Neurobobagem

Your brain on pseudoscience: the rise of popular neurobollocks

Steven Poole

Fonte:
http://www.newstatesman.com/culture/books/2012/09/your-brain-pseudoscience
acesso em 19/11/2012.

An intellectual pestilence is upon us. Shop shelves groan with books purporting to explain, through snazzy brain-imaging studies, not only how thoughts and emotions function, but how politics and religion work, and what the correct answers are to age-old philosophical controversies. The dazzling real achievements of brain research are routinely pressed into service for questions they were never designed to answer. This is the plague of neuroscientism – aka neurobabble, neurobollocks, or neurotrash – and it's everywhere.

In my book-strewn lodgings, one literally trips over volumes promising that "the deepest mysteries of what makes us who we are are gradually being by the simple expedient of adding the prefix "neuro" to whatever you are talking about. Thus, "neuroeconomics" is the latest in a long line of rhetorical attempts to sell the dismal science as a hard one; "molecular gastronomy" has now been trumped in the scientised gluttony stakes by "neurogastronomy"; students of Republican and Democratic brains are doing "neuropolitics"; literature academics practise "neurocriticism". There is "neurotheology", "neuromagic" (according to *Sleights of Mind*, an amusing book about how conjurors exploit perceptual bias) and even "neuromarketing". Hoping it's not too late to jump on the bandwagon, I have decided to announce that I, too, am skilled in the newly minted fields of neuroprocrastination and neuroflâneurship.

Illumination is promised on a personal as well as a political level by the junk enlightenment of the popular brain industry. How can I become more creative? How can I make better decisions? How can I be happier? Or thinner? Never fear: brain research has the answers. It is self-help armoured in hard science. Life advice is the hook for nearly all such books. (Some cram the hard sell right into the title – such as John B Arden's *Rewire Your Brain: Think Your Way to a Better Life*.) Quite consistently, heir recommendations boil down to a kind of neo- Stoicism, drizzled with brain-juice. In a selfcongratulatory egalitarian age, you can no longer tell people to improve themselves morally. So self-improvement is couched in instrumental, scientifically approved terms.

The idea that a neurological explanation could exhaust the meaning of experience was already being mocked as "medical materialism" by the psychologist William James a century ago. And today's ubiquitous rhetorical confidence about how the brain works papers over a still-enormous scientific uncertainty. Paul Fletcher, professor of health

neuroscience at the University of Cambridge, says that he gets "exasperated" by much popular coverage of neuroimaging research, which assumes that "activity in a brain region is the answer to some profound question about psychological processes. This is very hard to justify given how little we currently know about what different regions of the brain actually do." Too often, he tells me in an email correspondence, a popular writer will "opt for some sort of neuro-flapdoodle in which a highly simplistic and questionable point is accompanied by a suitably grand-sounding neural term and thus acquires a weightiness that it really doesn't deserve. In my view, this is no different to some mountebank selling quacksalve by talking about the physics of water molecules' memories, or a beautician talking about action liposomes."

Shades of grey

The human brain, it is said, is the most complex object in the known universe. That a part of it "lights up" on an fMRI scan does not mean the rest is inactive; nor is it obvious what any such lighting-up indicates; nor is it straightforward to infer general lessons about life from experiments conducted under highly artificial conditions. Nor do we have the faintest clue about the biggest mystery of all – how does a lump of wet grey matter produce the conscious experience you are having right now, reading this paragraph? How come the brain gives rise to the mind? No one knows.

So, instead, here is a recipe for writing a hit popular brain book. You start each chapter with a pat anecdote about an individual's professional or entrepreneurial success, or narrow escape from peril. You then mine the neuroscientific research for an apparently relevant specific result and narrate the experiment, perhaps interviewing the scientist involved and describing his hair. You then climax in a fit of premature extrapolation, inferring from the scientific result a calming bromide about what it is to function optimally as a modern human being. *Voilà*, a laboratory-sanctioned Big Idea in digestible narrative form. This is what the psychologist Christopher Chabris has named the "story-study-lesson" model, perhaps first perfected by one Malcolm Gladwell. A series of these threesomes may be packaged into a book, and then resold again and again as a stand-up act on the wonderfully lucrative corporate lecture circuit.

Such is the rigid formula of *Imagine: How Creativity Works*, published in March this year by the American writer Jonah Lehrer. The book is a shatteringly glib mishmash of magazine yarn, bizarrely incompetent literary criticism, inspiring business stories about mops and dolls and zany overinterpretation of research findings in neuroscience and psychology. Lehrer responded to my hostile review of the book by claiming that I thought the science he was writing about was "useless", but such garbage needs to be denounced precisely in defence of the achievements of science. (In a sense, as Paul Fletcher points out, such books are "anti science, given that science is supposed to be our protection against believing whatever we find most convenient, comforting or compelling".) More recently, Lehrer admitted fabricating quotes by Bob Dylan in *Imagine*, which was hastily withdrawn from sale, and he resigned from his post at the *New Yorker*. To invent things supposedly said by the most obsessively studied popular artist of our age is a surprising gambit. Perhaps Lehrer misunderstood his own advice about creativity.

Mastering one's own brain is also the key to survival in a dog-eat-dog corporate world, as

promised by the cognitive scientist Art Markman's *Smart Thinking: How to Think Big, Innovate and Outperform Your Rivals*. Meanwhile, the field (or cult) of "neurolinguistic programming" (NLP) sells techniques not only of self-overcoming but of domination over others. (According to a recent NLP handbook, you can "create virtually any and all states" in other people by using "embedded commands".) The employee using such arcane neurowisdom will get promoted over the heads of his colleagues; the executive will discover expert-sanctioned ways to render his underlings more docile and productive, harnessing "creativity" for profit.

Waterstones now even has a display section labelled "Smart Thinking", stocked with pop brain tracts. The true function of such books, of course, is to free readers from the responsibility of thinking for themselves. This is made eerily explicit in the psychologist Jonathan Haidt's *The Righteous Mind*, published last March, which claims to show that "moral knowledge" is best obtained through "intuition" (arising from unconscious brain processing) rather than by explicit reasoning. "Anyone who values truth should stop worshipping reason," Haidt enthuses, in a perverse manifesto for autolobotomy. I made an Olympian effort to take his advice seriously, and found myself rejecting the reasoning of his entire book.

Modern neuro-self-help pictures the brain as a kind of recalcitrant Windows PC. You know there is obscure stuff going on under the hood, so you tinker delicately with what you can see to try to coax it into working the way you want. In an earlier age, thinkers pictured the brain as a marvellously subtle clockwork mechanism, that being the cutting-edge high technology of the day. Our own brain-as-computer metaphor has been around for decades: there is the "hardware", made up of different physical parts (the brain), and the "software", processing routines that use different neuronal "circuits". Updating things a bit for the kids, the evolutionary psychologist Robert Kurzban, in *Why Everyone (Else) Is a Hypocrite*, explains that the brain is like an iPhone running a bunch of different apps.

Such metaphors are apt to a degree, as long as you remember to get them the right way round. (Gladwell, in *Blink* – whose motivational selfhelp slogan is that "we can control rapid cognition" – burblingly describes the fusiform gyrus as "an incredibly sophisticated piece of brain software", though the fusiform gyrus is a physical area of the brain, and so analogous to "hardware" not "software".) But these writers tend to reach for just one functional story about a brain subsystem – the story that fits with their Big Idea – while ignoring other roles the same system might play. This can lead to a comical inconsistency across different books, and even within the oeuvre of a single author.

Is dopamine "the molecule of intuition", as Jonah Lehrer risibly suggested in *The Decisive Moment* (2009), or is it the basis of "the neural highway that's responsible for generating the pleasurable emotions", as he wrote in *Imagine*? (Meanwhile, Susan Cain's *Quiet: the Power of Introverts in a World That Can't Stop Talking* calls dopamine the "reward chemical" and postulates that extroverts are more responsive to it.) Other recurring stars of the pop literature are the hormone oxytocin (the "love chemical") and mirror neurons, which allegedly explain empathy. Jonathan Haidt tells the weirdly unexplanatory micro-story that, in one experiment, "The subjects used their mirror neurons, empathised, and felt the other's pain." If I tell you to use your mirror neurons, do you know what to do? Alternatively, can you do as Lehrer advises and "listen to" your prefrontal cortex? Self-help

can be a tricky business.

Cherry-picking

Distortion of what and how much we know is bound to occur, Paul Fletcher points out, if the literature is cherry-picked.

"Having outlined your theory," he says, "you can then cite a finding from a neuroimaging study identifying, for example, activity in a brain region such as the insula . . . You then select from among the many theories of insula function, choosing the one that best fits with your overall hypothesis, but neglecting to mention that nobody really knows what the insula does or that there are many ideas about its possible function."

But the great movie-monster of nearly all the pop brain literature is another region: the amygdala. It is routinely described as the "ancient" or "primitive" brain, scarily atavistic. There is strong evidence for the amygdala's role in fear, but then fear is one of the most heavily studied emotions; popularisers downplay or ignore the amygdala's associations with the cuddlier emotions and memory. The implicit picture is of our uneasy coexistence with a beast inside the head, which needs to be controlled if we are to be happy, or at least liberal. (In *The Republican Brain*, Mooney suggests that "conservatives and authoritarians" might be the nasty way they are because they have a "more active amygdala".) René Descartes located the soul in the pineal gland; the moral of modern pop neuroscience is that original sin is physical – a bestial, demonic proto-brain lurking at the heart of darkness within our own skulls. It's an angry ghost in the machine.

Indeed, despite their technical paraphernalia of neurotransmitters and anterior temporal gyruses, modern pop brain books are offering a spiritual topography. Such is the seductive appeal of fMRI brain scans, their splashes of red, yellow and green lighting up what looks like a black intracranial vacuum. In mass culture, the fMRI scan (usually merged from several individuals) has become a secular icon, the converse of a Hubble Space Telescope image. The latter shows us awe-inspiring vistas of distant nebulae, as though painstakingly airbrushed by a sci-fi book-jacket artist; the former peers the other way, into psychedelic inner space. And the pictures, like religious icons, inspire uncritical devotion: a 2008 study, Fletcher notes, showed that "people – even neuroscience undergrads – are more likely to believe a brain scan than a bar graph".

In *The Invisible Gorilla*, Christopher Chabris and his collaborator Daniel Simons advise readers to be wary of such "brain porn", but popular magazines, science websites and books are frenzied consumers and hypers of these scans. "This is your brain on music", announces a caption to a set of fMRI images, and we are invited to conclude that we now understand more about the experience of listening to music. The "This is your brain on" meme, it seems, is indefinitely extensible: Google results offer "This is your brain on poker", "This is your brain on metaphor", "This is your brain on diet soda", "This is your brain on God" and so on, ad nauseam. I hereby volunteer to submit to a functional magnetic-resonance imaging scan while reading a stack of pop neuroscience volumes, for an illuminating series of pictures entitled *This Is Your Brain on Stupid Books About Your Brain*.

None of the foregoing should be taken to imply that fMRI and other brain-investigation

techniques are useless: there is beautiful and amazing science in how they work and what well-designed experiments can teach us. “One of my favourites,” Fletcher says, “is the observation that one can take measures of brain activity (either using fMRI or EEG) while someone is learning . . . a list of words, and that activity can actually predict whether particular words will be remembered when the person is tested later (even the next day). This to me demonstrates something important – that observing activity in the brain can tell us something about how somebody is processing stimuli in ways that the person themselves is unable to report. With measures like that, we can begin to see how valuable it is to measure brain activity – it is giving us information that would otherwise be hidden from us.”

In this light, one might humbly venture a preliminary diagnosis of the pop brain hacks’ chronic intellectual error. It is that they misleadingly assume we always know how to interpret such “hidden” information, and that it is always more reliably meaningful than what lies in plain view. The hucksters of neuroscientism are the conspiracy theorists of the human animal, the 9/11 Truthers of the life of the mind.

Steven Poole is the author of the forthcoming book “You Aren’t What You Eat”, which will be published by Union Books in October.

This article was updated on 18 September 2012.