

# New Souls for Old

Anne Jaap Jacobson

John Hibbing's paper prompts me to outline three points: (1) Cognitive psychology and neuroscience are developing a new picture of human beings' cognitive functioning, broadly understood. One startling implication is that we often understand ourselves much less well than we are inclined to think. (2) It is seriously mistaken to think that reading the output of an fMRI experiment is as easy and clear as interpreting a realistic picture. Among other things, various interpretations of an output may be equally acceptable. (3) Neuroscience can, and has been, used to support widespread prejudices, such as the intellectual inferiority of the female mind. Major researchers have given in to the temptation to see their older views in the new sciences of the mind. The second and third points may well lead us to think that incorporating the insights from the new fields involves us in genuinely interdisciplinary research. At the very least, we cannot count on skimming through an admired text to find out what is right. But serious research that spans different disciplines can be immensely rewarding.

I am in considerable agreement with Dr. Hibbing's critique of the ten misconceptions, and such harmony could make a philosopher uneasy. Rather than manufacture a disagreement, though, I will offer three general comments that expand on themes raised by his important essay, while at the same time I urge a note of caution. The first brings together remarks to be found at various points in the paper, centering on the idea that cognitive psychology and neuroscience are developing a new picture of human beings' cognitive functioning, widely understood. The second advances a moderate warning; there are methodological problems that should make us cautious about, e.g., seeing fMRI representations as literally pictures of the brain in action. Were it not already owned by computer science, the slogan "garbage in, garbage out," would capture the general point of my third comment. To put it more bluntly: deeply rooted cultural preconceptions can withstand the new approach to human nature and, more disturbingly, some advocates of the new approach to human nature too often take such preconceptions for granted, and thus present ideas that are less "new" than sometimes appears.

Though I completely agree that understanding human actions, thoughts, and feelings is wonderfully illuminated by recent cognitive studies, my view of the access many of us have to these studies is more skeptical and even more

negative than Hibbing's. What is needed is genuinely interdisciplinary work. This is well worth doing. At the same time, when we scholars rightly embrace exciting new knowledge produced in adjacent fields, we should also be attentive to the limits of this knowledge.

## The New Style

The scope of the challenges of the new work on cognition is evident from this passage:

We all believe that we are capable of seeing what's in front of us, of accurately remembering important events from our past, of understanding the limits of our knowledge, of properly determining cause and effect. But these intuitive beliefs are often mistaken ones that mask critically important limitations on our cognitive abilities . . . . As we go through life, we often act as though we know how our minds work and why we behave the way we do. It is surprising how often we really have no clue.<sup>1</sup>

Nor is it just as ordinary folks that we have no clue. Much academic discussion reveals a total ignorance of many of the limits of our knowledge, even in the hands of those whose disciplines have focused for millennia on the mind and knowledge. For example, little in recent philosophical work on perception shows awareness of the highly partial intake of information that our vision at any one time gives us. It is a commonplace of vision theory that we get much less information at any one point in time than we tend to think we do. As Pylyshyn notes,

less information is encoded with each glance than has been previously assumed. Research by several workers has shown that information about the properties and relative locations of small changes in a scene are rarely noticed during saccades. Nevertheless, humans have the impression of a large, panoramic scene. Such a scene does indeed exist, but it is in the real world and not in the mind.<sup>2</sup>

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Nor should we think that the revisions being put in place by the cognitive sciences are merely replacing dark figures that have survived from philosophy's ancient past. Much of what we are hearing may either render pointless views very widely held today, or present very surprising alternatives.

One of the early revisionists makes this very clear. Antonio Damasio labels his first book *Descartes' Error*, but he has contemporary views in mind.<sup>3</sup> The challenged idea is that beliefs and decisions are improved when they are subject to the scrutiny of reason. Damasio sees reason as too inert to get us into action and too error prone to be so thoroughly trusted. One stunning result is that we misunderstand people if we see them as perfectly rational agents, as theorists grounded in economics have long done.<sup>4</sup>

Other recent revisions encompass memory. Memory is often spoken of as a container where everything stays once it is put in there. Not so. Our memory, like our vision, suits our evolutionary needs, which in general did not evolve to develop a detailed representation of our environment. At the same time, human beings may give detailed and accurate reports supposedly based on memory or vision. It is really too early to know what exactly is going on here, but it is quite possible that capacities like memory and vision owe much more to our social context than to supposedly independent minds.

Many readers will know of Chabris and Simon's famous gorilla experiment. They had a group of students, divided into two teams, throwing a ball to one another in front of an elevator. Members of the audience were asked how often one team had the ball. As the tossing game went on, a woman in a gorilla costume came out, moved through the group of players and then left. She also thumped her chest, so she wasn't trying to pass unnoticed. But for approximately 70 percent of the group, she did pass through without being seen.

What we learned from this is that seeing is not like taking camera pictures. One thing that makes a very significant difference is that vision is dependent on attention, which itself is finite. Use your attention on counting, and you may miss the gorilla.

It is a short road from understanding reactions to influencing actions. Suppose telling someone that people physically close to her are going to do such-and-such increases the probability that she will do it too. What would happen if a political campaign made use of such facts?

In fact, using such data appears to have had a good run in Obama's 2012 campaign.<sup>5</sup> And the strategy did work. It is true of many of us that our vote was far from the product of careful data collecting and reasoning.

## Seeing the Brain at Work?

Perhaps our eyes are not like cameras, but can't a machine be just like one? And in particular, don't fMRI machines just take pictures of what is going on in our brains at some

one time? Unfortunately, there are a number of problems with this view. One concern is that fMRI measures localized activations, while the brain may be more of a net-like structure. In this comparison, fMRI readings can remind one too well of phrenology. Another problem with the supposed objectivity of brain pictures is that the degree of resolution is to some extent a matter of the experimenter's choice. One person's decision might render another's as containing 20 percent false positives. In addition, some neuroscientists may publish results based on a sample size that others regard as at best fit for a pilot study.

The ordinary public can easily be taken in by pictures, but even admirable neuroscientists may fail to be properly conscientious. There is a well known case of comparative brain scanning reported in the *New York Times* in November 2007 that received quite thorough criticism.<sup>6</sup> Some of its conclusions seem correct, whatever the value of the evidence. Among them was: John Edwards had a trust problem, sexism was declining, and Mitt Romney appeared to be a promising candidate. But does the fact that Edwards' image activated subjects' insulas, which can register disapproval, *show* that he has a trust problem? Martha Farah, director of cognitive science at the University of Pennsylvania, thinks not:

Why do I doubt the conclusions reported in today's Op Ed piece? The problems I see have less to do with brain imaging per se than with the human tendency to make up "just so" stories and then believe them. The scattered spots of activation in a brain image can be like tea leaves in the bottom of a cup—ambiguous and accommodating of a large number of possible interpretations. The Edwards insula activation might indicate disgust, but it might also indicate thoughts of pain or other bodily sensations or a sense of unfairness, to mention just a few of the mental states associated with insula activation. . . . The Romney amygdala activation might indicate anxiety, or any of a number of other feelings that are associated with the amygdala—anger, happiness, even sexual excitement . . .

With this many ways of splitting and regrouping the data, it is hard not to come upon some interpretable patterns. Swish those tea leaves around often enough and you will get some nice recognizable pictures of ocean liners and tall handsome strangers appearing in your cup!

How can we tell whether the interpretations offered by Iaconi and colleagues are adequately constrained by the data, or are primarily just-so stories? By testing their methods using images for which we know the "right answer." If the UCLA group would select a group of individuals for which we can all agree in advance on the likely attitudes of a given set of subjects, they could carry out imaging studies like the ones they reported today and then, blind to the identity of personage and subject for each set of scans, interpret the patterns of activation.<sup>7</sup>

Visual results for fMRI can look to be like pictures, which until recently were thought never to lie. However, a number of factors may allow us to derive quite different representations from the same experiment. And features like sample size may affect the degree of credibility that should be accorded experimenters' claims.

## Reconditioned Bigotry

One might hope that at least on the very large topics, a scientific consensus indicates a convergence on truth. Unfortunately, this is not so. A google search under “fmri IQ African Americans” brings up unpleasant results that supposedly demonstrate the allegedly unavoidable inferiority of African American IQ.<sup>8</sup> Equally, work drawing on the brain science of gender is replete with generalizations that, for example, assure women that their brains have evolved to flourish in standard late twentieth-century Western gender roles. Such striking coincidences between the supposed results of “brain science” and deeply rooted modern gender norms should surely raise the eyebrows of serious *social* scientists.

These concerns lie at the center of my recent co-edited book, *Neurofeminism: Issues at the Intersection of Feminist Theory and Cognitive Science*. In her contribution to that volume, “Beyond Neurosexism: Is It Possible to Defend the Female Brain?”, my co-editor Robyn Bluhm nicely surveys the variations in the broad literature and reveals its weaknesses.<sup>9</sup> Cordelia Fine has gone even further, challenging the work of Simon Baron-Cohen, the world-famous professor of developmental psychopathology at Cambridge University, who is regarded by many as the world’s top authority on autism.<sup>10</sup>

Baron-Cohen maintains that the autistic mind is really the male mind taken to an extreme. He argues that the fascination with systematizing and forming hierarchies that characterizes many autists is in a lesser form a primary characteristic of the male mind. Women, in contrast, are very good at empathy, at which men are usually not very skilled. Much of Baron-Cohen’s thesis seeks support in the idea that the differences between male and female brain are caused in utero.

His speculations on how binary brain types have evolved over the eons, which have the male brain co-opting traits like power and leadership, leaving the female brain with gossip and motherhood, may ruffle a few feathers. Perhaps the most refreshing section of this cerebral volume is devoted to what he calls “extra” examples of the male brain-autism and its cousin, Asperger’s syndrome. The author of previous autism books, including *Mind-blindness*, Baron-Cohen offers curious lay readers a provocative discussion of male-female differences.<sup>11</sup>

Part of what the problems we have raised mean is the disappointing fact that one cannot peruse one article or one journal or one book and discover the latest, best position on complicated and sometimes deeply-contested matters of neuroscience. For when one attempts to do this, one might just as well wind up hitting a vein of bigotry as tapping into scientific progress. Further, the various parts of the neuroscience field may develop at very different speeds. The problem we saw Pylyshyn worry about—how do we get a whole object out of the products of our glimpses of a scene—suddenly seems to have gripped a large number of researchers by 2008, and as a result what seemed earlier a correct

way to characterize vision science is no longer in touch with the latest literature. Neuroscientific “truths” are in this sense no different than the “truths” of any science—they are conjectural, contestable, and refutable.

I agree with John Hibbing that incorporating neuroscience into the study of politics and society has great promise. But it needs to be an interdisciplinary effort undertaken with a great deal of caution. One of the remarkable and very fortunate features of interdisciplinary research in neuroscience itself is that just about everyone realizes how much they do not know. One can be up front about one’s ignorance. Among the most convincing arguments Hibbing advances appears on page 479, where he writes:

Perhaps the primary reason for incorporating biological measures into research on politics is that many of the forces shaping orientations, political and otherwise, do not reach the level of conscious awareness. Empirical political scientists currently rely heavily on survey self-reports. The basic approach is to ask people to describe their reactions, moods, perceptions, and thoughts. The problem with this approach—and I should add that I use survey self-reports extensively in my own research—is that people simply are not aware of a significant portion of their general emotional states or of their full responses to stimuli.

As a neurophilosopher who is also a feminist, I would simply add that this lack of awareness is a general feature of social life, and that scientists, whether political scientists or neuroscientists, are as vulnerable to such cognitive limits as any other social agents.

## Notes

- 1 Chabris and Simons 2010, xi-xii.
- 2 Pylyshyn 2000, 203.
- 3 Damasio 2005.
- 4 Much of the work applying the new view to economics is developed by Kahneman and Tversky. See Kahneman 2002; Volz, Schubotz, and von Cramon 2005.
- 5 Carey 2012.
- 6 *New York Times*, “This Is Your Brain on Politics,” <http://www.nytimes.com/2007/11/11/opinion/11freedman.html> (accessed March 16, 2013).
- 7 Farah 2007.
- 8 See, for example, “Race Differences In Average IQ Are Mostly Genetic, Not Cultural,” at <http://www.biology-online.org/biology-forum/about11606.html>, (accessed March 3, 2013) or “Brain size=IQ level theory (Blacks vs. Whites & Asians),” at <http://rensure.com/general77/racedif.htm>, (accessed March 3, 2013).
- 9 Bluhm, Jacobson, and Maibom 2012.
- 10 Fine 2005, 2010.
- 11 See review of *The Essential Difference: The Truth about the Male and Female Brain* by Simon Baron Cohen in Publishers Weekly, available at <http://>

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