

ON RITALIN, ADDERALL, AND COGNITIVE ENHANCEMENT: METAETHICS, BIOETHICS, NEUROETHICS

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ABSTRACT

In this article, I argue that the neuroethics of cognitive enhancement can help us bridge the explanatory gap between metaethics and bioethics (*qua* normative, applied ethics) and throw light on the classic gap between moral beliefs and neural correlates of brain processes. Insofar as it unveils the irreducibility of first-person propositional attitudes (esp. moral beliefs and judgments), neuroethics allows for justifying cosmetic, pharmacological interventions so as to bring about human enhancement, regardless of descriptive accounts of its neural correlates and independently of the cognitivist, noncognitivist or hybrid inputs of metanormative theories. Precisely because it cannot provide the ultimate grounds for any conservative, libertarian or liberal attitudes towards cognitive enhancement, neuroethics is better conceived in terms of a Rawlsian-like wide reflective equilibrium, procedurally and without any specific substantive commitment to any moral or comprehensive doctrine of sorts.

Key words: Bioethics. Cognitive enhancement. Metaethics. Neuroethics. Selfhood.

RESUMO

O artigo argumenta que a neuroética do melhoramento cognitivo pode nos ajudar a preencher a lacuna explicativa entre a metaética e a bioética (enquanto ética normativa aplicada) e lançar luz sobre a lacuna clássica entre crenças morais e correlatos neuronais. Na medida em que revela a irredutibilidade de atitudes proposicionais de primeira pessoa (esp. crenças e juízos morais), a neuroética permite que sejam justificadas as intervenções farmacológicas cosméticas, de modo a ocasionar o aprimoramento humano, independentemente de relatos descritivos de seus correlatos neurais e de aportes cognitivistas, não-cognitivistas ou híbridos de teorias metanormativas. Justamente porque não pode fornecer as razões últimas para quaisquer atitudes conservadoras, libertárias ou liberais quanto ao aprimoramento cognitivo, a neuroética é melhor concebida em termos de um equilíbrio reflexivo amplo, do tipo rawlsiano, procedimentalmente e sem qualquer comprometimento substantivo com alguma doutrina moral ou abrangente.

Palavras-chave: Bioética. Melhoramento cognitivo. Metaética. Neuroética. Primeira pessoa.

1 Metaethics, Normative Ethics, and Applied Ethics

Ethics has been broadly defined as the philosophical study of morality or as a theory of moral reasoning. Even though both the Greek word *ethos* and the Latin term *mores* refer back to human conduct and character, it has been usually assumed that while morals refer to a collective, social group's or an individual's principles regarding morally right and wrong modes of being and acting (including personal morality),

ethics rather refer to rules that have been codified or theoretically articulated in social, institutional, professional, and religious codes. In any case, morals and ethics have often been used interchangeably. Hegel's criticisms of Kant's failure to distinguish between an abstract, inner sense of morality (*Moralität*, in German) and the concrete, intersubjective *ethos* (*Sittlichkeit*) which becomes objective as it is shared by members of a social group, civil society or the State (linguistically, historically and socially construed by means of institutions) may help us elaborate on the development and social evolutionary processes leading to an ethical theory or moral concepts, but cannot ultimately justify its normative principles. To put it in a nutshell, "What makes a moral action *moral*?" remains as difficult a question as the Wittgensteinian famous thought-provoking query "What makes one meter measure one meter?" (Salmon, 1988), seeing that he is avoiding both Platonism and conventionalism: "There is *one* thing of which it can be stated neither that it is 1 m long nor that it is not 1 m long, and that is the standard meter in Paris [*das Urmeter in Paris*]" (Wittgenstein, 1963, p. 25 § 50; Bermon and Narboux, 2016). Although I won't be dealing here with the intriguing problems of rule-following relating to that particular section (§ 50) of the *Philosophical Investigations* and those relating to the so-called private language argument or Kripke's polemical recasting thereof (from § 143 through § 242), it is my contention that moral-ethical normativity inevitably refers back to social norms and how these are construed in linguistic, intersubjective practices (Dall' Agnol, 2011; De Oliveira, 2016). So whenever dealing with metaethical questions such as "What is the meaning of *moral* in moral reasoning?" or whether there is any way of justifying ethical-normative premises and moral-cognitive criteria without presupposing some dogmatic (religious or metaphysical) assumption (such as the moral realism thesis that there are moral facts or the idea of selfhood and free will), a certain conception of belief, desire or some propositional attitude on the part of moral agents is inevitably evoked, regardless of leaning towards cognitivist or noncognitivist accounts. In effect, the recent emergence of hybrid theories in metaethics in the past decades just attest to the fact that, by trying to accommodate both belief-like and desire-like features of moral, normative judgments, metanormative theories have allowed for complex mental states, constituted by both affective states and ordinary beliefs that people hold whenever they make normative claims (Guy and Ridge, 2014, p. 224). Now, Ethics has been traditionally divided into: Metaethics, Normative Ethics, and Applied Ethics. Ethical theories, broadly

construed, seek to justify arguments and moral reasoning when dealing with ordinary moral problems, such as why murdering is morally wrong or how should we lead a morally good life (Smith, 1994). Applied ethics is a discipline of philosophy that attempts to apply ethical theories to real decision-making processes (e.g. in legal procedures and political decisions), especially those involving moral dilemmas and world dilemmas, such as the ones found in bioethics (abortion, euthanasia, health care, stem cell research, cloning, and other problems in medical ethics), biotechnology (eugenics, genetic research, food processing), legal ethics and human rights (global ethics, global justice, public health, policy making, international law), environmental ethics, business ethics, computer ethics, and engineering ethics. Bioethics from the very start has been an interdisciplinary study of ethics as *applied* to the life sciences and health sciences, focusing especially on *human* life and *human health* problems, always reminding us that Hippocrates and Socrates were both dealing, after all, with life and death issues.

Although there is no consensus on the demarcation of disciplinary, ethical-philosophical research in biology – notably whether it should be confined to humans and technological innovations that relate to human life – bioethics has been the broadest, if not the most prominent, area of research in applied ethics, involving not only metaethical and normative problems, moral and political, social philosophy, but also specific issues that raise in medical ethics, law, neuroscience, economics, cybernetics, and religious studies. Metaethics is concerned with issues such as whether there are moral facts, the nature of such facts if they exist, and how we can know whether a moral claim is true or false, by way of contrast with normative ethics, which is primarily concerned with the question of how we should act. Neuroethics, on its turn, deals with bioethical, moral problems both in abstract, theoretical terms (such as in metaethics and normative ethics, for instance, to define what is morally good, whether there is free will or freedom of choice, what selfhood is all about) and in practical, concrete terms (applied ethics), especially informed by the empirical sciences and recent findings in neuroscience. Like bioethics and applied ethics overall, neuroethics also might resort to metaethics and normative theories when dealing with the moral, epistemic justification of given procedures and possible scenarios relating to practical problems such as the ones involved in neural, cognitive enhancement and the use of smart drugs. For instance, prescription drugs such as Ritalin, Adderall, Daytrana,

Concerta and others therapeutically prescribed in the treatment of attention deficit hyperactivity disorder (ADHD) or narcolepsy, have been also popularly used nowadays as athletic performance and cognitive enhancers, and even recreationally as an aphrodisiac and euphoriant. There has been an ongoing debate around the acceptable use of such psychoactive medications by normal, healthy individuals, with a view to bringing about enhancement rather than treatment of a disease or disorder. As James Bernat put it, the “traditional focus of medical practice has been to treat disease and disability with a goal of cure or at least re-establishment of normal functioning. The enhancement debate is controversial because it takes individuals who have normal functioning and asks if it is desirable or justified to use medical means to improve their function to levels above normal. The ethical issue centers on whether providing requested enhancements for the healthy is a proper activity for the profession of medicine” (Bernat, 2008, p. 496).

2 Bioethics, Neuroscience, and Neuroethics

Neuroethics deals precisely with this intersection of possible, imaginable uses of neurotechnologies and their moral acceptability, desirability, and permissibility: When is it permissible to alter a person’s psychological conditions, dispositions, memories, to the point of influencing her personality traits, consolidating her selfhood or “enhancing” her mental properties? What can neuroscience and cognitive psychology tell us about free will, self-control, self-deception, conditioning mechanisms, and the very justification of moral paths to be adopted by one individual or social groups that resort to neuroenhancing drugs? What behavioral and molecular implications for neuropharmacology are ultimately at stake in the way drugs affect human behavior, including drug dependence and addiction? What neuroenhancement and neurotechnological interventions are morally acceptable and appropriate to be adopted in public health policies and legislation? Should medical professionals seek to treat disease and disability with the goal of improving deficient function to normal levels, or should they also seek to improve patient functionality over and above what is normal in an attempt to improve quality of life? It seems that various, multidisciplinary accounts of social normativity are called for, including moral-ethical and legal normativity, and epistemic normativity as well. Starting with the neuroscientific turn in moral and social philosophy, I would like to argue that the philosophy of neuroscience, cognitive science

or neurophilosophy can help us today recast the normative problems of a naturalist research program in ethical, legal, social and political theories, particularly on the correlated conceptions of bioethics and neuroethics. Given the scopes and definitions of these disciplines, neither bioethics can be reduced to neuroethics nor the latter can be subsumed under the former. By focusing on the problem of the relationship between the properly neurobiological progress of our human species (esp. the evolution of the neocortex) and the social, cultural, and historical evolution of civilizations, societies, and social groups (esp. the evolution of technology, broadly construed, from primitive tools leading all the way to neurotechnologies), we may overcome a purely naturalistic, physicalist reductionism, as normativity turns out to challenge eliminativist versions of materialism, such as the one famously advocated by the Churchlands, insofar as the latter seems to dismiss any normative claims as ultimately reducible to descriptive premises or natural properties alone (Churchland, 1986). It could be argued that eliminative materialism renders metaethics implausible or futile, as it ultimately dismisses moral beliefs, desires, judgments, and propositional attitudes –not only for ontological reasons (commitments to realist or antirealist standpoints) but also the objectivity of intersubjective relations and systems, such as social institutions and language. Language cannot, after all, be reduced to communication or to the circulation and exchange of information but it rather requires intersubjective, social relations and the means-ends articulations that make sense, meaning, rationality, narratives, and cognition useful human artefacts for the survival of the species. Just as modern cognitive neuroscience emerged within developing, multidisciplinary efforts, initially combining research in neurophysiology and psychology at the turn of the 19th century leading up to extensive research programs in brain and consciousness sciences at the end of the last century, neuroethics' debut in the beginning of this millennium definitely brought about a sense of normativity which cannot be established in the vacuum or in total abstraction but rather requires a social, intersubjective dimension inherent in moral action and in cognition overall. It is in this sense that neuroethics is now consolidating a renewed interest in bringing together metaethical analyses and practical, normative problems and moral dilemmas usually dealt with in bioethics. As Paul Churchland himself remarked,

More specifically, it is the traditional sub-area we call metaethics, including moral epistemology and moral psychology, that will be most dramatically

informed by the unfolding developments in cognitive neurobiology. And it is metaethics again that will exert a reciprocal influence on future neurobiological research: more specifically, into the nature of moral perception, the nature of practical and social reasoning, and the development and occasional corruption of moral character. (Giordano and Gordijn, 2010, p. 147)

3 Sociality and Neuroscience

Kalderon has shown that, following Dworkin, all second-order, metanormative claims can be understood, fundamentally, as first-order, substantive, normative claims. If such happens to be the case, then metanormative inquiry could not intelligibly be conducted independently of substantive, normative reflection. Now, if Dworkin is right, then contemporary metaethics ultimately “rests on a mistake” (Kalderon, 2013, p. 129). Furthermore, metaethics may still be used, regardless of Dworkin’s and similar criticisms, as an argument to fill in the explanatory gaps between the first-personish experience of mental processes, propositional attitudes, and phenomenal consciousness, on the one hand, and the neural correlates empirically observed by means of neuroimaging and neurotechnologies, on the other hand. In this sense, the explanatory gap unveils physicalism’s objective stance of observation, hypotheses, conjectures, and established findings as causing its subjective counterpart, the stance of phenomenal experience, intersubjectivity, selfhood, reflexivity, and the like. Based on recent research, we can always review studies where non-invasive neuromodulatory techniques, such as Transcranial Magnetic Stimulation and Transcranial Direct Current Stimulation, have been used to promote social plasticity (defined as “the modulation of the neural substrate associated with social cognition aiming for more adaptive social interactions”) in developmental disorders (Boggio et al., 2015). The use of neurotechnologies has never been an ethical problem in itself and, just like the use of traditional technologies such as working and daily-use tools and gadgets, refers back to human, social relations and how these devices could cause harm or benefit to oneself and others (keeping in mind that self-harm has social, intersubjective implications). As I continue to work on this ongoing interdisciplinary research program in neuroethics and social, cognitive neuroscience, I keep pursuing the normative sense of a mitigated, social constructionism on a par with its physical counterpart, namely, a neurobiological constructivism, so dubbed *faute de mieux*, as it both preserves the idea of objectivity and claims a cognitive moral normativity. I think it is thus possible to meet the challenges of naturalism and of cultural relativism without giving up on a conception of

social normativity, albeit not absolutist, with the help of new interfaces that can encompass the differences between mitigated conceptions of naturalism and normative, empirical takes on culture. We have so far regarded this shift from bioethics to neuroethics in light of the neuroscientific turn of recent moral philosophy, starting from classic trolley problems and recast versions of moral dilemmas—in authors such as Joshua Greene (2003)—, and proceeding to investigate how decision-making processes attest to the latter's working hypothesis that the sharp, crucial distinction between the natural ontology of science (what is the case) and the normative claims of ethics (what ought to be done) is not only in full agreement with neuroscience but also help us reassess our own moral values and conceptions of morality, including metaethics, bioethics, and neuroethics (De Oliveira, 2013). The neuroethics of cognitive enhancement can thus help us bridge the explanatory gap between metaethics and bioethics insofar as first-person propositional attitudes in justifying cosmetic, pharmacological interventions with a view to bringing about human enhancement cannot be accounted for in causal terms, regardless of descriptive accounts of its neural correlates and of the reasons offered in cognitivist, noncognitivist or hybrid inputs of metanormative theories. It must be kept in mind that even if we adopt a thin definition of neurocognition, this must comprise various, related features such as attention, memory, and executive functions to process information and make decisions, so that social cognition stands out as humans apply these information and decision-making processes to social situations in their daily interaction with other individuals, intersubjective and collective entities (Frith and Frith, 2007). As a highly sociable species—in effect, as the most social of all primates—, humans' sociality and social interactions turn out to be one of the major forces driving our evolution (Frith and Frith, 2008). And yet, the question has been raised anew: What is so unique about human social cognition? And how is any uniqueness represented at the neural level? If there are individual differences, then don't we have to study individuals as well as groups? By identifying sociality with intersubjectivity (e.g., the fact that shared beliefs or social norms are common to individuals belonging to the same social group or set of individuals), social institutions may be regarded by way of analogy with the way one learns to speak and function in a natural language. That being the case, how are social processes to be differentiated from nonsocial processes? If so, why and how? Just as neurobiology can inform social psychology,

intragroup or intergroup competition among early hominids fueled a need to anticipate and predict others' behavior. Both tactical deception and social cooperativity are behavioral consequences of such a mechanism, and whereas precursors of both are present in other animals, they are not found remotely to the same extent as in humans. Could these mechanisms have fueled the expansion of the human brain and our distinctive cognitive abilities? (Cacioppo, Visser, and Pickett, 2006, p. 270)

That anyone resorting to methylphenidate stimulants, combination drugs containing salts of amphetamine or other controlled substance might face rapid heartbeat, delirium, panic, psychosis or heart failure, besides all the addictive risks involved for Ritalin, Daytrana, Concerta, Methylin, and Adderall frequent users, means that normal, healthy individuals seeking enhancement rather than treatment confirm the guiding idea that moral dilemmas are not solved once and for all by simply resorting to neurotechnologies or to neural correlations supposedly establishing causal relationships, as if all desirable effects could be obtained by the appropriate changes in the causes without damage or risks –to the patients themselves or to third parties. Indeed, one of the first contributions of neuroscience to social cognition is how the decision to take action in relation to a moral dilemma (say, in the classic dilemma of the runaway railway trolley) is associated with additional recruitment, as cortical, neural networks are associated with the need to exert cognitive control at a given moment, making impossible to reduce a decision to an automatic or procedural process. The analogy with plastic surgery had long been suggested by neuroscientist and neuroethicist Anjan Chatterjee, who coined the term “cosmetic neurology” and argued that, just like cosmetic surgery’s goal of improving an individual’s physical appearance, cosmetic neurology has also sought to improve an individual’s mental abilities (Chatterjee, 2013). Furthermore, while we can have an abstract ethical discussion about how such procedures and treatments should be limited, it won’t do much good. The public’s desire for personal enhancement is insatiable, and so neurologists should become comfortable with the idea of their healthy patients coming to them seeking “better brains.” Hence many issues raised nowadays in neuroethics repeat or recast some of the same problems already addressed in classic bioethics. To be sure, some neuroethical problems are unique as they relate to human consciousness, say, when dealing with neurocognitive enhancement or privacy concerns in neuroimaging. In effect, one may evoke all the medical benefits (such as permitting neurological enhancements will

potentially lead to an increase in overall quality of life, an increase in life expectancy, increased mental abilities, increased physical abilities) and weigh in as over against potential dangers, such as undermining societal values, happiness, and abilities gained through artificial means as not authentic or potentially undermining society's valuing of self-determination and personal efforts. Understandably cognitive enhancement could increase already existing inequalities as the richest 10% of adults own about 85% of the world's wealth. In contrast, the bottom half of the world adult population owns barely 1% of the global wealth. New technological enhancements will be highly expensive, making them only available to the extremely wealthy. If permitted, their use will exacerbate already existing inequalities between those who can afford such procedures and those who cannot. As Chatterjee remarked,

Several policies to maximize benefits and minimize harm would be helpful to mitigate the ethical concerns raised by cosmetic neurology... Enforceable policies concerning the use of cognitive-enhancing drugs to support fairness, protect individuals from coercion, and minimize enhancement related socioeconomic disparities should be implemented. Physicians, educators, regulators, and others professional groups will need to establish their own positions as cultural norms are debated and made explicit. (Chatterjee, 2013, p. 11)

4 Social Cognition and Neuroethics

Now, Swaab has convincingly argued that, insofar as neurons are the building blocks of our brains, human self-identity itself must be recast in materialist terms, so that a neuroscientific account does not have to presuppose any metaphysical, psychological or philosophical anthropology, say, to define what the self is or what is "being," after all. Human cells gather information, which is then integrated and processed, keeping decision-making on its basis and, finally, carrying out these decisions in the form of movements, changes in hormone levels, all the way up to the production of thoughts (Giordano and Gordijn. 2010, p. 2). Usually, when epistemologists and philosophers overall talk about beliefs, desires, judgments, thoughts and the like (so-called propositional attitudes) they are not attending to empirical or descriptive accounts of their neural correlates, but are rather attempting at an epistemic justification that could eventually corroborate moral reasoning, as they resort to thought experiments and idealized situations which cohere with cognitivist, noncognitivist or hybrid features of metanormative theories. Hence, depending on the way one handles the findings of empirical tests such as the Libet experiments or the Iowa gambling task,

traditional views of free will and decision making have come under attack and have been recast so that the theoretical assumptions and hypotheses fit into real-life complexity. Insofar as causal determinism is concerned, most descriptions and empirical accounts seem to be satisfactory up to a certain point, except when they seem to challenge our normative claims and expectations, for instance, that we assign moral responsibility to human agents or that we still believe in some conception of freedom of choice, even after we conduct these experiments and embrace their results. Norman Daniels (1979) has reclaimed Rawls's construal of wide reflective equilibrium as a methodological model for the process of justification in ethics, so as to account for the idea of making progress in moral arguments, a move that has been welcomed by different neuroscientists and moral relativists such as Damasio and Prinz, who favour the idea of accommodating initial disagreement on some moral judgments in the very social construction of a proto-self and emotivism. Since both authors have been evoked to strike a balance between extreme variants of reductionist naturalism and absolutist normativism, I think that by revisiting their respective conceptions of selfhood and metaethical relativism not only can we respond to aporetic approaches to the naturalism-normativity debate but can we also contribute to bridging the so-called explanatory gaps between between metaethics and bioethics, moral beliefs-*cum*-desires and neural correlates, phenomenal consciousness and computational processes.

Damasio's numerous contributions to cognitive neuroscience, including the somatic marker hypothesis, the Iowa gambling task, the social, conscious brain and several experiments on decision-making, cerebral lesions (of which the reconstruction of the railroad worker Phineas Gage's injury remains a classic paradigm) and neuroimaging leading up to his original attempts at developing an emotional theory of consciousness and emergentist selfhood (Damasio, 2005). From the very beginning of his research program, Damasio's criticisms of both behaviorist and functionalist alternatives to dualism pointed in the direction of combining reductionist and supervenience accounts of the mind-brain with emergentist takes on the nature of selfhood and subjectivity. In order to tackle the guiding question: "How does the brain make the mind conscious?" Damasio thus reviews two major working hypotheses in naturalizing the mind, namely: (1) the mind, and probably consciousness, have their origins in the subcortical circuits of the brain; (2) the key feature that makes the mind conscious is "the self process," which Damasio undertakes to analyze after changing his

mind regarding the subcortical origins of emotions (Damasio, 2010). Some major themes and problems in neurophilosophy are to be revisited, as we are to avoid reducing consciousness to mere wakefulness or inflating it towards a phenomenology of the free will (Cartesian and Kantian voluntarism): Damasio's provisional definition of consciousness as "a mind endowed with subjectivity" (2010, p. 4) is itself a recasting of his earlier criticisms of reductionist oversimplifications, especially regarding Libet's experiments and misuses of mechanical accounts, as opposed to mental states. As he wrote as early as 1994, "Realizing that there are biological mechanisms behind the most sublime human behavior does not imply a simplistic reduction to the nuts and bolts of neurobiology. In any case, the partial explanation of complexity by something less complex does not signify debasement" (Damasio, 2005, p. 125f.). Now, to reckon with consciousness as a mental state in which there is knowledge of one's own existence and of the existence of one's surroundings, Damasio deliberately adds the evolutionary "self process" to the mechanics of life management as "a basic mind process" that allows to reverse the narrative sequence of traditional accounts of consciousness:

Both basic homeostasis (which is non-consciously guided) and sociocultural homeostasis (which is created and guided by reflective conscious minds) operate as curators of biological value. Basic and sociocultural varieties of homeostasis are separated by billions of years of evolution, and yet they promote the same goal—the survival of living organisms—albeit in different ecological niches. That goal is broadened, in the case of sociocultural homeostasis, to encompass the deliberate seeking of well-being. It goes without saying that the way in which human brains manage life requires both varieties of homeostasis in continuous interaction. But while the basic variety of homeostasis is an established inheritance, provided by everyone's genome, the sociocultural variety is a somewhat fragile work in progress, responsible for much of human drama, folly, and hope. The interaction between these two kinds of homeostasis is not confined to each individual. There is growing evidence that, over multiple generations, cultural developments lead to changes in the genome. (Damasio, 2010, p. 31)

I would like to retain this mitigated naturalist approach because it convincingly conjugates the neurobiological evolution of the neocortex with the sociocultural, evolutionary notion of homeostasis with a view to understanding the neural construction of conscious minds, broadly construed within the broader picture of human enhancement. The very conception of enhancement entails a certain view of evolution and progress, and this cannot be trivialized inasmuch as it can't be taken for granted: on the contrary, it has been my contention throughout that a holist, naturalist account of evolution (both biological and social) must accommodate an account of moral progress,

just as suggested by different post-empiricist critics of innatism, behaviorism, and of the nature-nurture divide, such as Jesse Prinz.

5 Social Neuroethics

One ought to avoid, thus, any temptation to start from some standpoint of externality vis à vis moral dilemmas and decision-making processes, as required by empiricist variants of naturalism. Since there is no such a thing as freedom among natural phenomena (as Kantians argue, “free fall” and “free radicals” just attest to this facticity of natural determinism), there is no way of accounting for “free will” or the freedom of choice, given all the natural-biological and social-cultural conditioning. Humans have been hardwired to do most things they do –not only in vital, survival-like situations, say, flee or fight, but also in reward-punishment mechanisms and the like. And yet because human brains evolved beyond their ancestral reptilian (for the most basic instincts) and limbic functions and homeostatic mechanisms, their neocortical properties and functions point to a neuroplasticity and complex sociality that resists simplistic, causal-like explanations and descriptions (MacLean, 1990). To be sure, mathematically-based and statistically-laden relations, functions, and properties of human sociality might accurately do the descriptive job –but neuroplasticity means precisely that human sociality is to remain always open towards otherness – what cannot be formalized, what is said to be nonrelational, nonexistent or nonbeing. Social freedom points precisely in this direction, if one is to apply the critique of a neurophenomenological deficit to critical theory’s pragmatist turn, following Axel Honneth’s instigating conception (as over against negative and reflexive freedoms) (Honneth, 2011). In a nutshell, freedom is a construction of normative reason and a token of human sociality, just as naturalists conceive of it. This sounds, to be sure, like an old-fashioned way of keeping in mind that social cognitive neuroscience comes to the rescue of social theory in times of conceptual and political crises (Habermas, 1979). Precisely because it cannot provide the ultimate grounds for any conservative, libertarian or liberal attitudes towards cognitive enhancement, neuroethics is rather to be conceived, as I have argued, in terms of an interdisciplinary research program that, like Daniels’s recasting of a wide reflective equilibrium, keeps its theoretical views in constant revision and gauging by neural correlates and empirical findings, so that its provisional positions and prescriptions avoid particular commitments to any moral

comprehensive theory. Since cognitive enhancement and human wellbeing continue to make progress, as molecular techniques, fetal brain transplantation, gene and cell therapies continue to be developed –for instance, to treat Alzheimer and Parkinson patients—we can imagine that near-future generations will be able to experience their growing much older with a much healthier brain, if compared to ours. Such a promising scenario has prompted many advocates of a trans-human utopia to celebrate the end of humanity or human nature, as we have known it thus far, but this is not what strikes us as the most important lesson to be learned here. To start with, it is not only our view of human nature which has been radically transformed with the neuroscientific turn, but the very conception of nature (we might think of the shift from *physis* to *natura*, and then to mathematized nature as shown in mathematical physics) as such, if we assume that naturalism has only recently become widely accepted –as a metaphysical *and* scientific worldview capable of accommodating other beliefs, including folk psychology, common sense, and even religious beliefs. In effect, “naturalism” (also termed physicalism or materialism in a similar vein) has become even more plausible and reasonable as a starting-point if we simply assume that natural facts, events, phenomena or states of affairs in nature can be explained and investigated without resort to supernatural, religious or mysterious arguments, although they remain under continual, critical revision. Let’s face it, although it might sound just like a platitude or truism, that the Big Bang, biological evolution, and natural selection took place in space and time –and that they have become today what “the earth is round” was in the past centuries in so-called civilizational processes in most parts of the inhabited world – this is what we almost take for granted. And yet, what was there before the Big Bang? Why did life emerge, after all, “why is there anything rather than nothing?” Both Damasio and Prinz avoid delving into any metaphysical speculation, as they are rather following human experience, observation, and theoretical conceptions of mental and brain processes. Although I won’t explore this discussion here, I am assuming that both thinkers subscribe to naturalism and nonreductionist accounts of the mind-brain phenomena. As obvious as this might be for most philosophers of mind and neuroscientists, by assuming that all mind-talk presupposes an objective, neuroscientific account of physical, chemical, and biological causality, properties and functions, as mental states supervene on brain processes. Both Damasio and Prinz avoid the traditional type-token identity combinations, as they resort to a bodily theory of

emotions. For Prinz, emotions are individuated by various causes, which can allow for a systematic theory of emotions from a cognitive standpoint, defined as embodied appraisals continuously recalibrated by judgments to represent relations to the environment, differentiated from primary sensory relations. As recalibration files contain representations of all external causes associated with the emotion to be tokened, including judgements and feelings –very much like background beliefs in Rawlsian-like wide equilibrium. On Prinz’s account, “the cognitive concomitant of a cognitively elaborated emotion is not part of the emotion, but it plays a role in determining the identity of that emotion.” Accordingly, “cognitively elaborated embodied appraisals are not composite states... but embodied appraisals. The cognitions that elaborate them are prior conditions, not constituent parts” (Prinz, 2004a, p. 98f.). Hence, foundationalist or reductionist conceptions of normativity are equally untenable, not only because theological or dogmatic assumptions cannot be presupposed a priori (like in innatist, Cartesian type theories), but also because mitigated, transformative conceptions of naturalism and normativity must meet halfway (Prinz, 2002). So the self-defeating positions on cognitive enhancement (conservative argument for treatment, liberal improvements of patient functionality above normal levels, and transhumanist radical position that humans will achieve enhanced intellect, so as to eliminate suffering, enhance physical features and ultimately become free from illness, disease, and maladies). Relativism will inevitably obtain, as it has been the case with our liberal democracies (both in consolidated and emerging democracies). Hence metaethical reasoning will be in order, as we might follow Prinz (2010, p. 2) in approaching normative ethics as a social science, so that metaethical relativism would make a lot of sense for the arrangements of a pluralist society where conflicting moral, religious, and ideological comprehensive doctrines subscribe to a cultural relativism as much as it embraces the essentials of constitutional normativity. On Prinz’s account, moral psychology, metaethics, and an anthropology of morals can result in a recasting of normative questions in the final chapter. Prinz remarks that metaethics may find little of interest in the discussions of cultural history, and readers with an anthropological orientation may be put off by the discussions of moral ontology. a complete account of morality should touch on each of these dimensions, and I think the dimensions are mutually illuminating. For example, one can argue for relativism by presenting semantic evidence and one can argue by studying cultural variation. Both may provide

converging evidence, and the cultural observations motivate semantic inquiry and help to reveal why the semantic thesis may be so deeply important. Hence as Prinz put it,

Metaethical Relativism: The truth conditions of a moral judgment depend on the context in which that judgment is formed. If this thesis is correct, then a judgment that is true in one context can be false in another. Many people find this idea implausible, incoherent, and morally reprehensible. (Prinz, 2004b, p. 174)

And he goes on to add,

An action is right or wrong if there is a moral sentiment toward it. A moral sentiment is a disposition to have emotions in the approbation or disapprobation range. If descriptive moral relativism is true, then people have different moral sentiments toward the same things. If rightness and wrongness depend, metaphysically, on the sentiments people have, then the existence of differences in people's sentiments entails a difference in moral facts. Thus, metaethical relativism can be derived from descriptive relativism ...The truth conditions of a moral judgment depend on the context in which that judgment is formed, such that: A judgment that X ought to ϕ is true if and only if it is wrong not to ϕ on the value systems of both the speaker and X. A judgment that ϕ -ing is wrong is true if and only if ϕ -ing is the object of a sentiment of disapprobation among the contextually salient individual(s) (usually the speaker) (Prinz, 2004b, p. 179 f.).

6 The Neuroethics of Enhancement

According to Martha J. Farah (Farah et al., 2004) – together with Adina Roskies and Pat Churchland, one of the “founding women of neuroethics” —, since our growing ability to alter brain function can be used both to enhance the mental processes of normal individuals and to treat mental dysfunction in people who are ill, cognitive enhancement has raised many issues not only about what is safe, fair and otherwise morally acceptable, but also how new procedures have been pursued and developed, including the implantation of devices and tissue. Interestingly, the widespread use of psychostimulants like Adderall and Ritalin for cognitive enhancement by people without ADHD has been contrasted with the little conclusive evidence for effectiveness in this population, according to the available empirical literature, leaving motivational effects “to be at least as pronounced as cognitive effects, including the effects on attention” (Ilieva and Farah, 2013). Farah also cites her colleague Stephen Morse, who has long denounced the “fundamental psycho-legal error” (FPLE), regularly made by legal and social, psychological, and medical science academics, “of thinking that

causation of human choice by factors themselves outside the chooser's control excuses that chooser from moral responsibility." This is in full agreement with Damasio who boldly asserts,

The time will come when the issue of human responsibility, in general moral terms as well as on matters of justice and its application, will take into account the evolving science of consciousness. Perhaps the time is now. Armed with reflexive deliberation and scientific tools, an understanding of the neural construction of conscious minds also adds a welcome dimension to the task of investigating the development and shaping of cultures, the ultimate product of collectives of conscious minds. As humans debate the benefits or perils of cultural trends, and of developments such as the digital revolution, it may help to be informed about how our flexible brains create consciousness. For example, will the progressive globalization of human consciousness brought on by the digital revolution retain the goals and principles of basic homeostasis, as current sociocultural homeostasis does? Or will it break away from its evolutionary umbilical cord, for better or worse? (Damasio, 2010, p. 32)

In effect, as we revise our sense of "ourselves" and our ordinary folk psychology, aren't we also revisiting our basic, common sense intuitions, both moral and social, such as our basic beliefs and even something like a political, cultural shared "sense of justice"? This would be an interesting way of recasting Nagel's *what's it like* question in terms of a first-personish sense of consciousness, a phenomenal consciousness that revisits our very sense of being a self, and yet without assuming, say, that there is no consciousness without selfhood. Even qualia or first-personish phenomenal irreducibility, such as the one advocated by John Searle, refer back to physical processes, in ontological terms that cannot be confounded with the epistemological level of phenomenal consciousness accounts:

Consciousness is entirely caused by neurobiological processes and is realized in brain structures. The essential trait of consciousness that we need to explain is unified qualitative subjectivity. Consciousness thus differs from other biological phenomena in that it has a subjective or first-person ontology, but this subjective ontology does not prevent us from having an epistemically objective science of consciousness (Searle, 1995, p. 67).

The counterpart to Prinz's moral relativism is an emotional-cultural construction of moral normativity, which remains distinct from descriptive, natural phenomena:

Morality is a normative domain. It concerns how the world ought to be, not how it is. The investigation of morality seems to require a methodology that differs from the methods used in the sciences. At least, that seems to be the

case if the investigator has normative ambitions. If the investigator wants to proscribe, it is not enough to describe (Prinz, 2004b, p. 17).

That bioethics blossomed at a time when medical technology was undergoing significant growth and developing unprecedented powers tends to be overlooked, although analytic and continental approaches to the philosophy of technology thematized life-saving potential, the development of artificial reproduction, the fast growth of specialist knowledge and all the new technical possibilities, including reproductive technologies, genetic engineering, and life-enhancing techniques, such as biotechnologies and pharmacological innovations. Campbell, Gillet, and Jones can thus offer us a comprehensive definition of medical ethics as “an applied branch of ethics or moral philosophy that attempts to unravel the rights and wrongs of different areas of health care practice in the light of philosophical analysis” (Campbell, Gillett and Jones, 2006, p. 2). Hence, for many experts, medical ethics and bioethics are one and the same thing, as the former was conceived and developed within Jewish, Christian, and Islamic ethical traditions prior to the emergence of a post-secular, self-understanding of bioethics *via-à-vis* medical practices. Following the now classic, seminal work by Beauchamp and Childress, *Principles of Biomedical Ethics*, originally published in 1979 (already in its 6th edition), bioethicists set out to articulate a medical ethics in light of the four principles of respect for autonomy, non-maleficence, beneficence, and justice, as “these principles were argued to be mid-level principles mediating between high-level moral theory and low-level common morality, and they immediately became very popular in writings about medical ethics” (Beauchamp, 2003, p. 269). The descriptive and normative dimensions of theoretical insights and medical practices have been problematized as bioethics and medical ethics have been approached by different cultures and must meet the normative challenges of relativism. Hence, as Jonsen put it so felicitously, one must ask anew:

Is medical ethics a set of rules expressed in a written code promulgated by medical associations or is it a study of how the general principles of morality pertain to medical practice? Is it hardly ethics at all but instead a set of doctor-created conventions to preserve professional prestige and monopoly? (Jonsen, 2000, p. 8)

Neuroethics, as I have argued, deals with bioethical, moral problems both in abstract, theoretical terms (such as in metaethics and normative ethics, for instance, to define

what is good and what selfhood is all about) and in practical, concrete terms (applied and experimental ethics), especially related and informed by the empirical sciences and recent findings in neuroscience. To be sure, what is properly fearful and innovative in brain design enhancement is the ability to change something inherent in “human nature,” especially its genetic configuration and the implications of such changes. One might think of good examples in the neuropharmacological research and drug industry – both for enhancement and therapeutic purposes— as neurotransmitters, such as serotonin, and hormones, such as oxytocin, have been manipulated with the aim of reducing anxiety or stimulating empathy and social engagement. That would be quite different from using neurotechnologies and nanotechnology to change or manipulate the human genome itself, while seeking some cognitive and life-quality enhancement, in case it entailed some form of liberal eugenics or social Darwinism. Mutations and genetic manipulation itself would not *per se* be morally questionable, but the way they could be managed and implemented, in that they could compromise fundamental bioethical principles such as individual freedom, social justice, non-maleficence, and beneficence arising from particular cases. What one learns from neuroethical theories and conjectures, in the last analysis, is that moral dilemmas are not solved once and for all by simply resorting to neurotechnologies or to neural correlations supposedly establishing causal relationships, as it has been already pointed out. As studies in humans and other primates have revealed, different neural structures play a decisive role in the construction of social behavior and the so-called social brain: the amygdala, the ventromedial frontal cortices, and the right somatosensory cortex, among other structures, which seem to mediate perceptual representations of socially relevant stimuli, being reflexively sedimented in social, cultural codifications (Gazzaniga, 1985). In effect, the restrictions on the size of the social group arise from the ability of information processing in the brain, especially among primates, so that the neocortex eventually plays an important role in social evolution that leads us to our present complex sociality. Hence the human self only flourishes within human sociality. Gallagher (2013) has argued for a pattern theory of self, according to which a self is constituted by a number of characteristic features or aspects that may include minimal embodied, minimal experiential, affective, intersubjective, psychological/cognitive, narrative, extended, and situated aspects.

7 Sociality and Neuroethics

The “Event-Feature-Emotion” complex or EFEC developed by Moll *et alii* (2005) suggests that moral, cognitive phenomena emerge from the interplay between three main components associated with the recruitment of specific brain centers: knowledge of structured events (contextual representations in prefrontal regions), social traits and functional features (stored in the temporal cortex, such as perceptual memories), and central, basic emotional states, such as aggressiveness, sexual arousal, attachment, and sadness (represented in limbic and paralimbic structures). Models such as EFEC can generate hypotheses about the neural bases associated with different moral dilemmas from what might be the motivation and cognitive processes that underlie the decisions made. These hypotheses can be tested from the association of specific situations and dilemmas with specific networks whose functions (say, providing the basis for central emotional states) are well established. The social implications of this neuropsychological complex have been explored in neuroethics, neurolaw, bioethics, and applied ethics overall: “Moral cognitive neuroscience researchers have developed innovative paradigms for the scientific exploration of unique forms of human social behaviour.” (Moll *et al.*, 2005, p. 804) According to social epistemology, the emphasis on the primacy of emotions and the importance of common notions are not always equally crucial to characterize the formation of knowledge, agreement and disagreement between epistemic peers, and decision-making in social groups. In effect, the social dimension that is often emphasized in discussions about the social intellect, culminating with the notion of a Machiavellian intelligence and its presence in the world of primates, is the individual’s ability to interact successfully with social groups in order to predict and manipulate the behavior, the making and breaking of promises, and so on. The energy requirements of such a complex situation are deemed responsible for the large size of the primate brain, so that some evolutionary anthropologists, biologists, and colleagues in related fields postulated the hypothesis of a Machiavellian intelligence and the social brain hypothesis (Barrett and Henzi, 2005). And yet, the concept of social brain is not reducible to the individual manifestations of a social world around someone simply because the brain’s architecture rather reflects forms of social organization, language, and culture. On the other hand, one must actually avoid speaking of “social brain” to evoke the positivist idea that social behavior can be solely explained by brain functioning, as if the brain were the biological substrate that determines sociability and

human psychology, without taking into account reflexivity and social, cultural conditionings. The neurobiological and sociocultural evolutionary variables do seem to interact both ways, rendering the task of reconstructing the social brain even more complex and challenging. It is against such a complex semantic context that processes of moral decision-making that materialize in everyday life (instantiated in day-to-day, off-line activities and social interactions) and social media (which instantiate online, particularly in Facebook users and social behavioral games, such as Ultimatum and Dictator) can be measured in neuroimaging experiments (De Oliveira, 2013). These processes are thus investigated from the standpoint of the neural basis of decision-making, combining both empirical findings and theoretical assumptions, as one of the most intriguing tasks of neuroethics lies on the very level of its normative grounds, namely, whatever accounts for the moral justification of doing the right thing in given circumstances that can be described with the aid of neurotechnologies. The descriptive and experimental dimensions of most experiments fail to provide for such a moral justification, insofar as causality or causation cannot be taken for granted or satisfy ought-like normative claims –not every correlation turns out to be causal. Another feature that remains salient in Latin American research in neuroethics is that many active groups, centers and researchers are linked to confessional institutions, and this is very important as we consider the impact of neuroscience on worldwide reception of new technologies, particularly those that seem to defy traditional conceptions of human nature. It is thus very interesting to take into account the conjugated processes of democratization and secularization which shaped most Latin American societies, constitutions, and legislations after the several decades of military dictatorship that haunted almost all parts of the subcontinent, following the Cuban Revolution of 1959. Although most Latin American societies can be regarded as postsecular, constitutional democracies, one can observe varying degrees of liberal pluralism and remarkable contrasts between religious institutions that are clearly more secularized and those which remain more conservative and resistant to biotechnological and neurotechnological innovations, including the spousal of neuroethics.

Let me offer in closing a few remarks on the fate of neuroethics in Brazil and elsewhere in Latin America. Just as it happens in other areas of cutting-edge, interdisciplinary research in Latin America, most research in bioethics and neuroethics in this part of the world has been conducted in cooperation with U.S. and European

institutions through joint research programs, exchange initiatives, and international events that receive support or intellectual inspiration from major universities and programs in the Northern Hemisphere. With the evolution of neuroscience and neuroethics, models of human social cognition that are grounded in a new range of neuroimaging data also emerged. Given the fast-growing interest in neurotechnologies and neuroscientific research in Latin America, especially in Brazil, Argentina, and Chile, neuroethics will certainly become one of the most important areas of interdisciplinary, cutting-edge research in the next 5 years. The tremendous potential for human empowerment and social impact brought about by neuroethics attests such an optimistic prognosis, without invoking any utopian ideal of trans-human or post-human scenarios. In effect, the conjugation of the “social brain” with neuro-enhancement tends to be rather regarded as part of strategic investments and improvements in public health, so as to make biotechnologies more accessible to larger segments of society. Most brain research centers are thus somewhat committed to this social dimension of public health, as life expectancy and the population of aged people continue to grow in most Latin American countries and the neuroscientific study of the aging brain, especially the development of Alzheimer’s and Parkinson’s diseases and aging-related dementias, seek to investigate how sensory, motor, sleep, cognitive, and emotional functioning ultimately influence the quality of life of older individuals.

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exerts a quasi-absolutist monopoly over all competing principles in complex decision-making processes or proves itself too vague to account for the normative grounds of autonomy, beneficence, nonmaleficence, and justice. My contention here is that the neuroscientific turn in both analytic philosophy and in continental, phenomenological traditions has not only contributed to fostering multidisciplinary research in normative ethics, bioethics, and experimental philosophy but has also shown how moral dilemmas, decision-making, and normative problems are to be tackled as our increasing use of neurotechnologies and technological innovations unveil the neural bases of our complex, social behavior. Since the consolidation of bioethics as a research field in the 1970s and 80s, neuroscience and cognitive science have been brought in so as to distinguish two major strands of neuroethics: (1) a bioethical reflection on new techniques, ethical principles, and innovations produced by neuroscience and (2) an approach to moral problems in the so-called philosophy of mind, moral psychology, and more recently psychology and social epistemology (Roskies, 2002). To my mind, these two approaches are complementary and integrative for neuroethics, especially insofar as they bring together technological innovations and new understandings of human nature, not only in biological, neurological, and psychological terms but also socially and culturally. Neuroenhancement –even when primarily conceived in terms of cognitive and social-behavioral enhancement for healthy individuals without mental illness—tends to be more and more broadly conceived with a view to improving the processes of aging and minimizing age-related cognitive decline. It is indeed a salient feature of ongoing research in cognitive neuroscience and neuroethics to stress the “social brain” intertwining of emotion, memory, consciousness, and rational decision-making processes in both individual and collective existence. In Brazil, we find some good examples of this kind of interdisciplinary research programs in neuroethics, carried out by different programs, in medical and academic institutions. Thus, in order to fare well between Scylla and Charybdis, long-term perspectives for the ongoing, promising research in neuroethics in Brazil and Latin America must systematically avoid these two major extremes: necessitarian thought control and lack of scientific rigor in their research programs.

Note

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