover, for example, what brain process is involved when people make certain normative judgments, or what are the neural bases of some moral intuitions. But this examination in itself does not need to lead neuroscientists to metaethical claims (for example, about whether there are moral facts or whether moral judgments can be true or false) or normative moral conclusions.

What is a normative conclusion? Although it may be difficult to provide a definition of the notion of normativity, in one obvious sense «normative» is precisely contrasted with «descriptive». That morality is normative means that it does not describe what human beings do but rather prescribes what they ought to do; talk about normative conclusions is talk about some kind of oughtness, about how people should judge or think or act.

Despite the distinction between the explanatory/descriptive and we could even say ideally morally detached nature of science and the normative nature of morality, a review of the neuroethical literature shows an increased sympathy for the idea that neuroscientific findings have some kind of normative implication. It is worth noting, however, that many of those who argue for this at the same time assert that their claim that neuroscience has ethical implications does not commit them to the view that neuroscience can determine what people ought to do (Evers 2010; Greene 2008, 2003; Churchland, 2008). That is, they take pains to avoid what is known as

4 For a different view see Michael Gazzaniga, who states "I would like to support the idea that there could be a universal set of biological responses to moral dilemmas, a sort of ethics, built into our brains. My hope is that we soon may be able to uncover those ethics, identify them, and begin to live more fully by them" (Gazzaniga, 2005).

the naturalistic fallacy, the invalid transition from claims about how things are to claims about how they ought to be.[5] So what do they mean when they make the claim about the normative implications of neuroscience? I believe that in order to evaluate the legitimacy of their claim it is important to identify three ways in which it can be interpreted.

3. Interpretation I: Neuroscience and the Origins of Morality

One first interpretation of the claim that neuroscience has some kind of normative implication revolves around the idea that neuroscience gives us the kind of neurobiological knowledge necessary to understand human beings' moral condition, how people acquired moral concepts and why they formulated normative systems. Advocates of this view believe that the possession of such knowledge would allow us to ask the appropriate ethical questions and plan the most efficient methods to achieve our moral goals (Damasio 2007). The underlying assumption is that since specific brain systems and genes underlie behaviors that are considered moral, knowledge of what those are and of how they work allows us to inform the ethical discussion.

The work of philosopher Kathinka Evers illustrates this view. In a recent book, Evers draws on the work of neuroscientists Joseph Ledoux, Jean Pierre Changeux, and Gerald Edelman to give a neurobiological explanation of the nature and development of moral thought and of the human tendency to construct normative systems. For Evers, the brain is an «autonomously active, plastic, projective» and highly selective organ, necessarily and fundamentally constrained by values and emotions that in turn make it sensible to reward signals and learning (Evers 2010: 114). Human beings are «born evaluators», Evers says, neurobiologically predisposed to develop a system of values that facilitate navigation of their social, cultural and moral environments. Indeed, these values (understood as factors relevant in decision-making that shape choices and decisions) are rooted on neurobiological predispositions (such as self-interest, control-orientation, dissociation, and selective sympathy) that constitute the human identity. For Evers, moral theory can be explained as the attempt to manage the social distinctions that humans make between themselves and others and the hierarchies that they establish, source both of interpersonal relations and of conflicts.

For Evers, the normative implications of this knowledge are clear (Evers, 2010: 144). Insofar as neuroscience can provide a neurobiological diagnosis of the human condition, it can play an important practical role in the construction of meaningful

5 And yet, in a recent book, Patricia Churchland criticizes the idea that values are beyond science and appears to be quite skeptical about the putative autonomy of morality.

social structures and implementation of moral norms. She thinks that the evidence supports the view that human beings are «empathetic xenophobes», that is, «empathetic by virtue of our intelligence towards a relatively wide range of creatures, but far more narrowly and selectively sympathetic to the closer group …whereas we tend to remain indifferent or antipathetic to everyone else». (Evers 2010: 132) Thus, recognition of this fact should allow humans to articulate solutions to social problems and promote the development of the kind of societies they want. [6] That is, neurobiological knowledge can inform the articulation of our social goals and aspirations, hopefully increasing our awareness of the need for stable and realistic social structures and agreements.

Evers avoids over-interpreting her view: by talking about the normative implications of neuroscience, she means to make the point that human abilities to judge and act morally and formulate normative systems has a history and that this is linked to neurobiological mechanisms with which human beings are equipped. [7] But she does not believe that only neuroscience can give us moral knowledge nor does she suggest that neurobiological knowledge can actually settle moral questions or provide normative guidance. This means that recognizing human's neurobiological identity and understanding the impact this awareness can have on the type of society we build does not entail that the resulting society is necessarily good or morally desirable. Norms have to do with regulating people's actions: the normative discussion regarding what is good and desirable from a moral standpoint is still open and it is independent from neurobiological facts. In this sense, Evers' view does not threaten moral philosophy, nor does it demand that moral philosophers abandon ethics. For her, neuroscience plays a complementary role. This makes her claim about the normative force of neuroscience easier to accept, but also less philosophically challenging.

A much stronger version of the claim that neuroscience is morally relevant is found in the work of philosopher Patricia Churchland. At times she suggests a simply «informative» role for neuroscience, stating that neuroscience's contribution to ethics is related to the knowledge it can provide regarding the intricate neural circuitry and the hormones that manage attachment and trust (Churchland, 2011). Drawing on a number of studies and including evidence from endocrinology, Churchland argues that morality originates in the neurobiology of attachment and bonding. By attachment she understands a group of dispositions to extend care to others, form bonds with others and develop trust. She emphasizes the role of

6 For Evers, this does not mean that social forces are not relevant to the shaping of moral norms, nor does it entail negating the importance of free will.

7 The controversial aspect of Evers' view does not have to do with the role she gives to neuroscience. What some might consider controversial is her largely negative conception of the human neurobiological identity. However, an examination of this topic is beyond the scope of this paper.

oxytocin[8] (whose main purpose is to strengthen the mother-infant bond) and its significant spillover effect that makes empathy ultimately include distant relatives and other members of the in-group. From there, culture starts playing a role, shaping moral systems and institutional structures that in turn enforce norms and rules among strangers who can't be expected to automatically feel empathy towards others. For Churchland, «a deeper understanding of what it is that makes humans and other animals social, and what it is that disposes us to care about others, may lead to greater understanding of how to cope with social problems» (Churchland, 2011: 4).

And yet, Churchland seems to think that neuroscience plays a more fundamental role. For her, most practical problems are «constraint satisfaction problems» where a number of more or less relevant considerations are brought to bear in making a decision and where deductive logic plays no role (Churchland, 2011: 7). In turn, «[values] are at the same time facts that give substance to the process of figuring out what to do-facts such as that our children matter to us, and that we care about their well-being; that we care about our clan. Relative to these values some solutions are better than others, *as a matter of fact*; relative to these values, practical policy decisions can be negotiated» (Churchland, 2011: 8-9). Churchland believes that when this is taken into account, it becomes evident that some solutions are better than others.

But are those solutions *morally* better? And how do we determine this? Not through philosophical analysis. Churchland specifically rejects philosophers' normative project, which she believes does more harm than good insofar as it involves articulating and defending principles and norms when in fact morality is more to be seen as a practice similar to what we do naturally when trying to navigate our social world (Churchland, 2011: 186). Her suggestion is that understanding the neural underpinning of habits and emotions could settle the issue.

The problem is that the view that morality ought to be based on trust and attachment does not depend on understanding the brain and the cognitive and affective mechanisms involved in moral reasoning. The issue of the moral value of trust and attachment is philosophical, not scientific. And yet, Churchland's focus on neural mechanisms and biology suggests that they can offer a solution to moral problems.[9] But it is not clear in her account how knowledge of what happens in the brain can actually be instrumental in determining the moral value of some traits. This casts doubt on the suggestion that neuroscience can have this kind of moral import.

8 Along with other hormones. (Churchland, 2011: 31). Although it is true that oxytocin is considered an "attachment hormone" it plays other roles.

9 Thus disregarding the distinction between the grounding of and the justification of morality. For an analysis of this point see Cortina, 2011.

4. Interpretation II: Neuroscience and Moral Psychology

A second version of the claim about the normative import of neuroscience revolves around the idea that empirical research might allows us to uncover a more realistic moral psychology. It makes sense to think that «ultimately, even the most ardent anti-naturalist would admit that, at the very least, our moral theories must require us to carry out cognitive acts that are also possible for us to implement» (Casebeer, 2003: 43), and to wonder «what would be the point of norms that human beings were psychologically incapable of obeying?» (Appiah, 2008: 22).

Several types of empirical investigations have been considered to provide relevant (if controversial) information on human moral psychology. Consider two well-known empirically informed models of moral judgment that allegedly challenge prevalent assumptions about moral thinking. On the basis of findings in neuroscience and evolutionary psychology, Jonathan Haidt proposes the "social intuitionist" model. According to social intuitionism, moral judgment is highly influenced by non-conscious systems, particularly quick, automatic intuitions shaped by both natural selection and culture. On this view, rather than using reason when making moral decisions, people tend to rationalize pre-ordained automatic reactions (Haidt, 2001; Haidt and Bjorklund, 2008). Haidt argues that moral judgment is significantly driven by emotional reactions, and reason functions to justify unreflective moral intuitions.

A second influential neuroscientifically informed theory on moral psychology is an alternative dual process model of moral reasoning developed by Joshua Greene and colleagues (Greene 2008; Greene et al, 2008; Greene et al, 2004, Greene, 2001). Their model proposes two natural and different modes of moral thinking: one intuitive and the other more controlled and cognitive. Each is the result of two distinct psychological processes that operate in parallel and even interact in some contexts. Greene *et a*l state that the hypothesis that such a dual process of moral thinking is at work is further confirmed by scientific evidence resulting from fMRI that shows conflicting emotional and cognitive subsystems associated with different brain regions. Greene advances that the more affective system is linked to deontological moral judgments, typically driven by «alarm bell» emotions designed to issue simple commands and dominate decisions, while consequentialist responses are linked to greater activity in brain structures that support higher cognition such as abstract reasoning, self-control, and working memory (Greene, 2008).[10]

10 This does not mean that it is unemotional (for the fMRI data shows that consequentialist judgments show more emotional activation than non-moral judgments) but rather that the emotions involved are apparently more subtle and ultimately overridden by the person. Greene makes a distinction between two kinds of emotions, one that functions like alarm bells (designed to circumvent reasoning) and those that function like currency (and participate in the process of practical reasoning (Greene, 2010).

Both Haidt and Greene combine their views with the old philosophical debate over whether morality ought to be understood in terms of reason or emotion. Haidt thinks that his model presents a challenge to the prevalent understanding of moral judgment as an essentially rational enterprise only responsive to reasons, and more specifically Greene argues that his model shows that deontology, allegedly a rationalist ethical approach, is in fact not so but rather and «exercise in moral rationalization» (Greene, 2008). Hence the normative implications of the research.

Now, suppose that the science upon which they base their accounts is right. Let's forget that Greene and Haidt seem to rely on a by now controversial dichotomy between reason and emotion and that each of them presents evidence to defend a different account of moral reasoning. Let's assume that there is consensus on what model of moral reasoning to accept and that the accepted model shows that the moral psychology presupposed by, let's say, the deontological approach is mistaken. Even if all of the above were the case, still it would not necessarily follow that the science has normative implications (unless we use the term loosely). Furthermore, if there was compelling scientific evidence showing that moral decision-making (including deontological decision-making) is inescapably emotional, then a moral approach that presupposes an overly rationalist moral psychology would have to be considered *psychologically* inadequate. But this does not necessarily discredit the *ethical* view in question. That an account is psychologically implausible does not necessarily mean that it is *morally* illegitimate but rather that the moral psychology the approach takes as a starting point needs to be revised (Timmons, 2008).[11] At least in theory, the moral point of an ethical approach could be saved once the moral psychology upon which they rest is revised. [12]

So the second version of the claim about the normative import of neuroscience is plausible only insofar its limitations are understood. It seems reasonable to agree that together with evolutionary and psychological perspectives, neurocognitive work could reveal misconceptions and incoherencies in the psychological views presupposed by some theories. By uncovering and analyzing the neural and psychological mechanisms underlying social and moral decision-making it could present a welcome opportunity to reflect upon the psychological plausibility of those accounts. However, the empirical findings would not be playing a significant role in the normative discussion of what is right or wrong and what humans ought and ought not to do.

11 Timmons believes that it is possible to conceive more psychologically realistic versions of deontology that could accommodate emotional aspects without losing the main normative point.

12 For a discussion of the moral psychology presupposed by virtue ethics see Doris (2002) and Harman (1999). For a defense of virtue ethics see Appiah (2010).

5. Interpretation III: Neuroscience and Normative Ethical Theories

A third interpretation of the claim suggests a more significant role for neuroscience: the power to contest and even help undermine specific moral approaches. According to this version of the claim, neuroscience can give us empirical information that can seriously challenge the *moral authority* of certain approaches.[13] The idea is that if it can be shown that moral judgments have to do with how our brain is wired up and such wiring does not have a moral nature, then understanding the source of judgments should make us rethink our moral judgments, the moral norms we accept, and possibly our general moral commitments (Greene, 2008: 75).

I mentioned Greene's dual process model before. In fact, for Greene, neuroscientific findings can do more than provide plausible accounts of moral agency: they can undermine the *moral plausibility* of some ethical approaches. For him, the case against rationalist deontology as a moral approach is implicit in the empirical material. He states that «what deontological moral philosophy really is, what it is essentially, is an attempt to produce rational justifications for emotionally driven moral judgments» (Greene, 2008: 39) and that «our distinctively deontological moral intuitions reflect the influence of morally irrelevant factors and are therefore unlikely to track the moral truth» (Greene, 2008: 70). In fact, his skepticism extends to other approaches that allegedly depend on emotional intuitions as well. He says, «Does that mean that all non-consequentialists need to rethink at least some of their moral commitments? I humbly suggest that the answer is "yes"» (Greene, 2008: 75). Neuroscientific findings would be used as a trump card to show that non-consequentialist approaches are *morally* inadequate.

Philosopher Peter Singer draws on Greene's studies to argue that one of the most widely endorsed methods for conducting moral inquiry among philosophers, reflective equilibrium, is inherently problematic (Singer, 2005). He takes issue with this method's appeal to intuitions as standards against which chosen principles are to be assessed. For Singer such moral intuitions are not the data that Rawls takes them to be; rather than taking them as starting points of analysis, they should be considered unreliable and potentially erroneous.[14] More recently, Neil Levy has pointed out that neuroscientific results can produce better ethical approaches and suggests that the task of distinguishing good from bad intuitions may require scientific knowledge (Levy, 2011:4). Like Greene, both Singer and Levy are open to the idea that neuroscientific advances could play an important role in the normative

13 Note that this view does not naturalize ethics (as Churchland's view does) but it says that science plays a key role in the normative discussion.

14 Singer ends up making a distinction between emotional and rational intuitions, the latter supposedly superior because he thinks they would not be the outcome of our "evolutionary past."

discussion allowing us to distinguish morally relevant from morally irrelevant factors thus profoundly changing moral theorizing.

The suggestion that the knowledge resulting from the study of people's brains can cast doubt on the moral plausibility of some approaches has been contested on a number of grounds. Some commentators acknowledge the normative importance of the data provided by Greene and thus accept that some intuitions are unreliable, but try to show that the Greene's data does not count against all deontology, or against the method of reflective equilibrium (Timmons, 2008). Others in principle appear to admit the possible philosophical relevance of the empirical work but question the methodology and the empirical data provided by the studies. For example, some note that Greene's scenarios do not necessarily pose a real conflict between consequentialism and non consequentialism and thus fail to provide a reason for arguing that consequentialist responses are more associated with controlled processing (Allman and Woodward, 2008; Kahane et al, 2010). Others wonder about Greene's distinction between consequentialist and non-consequentialist judgment arguing that the distinction trivializes both positions and thus is misleading and even inaccurate (Kahane and Shackel, 2008; Kamm, 2009; Dean, 2010) or note that the studies may be culturally biased and their results contestable (Levy, 2006). And yet others complain that Greene's examples are highly unrealistic and hypothetical and thus, the intuitions that they generate are not necessarily worth considering (Allman and Woodward, 2008; Woodward and Allman, 2007).[15] Important as they are, methodological concerns are beyond the scope of this paper.

My main interest is the following: let's assume, for the sake of argument, that we have no methodological concerns, and that it makes sense to associate deontological judgments to automatic processing and consequentialist judgments to more controlled processing. Would the awareness of these associations undermine the moral plausibility of non-consequentialist approaches? Recently, philosopher Selim Berker has argued that it would not. According to Berker, the primary and «most promising line of argumentation» in Greene's view is the idea that deontological moral intuitions are to be rejected because they are automatic responses that track morally irrelevant and contingent characteristics (Berker...). However, Berker notes that it is not obvious how the neuroscientific information can be used to determine the moral relevance or irrelevance of those intuitions without further metaethical and normative assumptions regarding what is morally relevant and what is not. Thus, Berker concludes that the best argument in support of Greene and Singer's position does not depend on information provided by neuroscience but rather on a substantive normative view about what is morally relevant that is independent

15 For a real life, at least equally shocking case one can focus on The Queen vs Dudley and Stevens, 14 Q.B.D 273 (1884).

from neuroscientific results (Berker, 2009; Kamm, 2009). Hence the normative irrelevance of neuroscience.[16]

In a recent piece, Greene agrees in that «the relevance of neuroscience is rather indirect and that it depends on further non-neuroscientific ideas and assumptions» (Greene, 2010).[17] He even adds that the neuroscientific elements of his research are not essential to his normative argument (Greene, 2010).[18] But shortly after, he states that «scientific information can do work, not merely by drawing our attention to instances in which our shared values apply, but by challenging values that not all of us share» (Greene, 2010), and that neuroscience can actually threaten the moral authority of some judgments.

As I interpret him, Greene is torn between two positions. One holds a stronger view on the ethical implications of neuroscience, where its role is crucial in the discussion over the moral plausibility of an approach. On this view, neuroscience becomes the trump card, its role not limited to giving us knowledge about our moral predispositions, emotions, innate tendencies and neurobiological and psychosocial processes, but also as a crucial one in the discussion over the moral plausibility of an approach. If this is true, science would be doing much more than just giving us supplementary information: it could also challenge our moral values and even erode some ways of doing ethics. Unfortunately, the issue of how neuroscience can play such a role needs more explanation and justification than Greene provides.

The second position that at times he seems to endorse is more moderate, neuroscience's significance limited to giving us knowledge about our moral predispositions, emotions, innate tendencies and neurobiological and psychosocial processes only. According to this position, neuroscience's role is limited in content: it informs the normative discussion but it is not part of it. This second one is a reasonable view to hold, but it is less philosophically interesting than we think.

16 Berker accepts that neuroscience could potentially "give us clues for where to look when trying to characterize what sorts of features out there in the world each moral faculty is responding to … note that, even here, the neuroscientific results play no role after we have the principles stating what sort of features each faculty is responding to." (Berker, 2009: 328) However, for him "the neuroscientific results play no role after we have the principles stating what sort of features each faculty is responding to: …the argument for whether we should or should not discount the verdicts of one of those faculties proceeds entirely via armchair theorizing …"(Berker, 2009: 328).

17 The same could be said of Singer's view. He states that "advances in our understanding of ethics do not themselves directly imply any normative conclusions, but they undermine some conceptions of doing ethics which themselves have normative conclusions." Singer, 2005: 349.

18 The same could be said of Singer's view. He states that "advances in our understanding of ethics do not themselves directly imply any normative conclusions, but they undermine some conceptions of doing ethics which themselves have normative conclusions." Singer, ibid, p. 349.

6. Conclusion

My purpose has been to identify different interpretations of the claim that neuroscientific findings have normative import and the issues raised. I believe that when making the claim about the normative relevance of neuroscience, some neuroethicists mean to say that neuroscience plays a role in explaining the neurobiological origins of morality. Others want to argue that neuroscience can show the plausibility of some psychological portraits. And yet others that neuroscientific findings play a more important role, becoming an active participant in the normative discussion.

It may be that part of the reason why many philosophers are still quite suspicious of the experimental turn in moral philosophy is that they are not too clear regarding exactly what it is being said about neuroscience's ethical relevance and the autonomy of normativity. Due to the impressive advances in neuroscience in understanding moral reasoning and judgment, debates about this issue promise to become more and more common and possibly more heated. If we are to move forward and promote the kind of collaborative research needed we have to be clear about what each disputant is really claiming and why it is relevant.

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