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## Reviews

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### **Social Brain Matters: Stances on the Neurobiology of Social Cognition**

Oscar Vilarroya and Francesc Forn i Argimon, eds.

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MAHESH ANANTH

Ever since Darwin, humans have been unabashedly subsumed under the *animalia* category. Indeed, in the struggle for survival and reproductive success, it has been suggested by many of the stalwarts of the Darwinian revolution that our social and political gregariousness is a mere façade for our overriding brutish biological nature (see Michael Ruse, *The Darwinian Revolution* and Daniel Todes, *Darwin without Malthus*). As Arcadi Navarro stresses, “Darwin’s ideas and its derivations have allowed us to recognize ourselves as another animal species and to reevaluate our position in the universe” (171). Still, as Robert Ginsberg (248–54) ponders in the last article of this collection, even granting the need to acknowledge our Darwinian legacy, how can we also recognize the putative legitimacy of our status as moral, social, and political beings (see Leonard Katz, *Evolutionary Origins of Morality* and Paul Rubin, *Darwinian Politics*)?

By way of their *Social Brain Matters*, Oscar Vilarroya and Francesc Forn i Argimon offer a collection of twenty-one essays by a broad spectrum of scholars designed, in part, to address just this question. Indeed, Argimon stresses that, “this is a book of naturalist philosophy. The naturalist philosopher attempts to resolve philosophy’s big questions, taking into account the results of scientific activity” (1). Cautiously, however, he reminds the reader that, “the scientific and philosophic implications of Darwinism are still wanting for a more comprehensive development. This book examines those implications most relevant to our social behaviors” (3).

Schematically, the book is carved into three sections. The first section includes six essays that not only discuss human neurobiology, but also address the question “Can we learn to be unselfish?” The second section offers seven essays that examine various aspects of brain processes as they relate to the moral psychology of suicide terrorists. The third section provides eight essays that draw on evolutionary considerations to make sense of human social behavior. Although each essay in this collection cannot be given its due here, glimpses into the insights of most of the authors, along with special attention given to the pedagogical and overall philosophical value of the text, will be proffered.

In the opening section, the neurobiology-oriented articles by Núria Gallés (19–30), Katherine Nelson (37–44), and Eric Bredo (45–57) remind the reader that (i) basic emotions during early development play a crucial role in

learning (see Jaak Panksepp, *Affective Neuroscience* and Antonio Damasio, *The Feeling of What Happens*), (ii) the brain in early development engages in synaptic overproduction, allowing the ambient environment (along with internal information) to dictate which neurons and synapses survive (see proliferate and prune thesis discussed in David Buller's *Adapting Minds*), (iii) language plays a crucial role in disseminating cultural values, like being selfish and unselfish, and (iv) learning is a process of transaction between individual and environment that occurs best at certain developmental stages. Given (i)–(iv), Daniel Dennett's essay and that of the team of Emily Parker and Lawrence Barsalou attempt to make sense of selfish and unselfish behavior. Dennett argues, drawing on meme theory, that unselfish behavior is generated from memes (see Richard Dawkins, *The Selfish Gene*, Robert Aunger, *Darwinizing Culture*, and Kate Distin, *The Selfish Meme*), like "Do unto others as you would have them do unto you," that may have a fitness that need not be isomorphic with the fitness of their host. On this view, according to Dennett, memes can be reasonably understood as parasites that are able to infiltrate minds by emotional pathways (34), and being unselfish may be a kind of parasitic meme. Parker and Barsalou argue that the source of selfishness is located in the error of thinking that the perceived accuracy of our judgments in the realm of our basic perceptual domain carries over to our perceived accuracy of judgments in our socio-cultural-political domain. To remedy this problem, the authors propose that people need to be made aware of this error in early youth and there should be a focus on cross-cultural interactions amongst groups that have a history of tension (e.g., Jewish and Palestinian children). The hope is that unselfish behavior can be taught as children come to understand that their social values are contextual (61–65). Finally, Stevan Harnad argues for and conceives of a society in which mating is random and strictly polygamous such that children are raised by different constantly changing members within a community during the crucial developmental kin attachment period. Importantly for Harnad, one's biological progeny always remain unknown. The upshot, thinks Harnad, is that this social structure (similar to that conceived by Plato in his *Republic*, Book V) will render otiose the "us-them" categories that are at the heart of selfishness (See Paul Gomberg's recent *How to Make Opportunity Equal* as an attempt to mitigate, in a radical communitarian way, what he perceives as the selfishness induced by our contemporary market economy approaches to stem social inequality.).

Pedagogically, I suggest that the essays in this section be read in the groupings I noted above. Also, a better job of connecting Dennett's meme theory article to the subsequent articles should have been pursued. Specifically, the sense in which other-regarding behavior is or is not a parasitic meme could help make sense of the ambitious articles of Bredo, Parker and Barsalou, and Harnad. More troubling is the lack of rigorous ethical arguments by the authors who are making fairly strong normative judgments about how

unselfish behavior can be fostered. Only Harnard's clever utopian thought experiment broaches any sort of normative justification for why we ought to pursue molding individuals in early youth to embrace unselfish behavior. Finally, the implications of the "proliferate and prune thesis" should have been put forth by any one of the authors. For example, even if the proliferation and pruning ability is an evolved feature, the actual retention of some subset of ensemble of neurons is mostly the product of environmental influences on ontogeny. If this is correct, then not only would Dennett's attempt to locate meme theory within evolutionary biology likely require further argumentation, but also the view that evolution plays a substantive role with respect to the content of human psychology becomes suspect.

The essays in the second half of the book specifically address the neurobiological, psychological, and moral factors associated with contemporary "suicide terrorism." Tobeña and Rottschaefer argue that it is imperative, in the light of the recent surge of suicide bombings around the world and for the sake of making sense of moral motivation, that the link between biological group identity markers and the mechanisms associated with evolutionary neurocognitive biases be ascertained. Given that this link is associated with the *prima facie* paradoxical moral praise of violent group-oriented self-sacrifice, Tobeña concludes that such knowledge could offer a better understanding of the complex dynamics surrounding the making of "sacrificial lambs" and those individuals who mould such terrorist-soldier-beehive mentalities (96). Rottschaefer adds that current social, evolutionary, and cognitive psychology studies reveal that the ideal of universal empathy is implausible because our emotional and cognitive systems have evolved to give preference to those nearest to us. This can explain why concern for one's group could render one "numb" to those outside of the group—especially in extreme cases like suicide bombers (133–27). Premack's discussion (160–67) on the moral development of children appears to substantiate Rottschaefer's point about group solidarity at the expense of outsiders. In what appears to be a sharp contrast to Tobeña and Rottschaefer, Atran, Nichols, Ovejero, and Gomilla argue that suicide terrorists do not necessarily have any obvious psychopathology, but whole heartedly embrace a set of moral principles (113) that are different from the moral norms of most people (126). While debunking many myths about the psychological motivation of suicide terrorists, these authors argue that it is the terrorist networks and training camps that must be shattered in order to stop the "cognitive and emotional manipulation" of those who are acutely emotionally sensitive to the needs of their group. Additionally, Nichols sadly adds: "The way to change suicide terrorists is to change the norms that they hold. We have no recipe for that (129)." Interestingly, Gomila explores the complexity of moral decision-making, emphasizing that it cannot be captured fully by utilitarian-based game-theoretic approaches. He argues that the complexity of morality includes a subject's internalization of being morally responsible, a process that includes emotional commitment and control over

basic motivational states (154). Gomila goes on to argue that coming to grips with this internalization process and self-evaluation, which clearly includes a neurobiological component, is necessary to make sense of the *prima facie* absurd self-sacrifice made by suicide terrorists. He concludes that such an understanding of human morality will reveal that abstract moral theorizing does not capture fully practical moral deliberations (155–56).

The essays of this section are rather insightful, but not well organized from a pedagogical perspective. To begin, the centerpiece of these essays is Nichols'. Instructors would do well to start with it, since it can help illuminate some of the other contributions in this section. Nichols does an outstanding job of isolating where within human psychology one might wish to locate the activities of suicide bombers and the role emotions play in the inculcation of cultural norms (see Paul Griffiths, *What Emotions Really Are*). Still, and this is important, the essays do not sharply address three crucial points. First, Rottschaefer's article on the state of neuro-cognitive sciences and Premack's essay on the moral development of infants make no clear connection to the issue of suicide terrorism. I would recommend that these essays be used to motivate students to make a connection to the topic of suicide terrorism or simply ignore these essays for the sake of sticking to the theme of moral psychology and suicide terrorism. Second, although some of the authors mention the is/ought distinction (see Phillip Kitcher, "Biology and Ethics," in David Copp, ed., *The Oxford Handbook of Ethical Theory*, 2005, pp. 91–121) and its relevance, not enough attention is given to it. Teachers can point out that all the science of the brain can tell you what *is* likely to be the case with respect to the biological mechanisms related to moral motivation, but none of this science can by itself tell you what *ought* to be the case with respect to the normative content of moral motivation (see Michael Bradie, *The Secret Chain*). For example, it may be the case that there are people *who have* a certain neuro-chemistry that makes them easily accepting of the kind of persuasive speech that is necessary to produce suicide bombers. The problem, however, is that this fact says very little about whether or not suicide bombers ought to be produced or whether or not those who are susceptible to such speech *ought* to, upon reflection, embrace the ideology associated with the normative content of the suicide bomber's psychology. Finally, because it is not rigorously done by the authors, educators should try to connect some of the previous section's essays with the ones in this section. For instance, it would be worth exploring whether or not the proliferate-and-prune thesis and meme theory are relevant to determining to what extent in early neuronal development is a person susceptible to the ideas of others. Such findings could help determine why (and when) one person is more susceptible to the ideas of another; this data could assist in preventing such individuals from being exposed to the *prima facie* immoral suicide-bombing propaganda. Moreover, it might be possible to find out if there is a set of memes *qua* ideas that are doing the persuasive work for the propagandists—can Dennett's claim about

the fitness of memes be vindicated here? Although such ideas are speculative, they could form the foundation of new lines of research.

The final section of essays grapples with human nature; that is, special attention is given to the evolutionary factors that capture the duality—cooperation and conflict—of human psychology. The norms that emerge from this duality can be thought of as guides that govern how we ought to behave and what we ought to believe. In as sense, as Michael Bradie explains, “We are prescribers as well as describers. The act of prescribing involves the articulation, endorsement, and application of norms. Human beings are *normative beings*” (see Bradie, “Evolution and Normativity,” in Mohan Matthen and Christopher Stephens, eds., *Philosophy of Biology*, p. 201). Arcadi Navarro kick-starts this section by explicating five distinct approaches to making sense of human cooperative behavior (174–76) from a cost-benefit perspective that is coupled with natural selection:

- (1) Selfish Genes—genes that code for cooperative behavior can with stand the cost of cooperation so long as similar genes are aided to survive in the next generation (see W.D. Hamilton, “The Genetic Evolution of Social Behavior,” *Journal of Theoretical Biology*, 7 (1964): 1–52).
- (2) Reciprocity—non-kin other-regarding behavior is sustained through the preferential exchange of benefits with those whom we have had iterated mutually beneficial interactions (see Robert Trivers, “The Evolution of Reciprocal Altruism,” *Quarterly Review of Biology* 46 (1971): 35–57).
- (3) Indirect Reciprocity—non-kin other-regarding behavior is made possible by cooperating with those whom we observe to be relatively frequent cooperators with others (see M.A. Novak and K. Sigmund, “The Dynamics of Indirect Reciprocity,” *Journal of Theoretical Biology*, 194 (1998): 561–74).
- (4) Social Norms and Punishment—prescriptions about how to act toward known and unknown individuals; adherence to these prescriptions is achieved by way of both altruistic rewarding and altruistic punishment (see C. Boehm, “Emergency Decisions, Cultural Selection Mechanics, and Group Selection,” *Current Anthropology* 37 (1996): 763–93).
- (5) Group Selection—social groups with more cooperation can accrue greater benefits with respect to social groups with less cooperation (see Elliott Sober and David Sloan Wilson, *Unto Others* and Samir Okasha, *Evolution and the Levels of Selection*).

Which of the above accounts is the most reasonable account of human other-regarding and self-regarding behavior? Upon reminding the reader that a Darwinian account of human behavior had better acknowledge the fact that early hominids lived in some groups for the sake of both protection against predation and creation of boundary distinctions between other hominid groups (see Camilo J. Cela-Conde and Francisco J. Ayala, *Human Evolution: Trails*

*from the Past*), Navarro explains that evidence makes clear that reputation formation, rewards, and punishments were crucial to the development of early human behavior (177–78). With these factors in mind, Navarro claims that all five of the above accounts could be relevant to explaining certain human behaviors—depending upon the behavioral feature(s) under consideration; and, also depending upon the behavioral feature(s), none of the accounts above is relevant—indeed, he makes clear that some norms in some cultures are maladaptive (178–79).

Viewed as an elaboration on Navarro’s account, Nannini reasonably stresses that human self-regarding and other-regarding behavior has a normative component that cannot be reduced to descriptive facts. From this claim, Nannini proceeds to argue that, although the human mind is dependent upon neurobiology, it cannot be reduced to it. Taking these claims as premises, Nannini argues that cultural selection (iv and v above) *qua* meme theory could very well make sense of both beneficial and deleterious cultural norms (as Dennett and others have suggested).

By far the most interesting article in this section is F. John Odling-Smee’s article on “niche specialization.” He argues that standard evolutionary theory, which simply has humans as mere responders to environmental perturbations, is inadequate to make sense of human evolution. Primarily, the affects of human cultural processes and human technology on human evolution cannot be appreciated fully by the standard theory. Odling-Smee argues that these gaps can be filled by the concept of niche specialization, the idea that humans and other animals “transform some of the natural selection pressures that act on themselves and others” (189–91). This extension of evolutionary theory to include niche specialization (see David Depew and Bruce Weber, *Darwinism Evolving*), continues Odling-Smee, (i) reveals the failings of sociobiology to make sense of humans as co-directs in human evolution (he uses the example of the role of human agriculture on human evolution) and (ii) exposes that the gene-culture co-evolutionary theory erroneously assumes that only humans engage in niche specialization (e.g., niche specialization activities of earthworms). As an alternative to either approach, Odling-Smee offers the following “extended evolutionary theory” alternative:

Extended evolutionary theory converts gene-culture co-evolution from a dual-inheritance to a triple inheritance theory. It now incorporates: (1) genetic inheritance directed by natural selection, (2) ecological inheritance directed by niche construction, and (3) cultural inheritance by cultural processes (p. 195).

Human cultural inheritance (e.g., plowing techniques), much like non-human animal manipulation of local environments, modifies the environment and changing the local selection pressure. According to Odling-Smee, cultural niche construction allows humans to survive in the short-run so that natural selection can come around in the long and possibly select for beneficial human genotypes (195–96; also see Mahesh Ananth, “Psychological Altru-



ism Vs. Biological Altruism: Narrowing the Gap with the Baldwin Effect,” *Acta Biotheoretica* 53 (2005): 217–39.). With respect to Navarro’s account above of human cooperative behavior, Odling-Smee would likely argue that the factor of niche-specialization needs to be woven into (i)–(v) in order to understand more fully this aspect of human nature—that is, beings who are co-directors of their own evolution (see F. John Odling Smee, et al., *Niche Construction: The Neglected Process in Evolution*).

Although these are subsequent essays of this section, I highly recommend that instructors of this text start with Derek Bickerton’s article and then Camilo Jose Cela Conde, et al.’s piece. Bickerton does an excellent job of explaining the self-image transitions from (i) humans *qua* children of Greece and Adam and Eve to (ii) humans *qua* rational beings of the Renaissance to our contemporary Darwinian view of (iii) humans *qua* cousins of the great apes (243). Additionally, drawing on recent brain imaging studies, Conde, et al. conclude that human moral judgments involve the integration of the activities of both emotional and rational brain centers; and the corresponding behavioral responses are themselves the product of neuronal reorganization, genetic guidance, and environmental influences (201–12). These frameworks provide the needed conceptual, historical, and biological information for the other articles in this section.

Nannini’s essay ends with the following claim: “cultural evolution cannot act against biological evolution but it can act beyond it” (188). This is an odd phrase; primarily, given that Nannini concedes that cultural norms/memes can be harmful, it stands to reason that cultural evolution can work against biological evolution—indeed, this is part of Dennett’s overall argument. Instructors would do well to press this point in class discussions to determine to what extent Nannini’s final claim is overstated. Also, Nannini (and others) gesture toward the importance of meme theory as a way of making sense of cultural evolution, but there is little by way of sustained discussion in this text beyond Dennett’s contribution. Merlin Donald’s contribution (215–22) approaches such a discussion by giving importance to the almost unique human ability to rehearse and reflect upon (“metacognitive review” as he puts it) possible actions or speeches based on the consequences of past experiences (also see Robert Arp, *Scenario Visualization*). Furthermore, Luc Steels’ impressive essay on the origin of human language pushes the role of human speech in the direction of a non-gene centered account. He argues that symbol-based communication is the product of humans becoming social and legal creatures (238). Still, as impressive Donald’s and Steels’ essays are, this last section should have included an essay that explores meme theory with respect to evolution and culture (see Dan Sperber, *Explaining Culture*). Finally, this last section does not address directly the ambitions of evolutionary psychology. For example, does Odling-Smee’s use of niche specialization suggest that the human mind is a set of adaptations designed to solve the problems of our hunter-gatherer relatives (see Phillip Kitcher, *Vaulting Ambition* and Robert

Richardson, *Evolutionary Psychology as Maladapted Psychology*)? A final article of this collection could have focused specifically on the implications of the findings of the other authors as a way of suggesting to what extent the mind can be understood as a bundle of evolved interconnected modules designed to solve a specific set of problems. This is an obvious direction toward which instructors can guide their students.

At the end of his *On the Origin of Species*, Darwin famously proclaims:

In the distant future I see open fields for far more important researches. Psychology will be based on a new foundation, that of the necessary acquirement of each mental power and capacity by gradation. Light will be thrown on the origin of man and his history (488).

One can view *Social Brain Matters* as an attempt to show the extent of Darwin's oracular pronouncements about the human condition. A diverse set of problems are tackled by these authors revealing the breadth and depth of Darwin's puissant ideas. No doubt, the editors have put together a good collection of essays, many of which reflect cutting-edge work in their respective sub-disciplines. Although a few of the articles could be accessible to undergraduates, I would strongly recommend this book for a graduate-level course or a focused upper-division/senior seminar course that intersects philosophy, biology, sociology, and psychology. I not only have little doubt that most scholars would learn much from these essays, but I also believe that diligent students will be able to glean a great deal as well.

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## **Clear Thinking in a Blurry World**

Tim Kenyon

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### LESLIE BURKHOLDER

This is a textbook for a course in critical thinking or informal logic. After completing a course using it students should:

- (1) be able to say whether they are being presented with an argument or not and be able to analyze it into its important parts;
- (2) be able to determine whether the argument or reasoning is correct and without error or not and explain why this is so;
- (3) be able to use some central ideas in deductive logic and in statistics and probability in doing (2);