

*Neuroethics**Cashing the Reality Check*

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In an opinion piece in the *New York Times* last October, J.C. Markowitz claimed that “there’s such a thing as too much neuroscience,” and posited that the United States National Institute of Mental Health, under its prior leadership, may have engendered too much of a basic science focus, and in so doing, lost sight of the bigger picture of engaging research that is both reflective of, and directly applicable to, clinical contexts.<sup>1</sup> We believe that Markowitz’s call for clinically relevant research is laudable and worthy of heeding, but assertions of “too much neuroscience” might be tempered a bit. Not by claiming that there is too much brain research in general, but by examining if neuroscience is being conducted, communicated, apprehended, and/or used in right and good ways.

Any attempt to define and implement the “good” of brain science evokes the need for ethics. Formally defined as “studying, systematizing, and implementing concepts of right and wrong conduct,”<sup>2</sup> it is noteworthy that the word is taken from the Greek *ethikos* (ἠθικός: “character”) and *ethos* (ἦθος: “customs” or “habits”).<sup>3</sup> As the United States’s *Brain Research through Advancing Innovative Neurotechnologies* (BRAIN) initiative comes to a close, and the European Union’s *Human Brain Project* (HBP) prepares to enter its second phase (in the spring of 2018), it certainly is fitting to reflect on the character and customs of brain science, where such science may be headed, and what these activities and trends imply for its varied uses. This is particularly vital when engaging in ethical analysis that seeks to inform and affect policy, guidelines, or regulations.

It is true that there is an ethically defensible obligation for brain research—to inform and improve health, medicine, and quality of life, and to contribute to a deeper understanding of humans and other organisms; however, as Bruno Latour noted, science not only provides solutions, it also generates ever deeper and more expansive questions.<sup>4</sup> As a result, scientific facts can and often do change as a consequence of ongoing research. As a field, neuroethics can and should play a role in assessing, identifying, articulating, and advocating the sound conduct of brain science and its uses.<sup>5</sup> In this light, debates about if and why there may be something unique about neuroethics (e.g., the contingencies fostered by persistent unknowns of the brain, and their implications for applications of neuroscience) become moot. Regardless of certain aspects of the field that may render key distinctions, it is still “ethics.”

As such, it is important to recognize that sound ethical analysis begins with and proceeds from facts about the context, circumstance, agents, implementations, and actions involved. These facts should not be “alternative;” they need to be *real*. However, this is an age of increasing misinformation. Therefore, reality checks

become ever more vital, given the rapid movement of information via broad Internet distribution, professional and social media, tweets and re-tweets, and last but certainly not least, governmental postures that are trending away from factual deliberation. Such trends can incur inaccurate views and expectations of brain science. Assessing what is known, what is not known, and what is believed are all instrumental to ethical analysis.

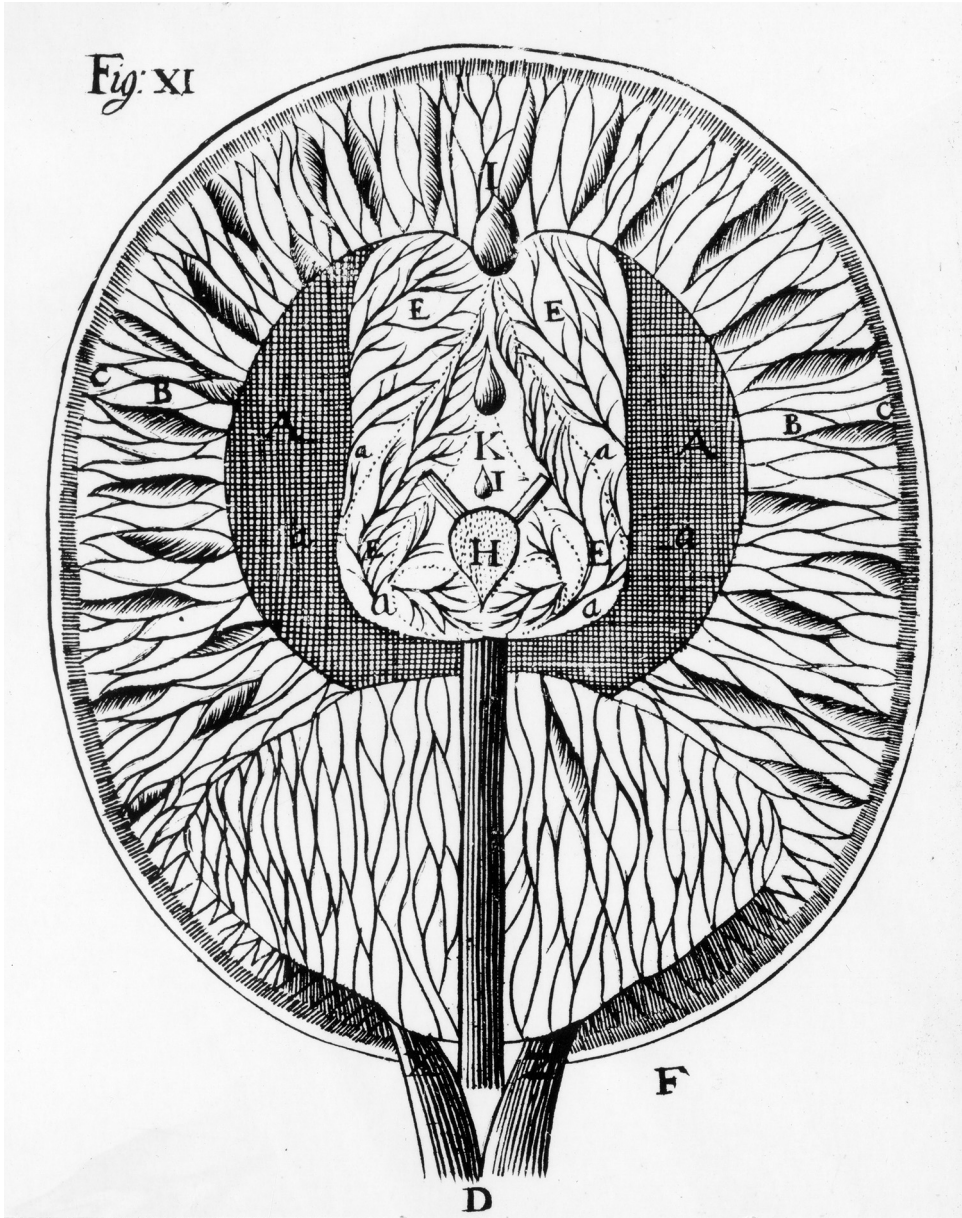
The real facts are that there is—and will be much—that brain science can do, and that there will remain much that it cannot. Identifying and apprehending the difference is a critical element of posing the neuroethico-legal and social questions of what can and should be done with the information and capabilities at hand, and what should be done about those which are lacking.<sup>6</sup> Fostering neuroethical discourses on the amplified benefits, risks, and harms of neuroscience and neurotechnology, and/or on distant “future shock” scenarios that posit effects far beyond the possibilities of neuroscientific capability serves little benefit, and is unnecessary. There are more than enough actual, current issues on which to focus and devote time and effort.

This is not to say that neuroethical discourse and engagement should not be forward looking. On the contrary, a view to the future is both important and necessary if proximate and more distal consequences of brain science are to be considered and prepared for; however, any such visions and models of the future should be firmly grounded in the realities of the present, and cognizant of lessons of the past. To paraphrase Socrates, to know where one is going, it is best to recognize both where one is, and from whence one has come.<sup>7</sup> It is vital to ask and assess what are facts and what are beliefs, and what these “mean” for the ways that brain science is embraced or refuted, and the ways that its information and tools are utilized or rejected. We believe that is a reality “check” that must reflect ongoing accounting of the capabilities and limitations of neuroscience *and* neuroethics, and be countersigned and cashed by both of these communities in order to sustain and advance their worth and value.

## Notes

1. Markowitz JC. There’s such a thing as too much neuroscience. *The New York Times* October 14, 2016, Opinion section; available at <http://www.nytimes.com/2016/10/15/opinion/theres-such-a-thing-as-too-much-neuroscience.html> (last accessed 13 Apr 2017).
2. *Merriam-Webster’s Collegiate Dictionary, Eleventh Edition*. Springfield, MA: Merriam-Webster Inc.; 2004, at 429.
3. See note 2, Merriam-Webster 2004.
4. Latour B. *Science in Action*. Cambridge MA: Harvard University Press; 1987.
5. Giordano J, Shook JR. Minding brain science in medicine: On the need for neuroethical engagement for guidance of neuroscience in clinical contexts. *Ethics in Biology Engineering and Medicine* 2015;6(1–2):37–42.
6. Giordano J. Neurotechnology as demiurgical force: Avoiding Icarus’ folly. In: Giordano J, ed. *Neurotechnology: Premises, Potential and Problems*, Boca Raton, FL: CRC Press; 2012:1–14.
7. Plato. *Phaedrus*. Oxford: Oxford University Press; 2002.

Fig: XI



Descartes' drawing of the human brain. From Rene Descartes *Opera Philosophica*, Frankfurt am Main, 1692. Photo credit: Image Select / Art Resource, NY. Reproduced by permission.