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Naturalizing Neuroethics? A Syncretic Approach

John R. Shook and James Giordano

Abstract

Neuroethics is uniquely situated to socially interpret what brain sciences are learning about social and moral cognition while helping society hold neuroscientific research and neurotechnological applications to firm moral standards. Both tasks, if they are to be pursued successfully, must find ways to closely relate the “neuro” with the “ethical.” Keeping them apart has been the objective of nonnaturalist worldviews worried about scientism and reductionism, and now they complain about “neuroessentialism” and similar labels for dissolutions of agency and responsibility into mere brain activity. A nonnaturalistic neuroethics, on whatever metaphysical basis, insists that the biology of brains could not explain moral decisions or ground moral norms. We agree on that much, since the methodology of brain sciences presumes, and cannot replace, behavioral and psychological attributions of moral capacity and conduct. But the social and the neurological are always related through the anthropological; and that common basis is, not coincidentally, also where the ethical is grounded, as humanity upholds persons as bearers of moral worth and moral capacity. Neuroethics, by focusing on persons, need never resort to nonnaturalism to uphold what ultimately matters for ethics, and “naturalizing” neuroethics is also unnecessary for a humanity-centered neurobioethics.

Keywords: neuroethics, neurobioethics, naturalism, nonnaturalism, neuroscience, psychology, ethics

1. Introduction

In this chapter we present a syncretic approach to neuroethics, opening a conciliatory and convergent path forward for this interdisciplinary area. This approach can (1) align neuroethics with cognitive and social neuroscience as well as neurology and (2) situate neuroscience within a capacious philosophical naturalism. Keeping “neuro” primary to neuroethics for its perspective on humanity and keeping “ethics” for humanity central to neuroethics and its mission are paramount goals. Yet, those goals anticipate that neuroethics will have sufficient generality and applicability for all humanity. If the “neuro” and the “ethical” cannot be somehow harmonized, any such universality for neuroethics is unattainable. To that end, we argue here that relationships and continuities connecting (neuro)science and (neuro)ethics should be traced through domains of (natural) philosophy.

2. Metaethics and philosophy

Elsewhere, we have labeled the higher goal of universal relevance for humanity as a “cosmopolitan” aim, to solicit ethical wisdom from many cultures and elicit principles fostering ethics across societies. That aim falls under the purview of ethical theorizing, but it cannot be beholden to any particular ethical theory (such as deontology, consequentialism, virtue ethics, and so forth) or to the perennial debates among them. By setting a high methodological standard for ethical theorizing, a cosmopolitan approach enters the area of metaethics as well. However, cosmopolitan ethics, due to its attentiveness to humanity, strongly doubts that metaethics by itself is oriented toward human universality. Metaethics can easily amount to validations bestowed on one society’s conventional morality over other societies or fixations with some country’s linguistic habits about moral matters or a meditation upon a single culture’s moral tradition.

Just as metaphysics eventually lost its credibility as an adjudicator of moral norms, skepticism toward metaethics as a lone arbiter of moral concepts and truths has also been warranted. Will further refinements to metaphysics, or metaethics, at last permit deductions of binding moral principles? That also seems dubious, as proffered derivations continue to be a plentiful source of diverse and inconsistent results. That profligacy, at least, could be reasonably expected. No narrow intellectual base could sufficiently support broad practical norms.

Looking to metaethics to adjudicate ethical theorizing and deliver a principled moral framework relevant to humanity cannot be encouraged, unless a different kind of metaethics is engaged—one that is based upon and employs a metaphysics that consults other areas of philosophy and is informed by fields across the humanities, social sciences, and life sciences. Tentative efforts and initial results on our part illustrate how such a broadly informed metaethics can yield a cosmopolitan ethical framework, which in turn suggests some principled ethical guidelines [1, 2]. We do not replicate that work here. Instead we address certain metaethical and philosophical issues of neuroethics, as it develops as an interdisciplinarity of several scientific fields. Analyses and inquiries of a philosophical nature seem inescapable, and likewise, we regard them as essential to the success of neuroethics.

But taking neuroethics to be fundamentally indebted to philosophy would not be apparent upon a survey of the many fields contributing to neuroethical concerns and inquiries [3]. The centrality of philosophical inquiry comes into view with the primary assignments given to neuroethics as an interdisciplinary enterprise (consult [4, 5]). In brief, neuroethics (i) ponders the brain’s functions that are involved with personal identity, autonomy, and moral judgment/action and (ii) evaluates ways that neuroscience and technology (i.e., neuroS/T) can be developed and implemented while respecting human dignity and ethical norms. Indeed, as many have begun to acknowledge, each assignment yields information and actionable assessments that are relevant to the other assignment.

Harmony between these two assignments is hardly automatic or straightforward. Consider again the hazardous intersections of ethics and neuroscience where neuroethics has offered its supervision: first, the growing responsibility to advise or even adjust social views about psychological and neurological processes involved in moral and immoral conduct and second, the expanding ability to alter cognitive processes in ways affecting conceptions of the self and moral capacity. Unless neuroethics can coordinate the advice to society with an assessment of neuroscientific interventions, neuroethics will be unable to distinguish itself amid the cacophony of opinions about what brain science does and means.

For example, what neuroethical advice and guidance will be offered about these matters in the area of criminal justice? Imagine a defense lawyer making this argument during a trial: “Ladies and gentlemen of the jury, my client cannot be guilty because neuroscience shows that no brain is really capable of moral responsibility.” And then imagine another trial, where a judge imposes this sentence: “The court requires this convicted criminal to undergo neurological treatment to restore the capacity for moral responsibility.” As discourses in neurolaw are already indicating, such scenarios may not remain as fictional as they once seemed [6]. But it appears that a forced choice lies ahead: moral responsibility is either “in the brain” or it is not. Criminal law and legal theory require consistency and try to eliminate confusion. And many other civic institutions, social structures, and cultural frameworks will encounter conflicting interpretations of new neuroS/T. If and when neuroethical consultation is sought, will it be able to speak with one voice?

One might think that the aforementioned kinds of confusing scenarios would be preventable, or at least manageable, if neuroethics is steered in a less naturalistic direction. Assertions that “We are not just our brains!” have an appealing clarity. Disparaging labels for an excessive fixation upon brain functions now include “neurocentrism” and “neuroessentialism” to join the oft-heard charges of “reductionism” and “scientism” [7]. Such labels conceal more than they expose. How does a blanket rejection of scientific reductionism enlighten legal theory about utilizing empirical evidence that adjusting neurological functioning in a brain region actually makes a person less indifferent to hurting other people? How does a scornful repudiation of neuroessentializing illuminate a better definition of moral responsibility, while societies dispute different conceptions of culpability? Deeper philosophical investigations are evidently necessary.

3. Naturalistic and non-naturalistic neuroethics

The counterpart to naturalism would presumably be nonnaturalism, as a catch-all classification. Any alternative to naturalism sets up its opposition by pointing out selected matters that are (allegedly) unaccounted for and left inexplicable, by the resources of naturalism. A nonnaturalistic neuroethics therefore is a neuroethical approach taking the view that authentic moral responsibility and moral decision-making are matters requiring something unnatural about human beings. As unnatural, that feature cannot be generated or directly affected by natural causes, although natural causes may be able to interfere with human capacities (e.g., “free will” is held to be necessary for moral responsibility). In addition, a nonnaturalistic neuroethics would hold that authentic moral responsibility and moral deeds must meet normative standards that remain independent of physiological/neurological/cognitive processes, although such processes can help explain human behaviors (e.g., “ethical rules” must prevail as normatively binding).

In sum, nonnaturalistic neuroethics rejects what it takes to be the opposed position of “naturalistic neuroethics” and the neuro-reductionism and ethical naturalism which naturalistic neuroethics could foster. Such a nonnaturalistic perspective has its own distinctive stance on the two tasks assigned to neuroethics. For nonnaturalistic neuroethics, psychological matters needed for one’s moral capacity and moral conduct cannot be explained by any amount of information about the structures and functions of brains; and ethical norms needed for judging someone’s morality cannot be grounded by any amount of information from biology or neurology. Neuroscientific reductions or replacements of moral capacity are severely questioned (NB: for a current survey, see [8]), and attempts to ground ethics directly upon nature have long been scrutinized (a recent analysis is offered by [9]).

At this stage, we make our urgent plea for a philosophical pause, before the paired tasks of neuroethics proceed toward a contested divorce, and false dichotomies compel differing worldviews to collide. Although it is the case that “neuro” was hitched to “ethics” with the sort of haste that intellectual fads display, no such mistake was made with “neuroethics.” Rather, the true mistake is to presume that each component rests upon a basis that is independent from the other. Philosophy, even naturalistic philosophy, does not so presume, which receives our elaboration in what follows. We remain convinced that the “neuro” and the “ethical” can be closely related and their grounds should be somewhat integrated. We provocatively raise the question of “Naturalizing Neuroethics?” not to advocate for that one-sided agenda, or to instigate counter-responses from naturalism’s adversaries, but rather to point the way to a conciliatory philosophical setting that is broader than both sides.

Physician-philosopher Henk ten Have has recounted how the central tasks of any philosophy involve metaphysical, epistemological, anthropological, and ethical domains [10]. Naturalism is no exception. Naturalism, as a philosophical worldview, cannot avoid a metaphysical perspective about what counts as real. For naturalism, the universe, as it is empirically experienced and known, represents phenomena of nature, which are accessible for inquiry. On this view, the tools and methods of science—inclusive of those exploring and demonstrating how organisms arise, exist, and interact with each other and their ecologies—are applicable to the universe, and they are able (at least in the long run) to reveal the nature of anything accessible by inquiry.

To be sure, practicalities limit what can be investigated and understood, especially at the outer bounds of size and scale. The epistemic basis of naturalistic understanding, while ever-widening from the minute to the massive, has to respect constraints of technologies and techniques (i.e., the tools) that humans develop and employ to define what is known and can be known. From such capabilities and constraints arise hypotheses and theories. Through methods of observation, evaluation, and corroboration, hypotheses conjoin currently accepted facts and established physical laws to develop theories: well-substantiated, valid explanations of some aspect(s) of the natural world. Common definitions apply:

Fact: In science, an observation that has been repeatedly confirmed and for all practical purposes is accepted as “true.” Truth in science, however, is never final, and what is accepted as a fact today may be modified or even discarded tomorrow.

Hypothesis: A tentative statement about the natural world leading to deductions that can be tested. If the deductions are verified, it becomes more probable that the hypothesis is correct. If the deductions are incorrect, the original hypothesis can be abandoned or modified. Hypotheses can be used to build more complex inferences and explanations.

Law: A descriptive generalization about how some aspect of the natural world behaves under stated circumstances.

Theory: In science, a well-substantiated explanation of some aspect of the natural world that can incorporate facts, laws, inferences, and tested hypotheses ([11], 2).

Humans engage in their empirical inquiries with investigational and decisional tools they implement and put acquired knowledge (information, understandings, meanings) and invented technologies to use for other human enterprises. Everything about science is thoroughly human in embodiment as well as in intellect. Science (qua *Scientia*: knowing, and epistemic means and methods at hand),

no less than technology (qua *Techne-logos*: an accounting of tool development and use), falls entirely within the range, and limitations, of human activity in general. To examine what science does is to study ways that humanity lives. Humans use science and its tools for human endeavors: of comprehension, articulation, interaction with the world, survival, competition, cooperation, and flourishing. Examining, explaining, and proposing how humans enact and implement science include epistemic matters, but they all instantiate the anthropological domain.

Moreover, as Thomas Kuhn, Bruno Latour, and other philosophers and historians of science have elucidated, human ways of life and thought are able to influence and impact each other (for overviews, consult [12, 13]). Because science is a human endeavor, its conduct and employment render it amenable to interpretations and redirections based upon a worldview or philosophy, and/or on cultural tenets and traditional beliefs, which both reflect and foster particular sociocultural ideas, norms, and mores. As philosopher and cognitive scientist Daniel Dennett points out, there is no “philosophy-free” science, “only science whose philosophical baggage is taken on board without examination” ([14], 21). Furthermore, since science is part of the human drama of life, it cannot help but manifest an ethical dimension. Human enterprises pursue ends and defined “good(s)” which are taken to be valuable for something and someone, and thus the ethical domain is engaged.

For naturalism, or any other worldview, the “natural” cannot be very distant or detached from the “human” and the “ethical.” That relationship works both conceptually and pragmatically. Neuroethics is no exception, and indeed, it should exemplify that kind of relationship. If and when the “nature” of moral meanings, decisions, and actions are understood in connection with “neural” matters, *and* the nature of brain operations are understood in relation with meaningfully “moral” behaviors, then we can ascertain that the “neuro” is placed securely in “neuroethics” [15].

Can so much “neuro” for neuroethics be trusted? Nonnaturalistic neuroethics lacks that confidence. However, neuroscience cannot dictate what counts as morality and moral cognition, on scientific grounds alone. The neuroscience of morality cannot be scientifically conducted without guidance from social understandings of morality. Scientists premise inquiries into “moral” brain functioning upon ethical views about what shall count as moral situations, moral thinking, moral decisions, and moral values. No amount of cognitive neuroscience and neurology, on their own, could determine what counts as a moral emotion, value, or belief had by any subject. Nor do any of those fields, by themselves, identify the occurrence of a moral decision among the innumerable brain processes happening at any moment. Any perusal of current literature from those fields will illustrate such scientific modesty, independent of conclusions that researchers themselves happen to make about moral cognition (Ample citations to that body of literature are provided by [16–18]). A fuller discussion of neural processes involved in moral cognition, decision-making, and action is beyond the scope of this chapter, but the reader is referred to references cited above.

This methodological point deserves some additional expansion. Exploratory experiments proceed as a human subject (an encultured person, to be specific), who is told what to think about, is asked for a judgment about a certain situation, or the subject is watched for some specific type of conduct, etc., so that experimenters know when morality (among numerous matters for one’s attention) has some relation to ongoing cognitive processes. For example, Keith Yoder and Jean Decety survey key brain regions involved with the neuroscience of morality in this manner:

Converging evidence from functional neuroimaging studies and neurological observations indicates that the same regions implicated in social decision-making play

important specific roles in morality. Specifically, a set of interconnected regions encompassing the vmPFC, OFC, amygdala, TPJ, ACC, aINS, PCC, and dlPFC are reliably engaged across tasks which involve explicit or implicit evaluations of morally-laden stimuli, regardless of whether the outcome of an action affects the participants directly or another individual ([19], 285).

Neuroscientific terms predominate, yet key conditioning factors—such as “morally-laden stimuli”—are already deemed by experimenters to be *moral* prior to peering into the brain. In general, unless conditions are amenable to moral sensitivity and judgment, and a person could be mentally oriented under those conditions toward possible moral behaviors, nothing about that person’s brain could be interpreted as *moral* cognition [20]. Brains are not examined for signs of moral cognition, while subjects are focused on preparing a dinner meal or operating a lawn mower, unless some distinctively moral feature were added, and that cannot be added by brain science alone. Nevertheless, neuroethics would lack vital content and credibility without consulting neuroscience, so we believe our call for “no neuroethics without neuroscience” to be a sensible demand [21].

In short, epistemic, anthropological, and ethical frameworks together transmute a neurological assessment of brain activity into a neuroethical assessment of moral competency and performance. These methodological considerations lend reassurance that our approach does not conceal a “neuro”-reductionist or essentialist agenda. The discoveries of empirical relationships, stable connections, cause-effect patterns, and conditioning factors among observable events are the very opposite of concluding that some of those matters are unreal or “really” something else entirely. As an illustration, if two observed matters are empirically correlatable, they both remain just as real. References to neural correlates of psychological events, or to neurological events preceding and preparing behaviors, are not covert concessions to reductionism (see, e.g., [22, 23]). Neuroethics pursued in light of well-confirmed neuroscientific discoveries is just well-informed neuroethics, not a neuroethics already co-opted by a metaphysical worldview.

We have also endorsed a call for “no neuroscience without neuroethics” [21, 24], to support an agenda already promoting the development and impact of neuroethics. Yet neuroethics has characteristically been equivocal at best, and at worst mute (if not blind), about the corresponding call for “no neuroethics without neuroscience.” Ethical rules and principles ready-made for application to neuroethical issues relieve philosophical intercessions from the burden of incorporating cognitive and neuroscientific information about moral judgment and action. A *philosophical* neuroethics can do better than that. The dictum that “Is cannot imply an Ought” appeals to positivists, yet the converse notion that “Ought cannot supply an Is” is too simplistic and pessimistic as well. What is devoutly pursued with ethical devotion must make its material difference in human practices and psychological operations, or else it has no footing or effectiveness (anywhere) in the natural world.

To this point of our argument, we have defended our view that reflective philosophical approaches to neuroethics should acknowledge a “natural-ethical” continuity and entanglement. Due recognition of that relationship has not been naturalism’s insight alone. After all, idealisms, phenomenologies, existentialisms, and theologies have perennially sought to integrate the ideal and the real. Perhaps answering the question, “Which philosophy or philosophies best undergirds neuroethics?” need not choose one front-runner, if enough shared philosophical ground could be found.

Philosophical anthropology, as the fulcrum point midway between metaphysics and ethics, is ideally situated to stimulate realistic reflections on the capacity of various cultural constructs and practices to ground a global neuroethics. The

plurality displayed by ethics around the world is the key to forging an applicable ethics for humanity. Since it is naturally human for societies to develop and uphold their cultural ethos in diverse ways, all ethics is undeniably human in aspiration and service. Our search for a universally relevant neuroethics, securely grounded in humanity's capacities and endeavors, has brought us to the question of cultural diversity. How might neuroethics comport with, and best serve, the varied world-views, wisdom traditions, and philosophies exemplified in the global heterogeneity of the twenty-first century?

To begin with, neuroethics in definition and practice should not be viewed as only another subfield of applied ethics, despite certain advantages to doing so. If neuroethics were entirely subsumed under philosophical ethics, then its supervision by philosophy would bind neuroethics to the humanities, where human values can be insulated from scientific encroachment and the "naturalistic fallacy." That security might relieve anxieties about dissolving what is most "human" into the biological realm. However, neuroethics has already acquired and apprehended far too much from the behavioral and brain sciences to expect and propose that human values float freely and apart from individual and groups' plans, pursuits, and practices. We would hope that dismissing the scientific study of human beings and retreating into idealistic enclaves should not be the destiny of neuroethics.

Perhaps neuroethics is instead destined to play an ancillary role, supporting the lead taken by the brain sciences. Ethics, to be most realistic in nature, would presumably be discerned somewhere in the cognitive processes generating the actual moral judgments that humans make in the course of living (more or less) moral lives. That would allow neuroethics to appeal to ethical standards pre-approved by the embodied human brains of people trying to be moral in the first place, so neuroethics gets subsumed under the "neuroscience of morality." But that leaves moral psychology torn between two masters: shall it conform to strictures set by neuroscience (such as the eliminationist abandonment of much moral vocabulary as fictional folk psychology), or shall it remain loyal to one or another ethical theory (e.g., by taking the dualist route of awarding moral thinking an ontological status among other brain processes). Is neuroethics similarly caught between serving two masters?

Treating ethics as something that is materially instantiated in the brain, as many academic writings on neuroethics expect, is only a half-way measure that contorts both ethics and science. Crafting just-so interpretations "showing" how the brain does what this or that ethical theory requires amounts to committing the naturalistic fallacy in reverse! Far too much work on behalf of one preferred ethical theory or another has to be put into designing experiments and selectively interpreting results, from either experimental psychology or imaging neuroscience, to reasonably conclude that any ethical theory enjoys an obvious empirical advantage. Uniquely *moral* sentiments (and moral values, etc.) have no singular cerebral locale, and they are not ready-made for guiding purely *moral* judgments somewhere in the brain [8, 15, 25].

However, a third option beckons, presented by philosophical anthropology. Like neurophilosophy, and its revisions of philosophical issues with a due measure of scientific information, neuroethics could collaborate with the sciences in a pragmatic and judicious manner. Neuroethics can be suitably naturalistic with respect to advances in behavioral and brain sciences, without descending into a naturalistic submission to science. On that basis, then—and only then—will human "ethics" be fully aligned with "neuroethics."

Here, proponents of nonnaturalistic neuroethics may intercede, observing that their protection of moral values surely merits considerable anthropological validity. To reiterate, a nonnaturalistic neuroethics follows the lead of privileged

nonscientific or anti-scientific ideas about why and how people are moral/immoral, and it conforms to traditional moral norms endorsed by one culture or another. What could be more human? We cannot disagree, having drawn attention to the way that humanity flourishes through many diverse cultures.

However, such laudable diversity compels nonnaturalistic neuroethics to subdivide into numerous neuroethics, each beholden to one or another ethical tradition that seems as “natural” for human beings as any. What they retain in common is their reluctance to accept neuroscientific claims about human morality without ample reinterpretation and amendment in light of their tradition(s). And in this way, each nonnaturalistic neuroethics will tend to display a contradictory stance toward brain science: while denying that neurological evidence could count against preferred moral judgments, they expect brain evidence to somehow support the naturalness of those judgments. To conceal that tension, a nonnaturalistic neuroethics may appeal to two allies: moral philosophy (about what morality really is) and ethical theory (about principles grounding moral norms). A suitably parochial moral philosophy and a parochial ethical theory, sharing a sociocultural basis, can lend support a nonnaturalistic neuroethics. No admission of relativism will be forthcoming, as they purport to address what is genuinely moral for humanity.

A concern for human morality is admirable, yet nonnaturalistic neuroethics is not alone in its anthropological focus. Naturalistic neuroethics, by definition, will not follow ideas about humanity and human morality that prove incompatible with the behavioral, biological, and brain sciences. Inconsistency cannot be ruled out in advance. Naturalistic neuroethics is not silenced by claims to the effect that “What we think about morality cannot be placed in doubt by anything brains are doing.” For a naturalistic neuroethics, what human brains are really doing (and not doing) can expose mistaken ideas about how people are able (or fail) to behave morally.

Human capacities to learn morality and incorporate moral norms into daily conduct are studied closely by developmental, social, and moral psychology, and cultural anthropology can be coordinated with those fields [26]. As for cognitive and social neuroscience (i.e., what could be considered “neuroscience of moral cognition and behavior”), their role here is adjunct to psychology, since they presuppose that experimental subjects are sometimes thinking about, and occasionally performing, moral behaviors. Moral philosophy should cooperate with the behavioral sciences as well: moral philosophizing that ignores anthropology and psychology lacks sufficient content, devolving instead into either rationalism or sentimentalism.

4. Integrative, realistic, and neuroethics

Naturalistic neuroethics, heeding moral anthropology and psychology, finds that only socialized and encultured brains enact moral practices. As previously explained, no answer to “What is morality?” or “Who is moral?” will arrive solely from studying neural functioning and brain processes. A “naturalistic” stance for neuroethics should affirm, as firmly as nonnaturalistic neuroethics, that ethics will not be determined by brain sciences, and narrow “neuro-reductionism” will not replace moral philosophy or dictate neuroethics. Nevertheless, what human brains are really doing (and not doing) sets factual bounds to pondering how people are able (or fail) to behave morally.

Nonnaturalistic neuroethics would be best served by heeding and upholding the realistic advice that ethical theorizing should attend to actual moral capacities and practical methods able to improve them. Naturalistic neuroethics has the same

boundaries, attending to humanity as it has biologically evolved, and morality as actually practiced by humanity. Only socialized and encultured individuals (with their embodied brains) understand and enact moral practices; hence there is no such thing as a culture-free morality, unstructured by historical tradition embedded in some society or another. Any neuroethics relies on ethics and cannot create it. Ethics displays considerable variation with regard to concrete moral norms, but it never wavers from its primary devotion to moral agency and the moral subject, without which morality would be an empty gesture. It is ethics itself, a thoroughly human ethics that requires neuroethics to protect the human capacity for personal identity, dignity, and moral responsibility. And it is ethics that demands neuroethics to accordingly apply the highest ideals and principles for evaluating neuroS/T. Thus, the answer to the question, “From where does neuroethics get its ethics?”, can only be an anthropological answer: from humanity itself.

In comparison, nonnatural neuroethics cannot be as faithful to humanity as a whole. Fixations upon unnatural psychology and transcendent ethics only seem to satisfy metaphysical quests for permanence and certainty. Epistemic tensions tend to render any nonnatural neuroethics apart. Neuroscience cannot be conducted or trusted without reinterpretation from unscientific stands, while allies from moral philosophy and ethical theory are culture-bound and somewhat resistant to revision. Anthropological problems will also mount: human moral capacities are misconceived or minimized in contrast with idealized moral expectations, while the effects of neuroS/T interventions on moral behavior are regarded as mysterious or tenuous. Finally, when it comes to practical ethics, nonnatural neuroethics is bereft of resources for constructive ethical theorizing about workable ways to adjust and improve moral conduct.

A nonnatural neuroethics need not exalt metaphysics to the detriment of epistemology, anthropology, and ethics. A cultural heritage or religious tradition can avoid the problems inherent to a staunchly nonnatural neuroethics. Abandoning ethical principles and embracing reductionism is not necessary; indeed, naturalistic neuroethics is admittedly metaphysical about nature yet it need not, and should not, devolve into value-free physicalism. Even if metaphysical insights distinguish the worldview of a religious tradition, scientific insights into the whole human being and the human capacity for moral agency can be accepted and implemented for worthy ethical goals. As for naturalistic neuroethics, it must never lose sight of the personal self that bears moral worth and pursues moral ends. Here, it is important to assert that neuroscience—and neuroethics—must appreciate the functions of brains that are embodied in organisms that are embedded in their ecologies, inclusive of culture and religious traditions and practices [27]. In this way, naturalistic neuroethics will be indebted to ethical wisdom conveyed by cultural and religious heritages.

From this broader vantage point, the chasm separating naturalistic and non-naturalistic neuroethics no longer seems so wide. With anthropology and ethics leading this approach, a closer convergence is coming into view. We can now confess that the initial (and admittedly artificial) dichotomy that we erected between “naturalistic” and “nonnatural” neuroethics had to collapse. The shared humanistic basis to any ethical neuroethics, grounded in humanity and its moral ways, brings ethics and science into conceptual and practical coordination:

Only socialized and encultured brains understand and enact morality. No science has a basis for inquiries or judgments about morality apart from this human arena of life.

Moral values and norms are instilled and perpetuated through one or another culturally embedded heritage. No science is inquiring into anything about morality outside of these ongoing practices.

Cognitive science and neuroscience cannot independently understand human moral capacities. Alleged discoveries about moral cognition from brain science alone have, in fact, tacitly presumed psychological or philosophical frameworks.

Developmental, social, and moral psychology is best positioned to comprehend how people participate in the moral practices of their societies. Brain sciences yield adjunct inquiries to moral capacities by presuming frameworks from the behavioral sciences.

The behavioral and brain sciences are discovering the cognitive functions and neurological processes permitting moral behaviors. What human brains are really doing (and not doing) sets factual bounds to pondering how people are able (or fail) to behave morally.

Ethics offers bridges between moral practices that humans promulgate and desired moral ends worthy of pursuit. Ethics should deal with actual moral capacities and practical methods of improving them.

Effective means of understanding and improving real-world moral conduct are the practical tools in service of meeting moral standards and realizing ethical ends. Imagined threats to morality from nature and causality unwisely thwart motives to make a more moral world.

So long as humanity as a whole is an objective of both scientific study and ethical interest, then neuroethics can be cohesive and complete. “Naturalizing” neuroethics actually names no urgently needed project. As unwarranted worries over reductionism subside, “nonnaturalistic” neuroethics only names a reactionary agenda without a real opponent.

5. Conclusion

We posit that the truly urgent project facing neuroethics today is this query: *Given the cultural heterogeneity characterizing the global stage where advanced neuroS/T is emerging, how should neuroethics wisely learn from, and lend advice to, humanity’s worldviews, wisdom traditions, and philosophies?* Elsewhere we have urged that a cosmopolitan approach to ethics can elicit deliberations converging on useful principles [1, 28]. Here, we add our warning against emphasizing metaphysical differences or moral disagreements at the expense of our shared humanity, so that “neuro-bio-ethics” has a consolidated foundation and consists of more than just a hybrid term [22, 29]. A human-centered and person-oriented neuroethics will prove capable of assessing how neuroscience is exploring and affecting cognition, emotion, and behavior (inclusive of moral conduct), while upholding ethics to guide the application of neuroS/T as an endeavor seeking the good for humanity.

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