Identity? It's a no-brainer: Yet more neuro-mythology.

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Having for some time taken an interest in concepts of self and identity, I was immediately drawn to Susan Greenfield's recent book "Id: The quest for meaning in the 21st century" (Greenfield, 2008). I had already formed the opinion that many neuroscientists who have written for the popular market have taken a naïve philosophical position on the so-called "mind-body" problem but I was unprepared for the conceptual incoherence of Greenfield's book and the psychological bunkum it invites its readers to consider. Her position on the points I want to take up in this article can be found in other popularisers such as Nicholas Humphrey, Antonio Damasio, and Joseph LeDoux, so my criticisms should not be taken in the spirit of a 'book review' but are intended to apply more broadly, using Greenfield's book as an illustration.

The topic of identity is about as close as one can get to psychology's rationale for its own existence. We commonly assume that there is a 'person' level of explanation that cannot be reduced without remainder to biology and cannot be totally subsumed within sociology. Without this assumption, we might just as well disband. Greenfield's objective, like that of the other neuroscientists mentioned above, is reduction – as she states in the ultimate paragraph of her book: "we neuroscientists" should be trying to translate issues connected with human nature, mind and consciousness into "the physico-chemical context of the brain itself" (p. 293). This objective can be traced back directly to Descartes' philosophy and the way his ideas were absorbed into theories about self and identity from that point on. One major consequence was an exclusive scientific focus on the body (brain and behaviour), and the second was 'mind-brain identity theory' as a solution to the mind-body problem. While professing to have left Descartes behind many years ago, many neuroscientists simply say that 'mind' (whatever that is) is identical with brain activity. As a number of philosophers have pointed out, e.g. Stuart Shanker,

(Savage-Rumbaugh, Shanker and Taylor, 1998), this position can be interpreted as a materialist version of Cartesianism.

In fact, Greenfield draws a great deal on the theories and findings of the behavioural and social sciences but her ultimate allegiance is to neuroscience and mind-brain identity. In the course of discussing some new technologies that have the potential to disrupt familiar identities or fashion new ones, Greenfield, like Humphrey (2002), makes the more ambitious claim that a person's identity can be explained in neuroscientific terms – and if that claim could be justified, the reach of technology would extend far beyond anything we have seen in the past. At present we have rather crude chemical means of manipulating the brain in order to change our 'sense of self', mainly through licit or illicit drugs, but if technologies could be developed to target, say, our 'self esteem' or alter in a more general way our sense of superiority over, or inferiority towards, others, then we are in for major social upheavals.

In essence, Greenfield's aim is to discover how the brain "gives each of us a sense of unique individuality" (p. 14). If it were indeed possible to make a discovery of this kind, the 21st century could be: "the first era in which we have the time and the technological tools to determine the kind of society that will realize our full potential as individuals, to the maximum" (p. 13). I hear echoes of Dr Faustus here. Greenfield acknowledges that primates and very young infants possess brains but do not express the sense of identity that she wants to explore. Her central notion is that brains get 'personalised' into minds. Or at least 'mind' is the "personalised connectivity" of an otherwise generic brain (p. 86). Greenfield nowhere defines mind as such, and presumably, a sense of identity or self cannot simply be equated with mind – at best, identity is a component of mind and its personalised connectivity. Of course, no-one would deny that we need a brain to acquire a sense of identity or self but until we have some credible evidence, tied in to a credible theoretical explanation, the neuroscience project of finding identity in the brain is just wishful thinking.

Just as LeDoux (2002) expresses it in the title of his book "Synaptic self; How our brains become who we are", Greenfield says: "there is no separate 'you' apart from all your neurons" (p. 49). However, mind-brain identity cannot amount to logical identity (see, for example, Velmans, 2000). Some of our ancestors led their normal lives knowing absolutely nothing about the brain. We seem to be left with the idea that brain events are strongly correlated with or causally implicated in the production of everyday experience. Like me, Greenfield is a monist rather that a dualist, by which I mean that there is only one sort of stuff in the universe and that whatever 'mind' is, it is not some extra-terrestrial substance or force. However, monism is a metaphysical position. We could both be wrong. But Greenfield believes that the brain sciences are now empirically demonstrating that there is no difference between mental and physical events and that this is one of the most important achievements of current neuroscience (p. 50). It is, nevertheless, plain obvious that there is a difference between mental and physical events (whatever 'mental' and 'event' might mean in this context), and Greenfield admits so herself when she asks: "how the water of brain events is turned in to the wine of subjective conscious experience" (p. 196). If it makes some sense to say that there is an identity between mental and physical events, this is not something that could be demonstrated empirically and with certainty. All we can hope to do is produce better theories to explain mental experience.

With regard to the question of the physical correlates of mental experience, an exclusive focus on the brain is rather myopic, as many biological scientists would agree. Not only are there a variety of interacting systems within the body but there are also biological messages and 'messengers' between separate biological organisms (e.g. see Barrett, in press, Decety and Meyer, 2008). Greenfield herself points to the important role of pheromones. And at one point, she admits that human nature and the "self" are a product of an incessant dialogue between the brain and the outside world, neither of which can be given causal priority (p. 251). The brain is a boundary created for scientific purposes and there is no *a priori* reason for choosing a part of the nervous system inside our head as the sole basis for mind. One brain is only a component of one body which in turn is causally connected to other bodies with their own brains. A number of philosophers and

scientists are now employing the concept of an 'extended mind', a systemic causal concept that incorporates external repositories of information and cultural artefacts as well as other organisms (Clark, 2008).

According to Greenfield (p. 73), the brain is personalised by all the unique experiences a unique organism undergoes. The problem with this idea is that the uniqueness of a biological structure no more defines a unique mind than the uniqueness of every snowflake gives it anything over and above its unique arrangement of molecules. To say that neural tissue is personalised mixes up psychological and biological discourses. What is personal about it cannot amount to the traces of absolutely everything that the organism has uniquely experienced, unless we define it this way by fiat. And in the unlikely scenario that bits of the brain responsible for giving us a personal identity and a sense of self could be separated off, how could this be understood conceptually? Our physical body changes through time and so does our sense of who we are but we also recognise that there is a temporal continuity of self and identity. John Locke thought deeply about this problem in the 17th century and he attempted to distinguish 'biological man' from 'person' and 'self'. Locke realised that person/self does not depend on the continuity of the material body in a concrete sense. Particles of matter can be replaced with new ones and so what is key is their pattern or organisation not their uniqueness as individual particles. Locke did not possess a notion of the biological dimension of social interaction but it is unlikely that, on principle, he would have restricted the biological basis of person/self to the brain were he to have been aware of subsequent developments in science.

While stressing a unique personal history, Greenfield does not, in fact, attempt to ground this in any concrete neural substrate – after all, in a changing flux of neural activity how could you begin to specify it in a unique way? She argues that a self-conscious adult mind rises above the world of a child (that is, beyond immediate sensory experience that exists 'outside' human time) a world, according to Greenfield, that is resurrected in drug experiences, sexual orgasm, and psychosis. To possess a personalised brain, a mind, is to live in a world of 'meaning' and 'reason' and to posses a 'life narrative' (p. 91). We

might well ask what any of this has to do with the brain. Or rather, if we are our neurons, this assertion must be equally true for adults who feel they lack a self, are undergoing an 'identity crisis' or lack the brain power to think rationally. Greenfield still thinks that the basis for a sense of identity - the "consistent theme" in one's life – emerges out of the "spectacular dynamism" of the brain (p. 115). She says that this theme can be experienced from a first person perspective (how you see yourself) or how others see you (your personality). Despite the vicissitudes of the neuronal landscape over a lifetime, Greenfield states that the enduring theme is always the same – "an irrefutable sense that you are a unique and continuous first-person consciousness" (p. 117). This sounds exactly like a re-statement of Descartes' "I think, therefore I am". What exactly does this supposed sense of self have to do with the brain apart from the obvious need to incorporate the latter in to a scientific account?

In common with other neuroscientists of her ilk, Greenfield cannot of course sustain a neural discourse for talking about self and identity. She has to argue that what is important in sustaining a sense of identity is how others respond to you (p. 119), and she refers to individuality as being achieved through acquiring symbols of social status. This is having one's cake and eating it. For her to argue that depth or complexity of consciousness (e.g. self-consciousness) is just a question of the number of neuronal assemblies that are currently active begins to sound like a neuroscience mantra. This mantra starts with a social or behavioural observation and then seeks to explain it as a neural process. What we need is a neuroscience (and there are many examples in areas other than identity) that actually enlightens social and behavioural science thinking.

But it is often the case that neuroscientists indulge in speculations that Greenfield admits can be "crass caricatures" (p. 277). Empirical findings from the social and behavioural sciences are linked in any conceivable way possible to the brain. She assures us not to worry about the technical details because even to her and to "other professional neuroscientists" they are sometimes "incomprehensible" (p. 271).

Greenfield equates 'real identity' with inner privacy (p. 131) and so this partly explains, in light of the new technologies of surveillance, why she thinks that identity is likely to become increasingly "transparent, fragile and questionable" in this century (p. 131). However, I do not see the connection between identity and privacy. Most people want to have their personal uniqueness publicly recognised – even if this amounts to little more than an opportunity to become an ephemeral celebrity. A private 'real self' that is unshared sounds like a very frustrating state of affairs indeed. The essence of Greenfield's argument is that we have a choice between fostering different types of identity which, to paraphrase, consist of 'striving for status', 'getting immersed in pleasurable sensory moments', and 'getting absorbed into shared dogmas'. There is also a final option of 'encouraging individual creativity', which is an "internally driven, non-comparative way of defining our uniqueness" (p. 254). The hope here is to develop technologies that help to develop abstract thought and enhance "the 'Eureka' mindset" (p. 286).

All of this is predicated on the idea that people can "choose" their identity and that Governments can foster the right choices through enlightened public policies and a bit of social engineering, aided and abetted by neuroscientists who will try to find ways of forging the creative process in "the developing brain" (p. 286). Of course (and I hope this will not be taken seriously) all of these problems could be short-circuited once we have understood the neural basis of free will. I do not want to pretend that the issues I have touched upon are anything but complex (Hallam, 2009) and I have no wish to underestimate the contributions of neuroscientists. However, I object to the sorts of claim that many neuroscientists are currently making. Greenfield, for instance, thinks that "for the first time in human history" we have the means to blend the various options for individuality and to produce generations of children that "will have the potential to be truly fulfilled individuals and useful to society" (p. 291). I just wish that someone would call a moratorium on this kind of neuro-mythologising and give us time to catch our breath.

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