CONFRONTING OUR BRAINHOOD AND SUBSTANTIVE ALIENATION

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• We have a new scientific revolution – the “neuroscience revolution – which has thrown up cognitive neuroscience and more in the last few decades

• Intellectual life is in the grip of ‘Neuromania’ and we have new debates over “human nature”

• Whether this is good or bad depends upon your view of the positions, and arguments for them, that have recently been offered

• But we have a somewhat bi-polar schism in the neuro-maniacal debates.
• Consider the new debates over “human nature” which have seen defenders of “Nihilism”, the view that the self and you do not exist (Metzinger, Hood) along with a broader skeptical assault on the ideas of agency, mental causation and action using the neurosciences

• But there is another, presently minority, strand that takes neuroscience to establish that we exist, but have a surprising deeper kind in our being a brain (Gazzaniga, Panksepp) where this view also accommodates our usual picture of our psychological natures
• The latter two views actually challenge the reigning orthodoxy in the sciences and wider intellectual life that assumes the question of what we are has been settled – you are identical to an animal.
• Philosophers call this view “Animalism” and it has only recently become popular with philosophers, but it dominates anthropology, biology, primatology and much of the sciences
• You will find anthropology textbooks that tie themselves in knots explaining the delicate nature of evidence of all kinds of issues, but declare it an established “fact” that you are identical to a Homo Sapiens animal (Fuentes)
• Debates over human nature are really about the animal you are is shaped by nature or also nurture, or over whether Homo Habilis, Neanderthals etc, are amongst our ancestors
• Given this background, I am going to focus primarily on Animalism as the opposing view to the position I want to press, though I will engage other views along the way

• Hopefully you can ask me about the problems with other views in Q&A
• ...and there are a number of other views in philosophy.
• The debates about human nature driven by the sciences rarely have clear positions or arguments.
• In contrast, philosophical discussions of what we are have crystal clear frameworks or views and rigorous arguments for them.
• And you cannot accuse the philosophers of neuromania – far from it.
• Empirical evidence, from neuroscience or beyond, does not permeate such debates which are instead driven by the method of cases and a panoply of thought experiments many of which are known to be nomologically impossible.
• Everything from minds simply switching from Cobbler to Prince, all the way down to extracting and implanting the two cerebral hemispheres of a brain into two new bodies.
My wider project...

- In earlier work, some of which I outline tomorrow, I have offered accounts of the “metaphysics of science” focused on the concepts of composition, levels, reduction and emergence used in successful science.

- My present project is to apply these frameworks from the metaphysics of science to debates over what you are.

- My goal in this wider project is to use empirical evidence from neurosciences to inform metaphysical debates over what we are, whilst using philosophical frameworks to discipline neuroscientific and wider debates about human nature.
Today...

• Today I will try and convince you of seven theses, though I spend much more time on defending later theses
• We have not revisited the foundations of neuroscience in twenty years, so in Part 1 I offer an interpretation of some of the changes wrought by the neuroscience revolution and offer a new account of the foundations of neuroscience
• In Part 2 I show how this means we can dump the method of cases and supports a new view of what we are – supporting the positive strand of work in neuroscience
• Lastly, in Part 3, I defend the conclusion that our neurocognitive nature means we are “alienated” from our substance and I defend the strong methodological conclusion that we ought to avoid the method of cases, and impossible thought experiments, when seeking to understand what we are
• One last important comment...

• I special thanks to the Notre Dame Institute for Advanced Study, especially Brad Gregory and Don Stelluto, for a research fellowship last year during which I spent my time digging into the neuroscience and grinding out my present views
Part 1 – Foundations of Neuroscience and Psychology
• As an exemplar of one strand of work in the neuroscience revolution, I want to briefly consider work by Endel Tulving, and many others, on episodic memory

• But accounts of visual and other kinds of experience provide other exemplar theories amenable to the same treatment
Interesting that Tulving (2002) explicitly terms “episodic remembering” a “neurocognitive” property.
So there is a change from the older terminology where “remembering” was a “psychological” property.

Tulving also now calls himself a “cognitive neuroscientist” and not a “psychologist”

These changes are pretty systemic beyond Tulving: Why the changes? Just funding-friendly nomenclature? What?

I will suggest later that we can see this move can be defended and actually reflects deeper, substantive findings.
• Two Descriptive Claims about the neuroscience:

• (I) Cognitive neuroscience, cognitive science and other areas of the sciences now posit rich psychological properties

• and

• (II) Cognitive neuroscience, and other sciences, take rich psychological properties to be individuated, amongst other features (such as experiential structure), by productive roles (A)-(C).
• Using our findings about the roles of rich psychological properties in the neuroscientific theories, and the causal theory of properties, plus an assumption about scientific composition and levels in the sciences, we can give an argument about what individuals cognitive neuroscience does, and should, take to instantiate rich psychology.
The Causal Theory of Properties

• The causal theory of properties says a property is individuated by the powers it contributes to individuals and hence by its distinctive productive ‘role’

• Notice that an individual $x$ instantiates a property $P$ if and only $x$ plays the role of $P$
A Thesis about Scientific Composition and Levels

• I contend that Wimsatt, and Bechtel and Craver, amongst others, have been right to press what I term the “productive closure” of levels in compositional hierarchies.

• Basically, individuals at different compositional levels in the same compositional hierarchy do not productively interact (though they do bear relations of counterfactual dependence and hence causal relations)

• For my purposes, I actually just need the narrower claim that parts and wholes do not productively interact with each other.
The Crude Argument from Scientific Roles...

• Using the latter thesis, along with thesis (II), we can show that all of our candidate individuals (animal, brain, brain areas, neurons) except one fail to play the roles (A)-(C) that the neurosciences take to characterize rich psychological properties.

• The full argument is on the hand-out in the reasoning terminating in (13) – but let me walk through the basic argument rather than reading dry premises.
Animals fail to fill (A) and (C) because they could not productively interact with eyes or muscles which are parts of them.
Brains areas or neuronal populations or neurons do not appear to instantiate rich psychological properties which are not localized in their instantiations in the brain; and more importantly such entities fail to satisfy (B) - even if one rich psychological property is instantiated locally these entities fail to have other rich psychological properties (hence failing “Many to have Any”)
• In sharp contrast, the brain nicely fills (A)-(C)
• So we get the lengthy **Crude Argument from Scientific Roles on the handout** to the conclusion (13) that brains instantiate rich psychology
• Notice that this conclusion matches the actual scientific practice of many working neuroscientists like Tulving who routinely ascribe such properties to brains
• We now see that such a practice can be rigorously defended using the Crude Argument and its analogs
(III) Rich psychological properties are instantiated by brains, i.e. at the organ level and hence below the level of the organism but above the level of brain areas and/or neuronal populations.
• These new developments can be characterized as expanding our understanding of the properties of brains to include rich psychological properties.

• Thus I term the new position in the foundations of neuroscience, and the new Big Picture, “Expansive Materialism”
So...

We see a deeper reason why Tulving and others talk of “neurocognitive” properties when referring to rich psychological properties – for these cognitive properties are had by brains.

Such properties are “neuro” in being had by brains, but also “cognitive” in having all the features that rich psychology has always had...
• Note that this position is NOT a mind-brain *identity* theory advocating identities between neural and psychological properties

• The position is a brain-psychology *instantiation* theory – the central claim is that brains, a kind of individual, are taken to *instantiate* rich psychology, a certain kind of property

• Expansive materialism takes rich psychology properties to be identical to no other properties than themselves
The Two Dominant Views in Foundations of Neuroscience

- Note the contrast to, and problems of, the two dominant views in foundations of neuroscience.

- Eliminative Materialism pioneered in the 80’s-90’s by philosophers of neuroscience like the Churchlands in response to cellular work – *HUGE problems about rich psychology.*

- Separatist Materialism pressed in the 60’s, 70’s and 80’s by philosophers of psychology like Fodor in repose to the rise of cognitive science and computational approaches – *RIGHT about rich psychology, WRONG about its level.*
Is THE phenomenal or qualitative aspect of consciousness a problem?

Notice Expansive materialism will claim the phenomenal aspect of experience is had by brains along with the property of experiencing

• BUT the view is not committed to any of these properties being realized – Expansive materialism can go either way in taking such properties to be realized by properties of component neurons OR NOT

• The position’s key claim is only that rich psychological properties are instantiated in the brain (and not the further claim that such properties are or are not realized)

• So phenomenal aspects appear to be no special problem for the Brain view I discuss shortly beyond the problems they pose for soul, animal, or other views
Part 2 -- What are you?
I contend that all parties to the debates endorse a claim highlighted by Olson (2007):

- (Thinker Thesis) You are identical to the individual in your chair that instantiates the rich psychological properties of remembering breakfast, fearing cancer, fearing skin cancer, etc.
A Methodological Innovation:

Given the Thinker Thesis, resolving the question of *psychological ontology*, i.e. what individual instantiates rich psychology, resolves the issue of what we are.

- *If* you find the individual in your chair that instantiates rich psychology, *then* you find the kind of individual that you are.

- And the sciences now provide accounts of rich psychological properties and the individuals that have them.
So are you a Neuronal Population?
Neurons? Neuron?
NOPE! NOPE!
Brain Area?
NOPE!
Are you an Animal?
NOPE!
...we now know where rich psychology is instantiated!

• Given the recent turn in cognitive neuroscience, we now have detailed, apparently confirmed, accounts of where episodic memory or experience etc. are instantiated...

• ..in the brain.

• So the Thinker Thesis gives us a very quick and clear conclusion if we add it as (14) to the Crude Argument then we get (15) to see that...
What you are is a brain
YUP! WHO WOULD HAVE THOUGHT IT?
(IV) You are identical to a brain that can or does instantiate rich psychological properties of remembering breakfast, fearing cancer, etc. (The Expansive Brain View)
Really?

• It is deeply, deeply shocking to be told we are brains

• Virtually none of us believe that this is, or could be, what we actually are (although maybe this is changing if we believe the media and popular culture...)

• I will return to why we might find the conclusion so shocking and some of the implications of this situation shortly

• But first let me fill-out a finer-grained picture of the mind-brain endorsed by Expansive materialism based around recent cognitive neuroscience
Contrary to the Nihilist, we find the neuroscience supporting a “self” in the sense of a substance, an individual, with rich psychological properties of remembering, hoping, believing, experiencing etc.

Where this self experiences and controls the body

Is an agent whose belief, desires, etc cause its bodily actions

...and on and on through a range of familiar psychological properties

Though the substance we are is shocking, we also see that the neurosciences plausibly confirm you, as a brain, have very many of the psychological characteristics central to our understandings of ourselves
Part 3 -- The Most Compelling Objection(s), Lived Experience & our Substantive Alienation
An Objection from what Evolution (putatively) Established

• One very common objection to the Expansive Brain view in the wider debates is that evolution has established you are an animal
• (So the debates over what we are really concern how much that animal is (i) shaped by nature versus nurture or (ii) which primates are our ancestors (i.e. Homo Habilis, Neanderthals etc))

• I think it is pretty clear that we are evolved AND that evolution does NOT establish you are an animal – but I want to leave this Objection and my response to Q&A... So raise it then if you are interested.
...the Stronger Objection

• Most of you will think that the Expansive Brain view, putting it in the terms of the New Jersey school of philosophy in which I was trained (this should preferably be screamed to be truly authentic), is nutso or whack-a-doodle.

• Putting it in the killing-with-politeness idiom of English philosophy, from which I fled as a young man, the view is a novel and intriguing possibility -- but deeply implausible.

• Why the continuing skepticism given the premised arguments and backing empirical findings I outlined?
• Right now each of us is having a richly structured, integrated experience combining our experience of our bodies, our experiences of external objects, and their spatial locations and relations through a variety of sensory modalities/experiences. (So I am going to use throughout the awkward expression “proprioceptive-perceptual” experience because the experience is integrated.)

• Furthermore, you experience your body parts as owned by you – you experience them as yours.

• (A similar phenomenon is experienced during remembering or your inner monolog – you experience the memory or monolog as owned by you and you experience the episode remembered as yours.)
• We can consequently diagnose our deep attraction to Animalism (psychological or soul views) and deep resistance to the Brain view...

• The ownership we experience during our lived experience very strongly inclines us to believe that we are a body and hence the animal such a body is identical to – for we experience that body as us, so it is an easy step to infer we are identical to the body. So Animalism is an easy inferential step from our lived experience.

• (Similarly, when we remember, or have experiences with other mental properties such as having an inner monolog, which we also experience as unlocated and partless, then the ownership of this experience strongly inclines us to believe that we are souls or neo-Lockean psychological individuals – and given the experienced partlessness and non-spatiality of the mental properties we can even end-up thinking we are non-located, uncomposed psychological individuals.)
Should we trust our lived experience...

Our lived experience, and especially its ownership aspects, strongly incline us to reject the Brain view and endorse other accounts

• But should we trust our lived experience as a guide to what we are?
• I want to suggest that we can now see that we should not.

• (Notice my question was not should we trust our experience as a guide to the properties of our bodies or our psychological properties – I think we have overwhelming evidence for the reliability of our experience, under normal conditions, about those topics...)
• The Rubber Hand Illusion
Plate 18.4. The rubber-hand illusion. A healthy subject experiences an artificial limb as part of her own body. The subject observes a facsimile of a human hand while one of her own hands is concealed (gray square). Both the artificial rubber hand and the invisible hand are then stroked repeatedly and synchronously with a probe. The yellow and green areas indicate the respective tactile and visual receptive fields for neurons in the premotor cortex. The illustration on the right shows the subject’s illusion as the felt strokes (green) are brought into alignment with the seen strokes of the probe (areas of heightened activity in the brain are colored red; the phenomenally experienced, illusory position of the arm is indicated by the blue area). The respective activation of neurons in the premotor cortex is demonstrated by experimental data. (Figure by Litwak Illustrations studio 2004.) (For B/W version, see page 226 in the volume.)
• So?

• Visual and proprioceptive stimulations are used to construct an integrated proprioceptive-perceptual experience.

• The experience is *constructed*.

• The *ownership element* of the experience is *constructed*.

• And the ownership represented in experience can be *illusory* – you do not have a rubber hand.
• The Body Switching Illusion
Plate 18.9. (A) Participant (in dark blue trousers) sees through a HMD his own virtual body (light blue trousers) in 3D, standing 2 m in front of him and being stroked synchronously or asynchronously at the participant’s back. In other conditions (Study 1B) the participant sees either (B) a virtual fake body (light red trousers) or (C) a virtual non-corpsoreal object (light gray) being stroked synchronously or asynchronously at the back. Dark colors indicate the actual location of the physical body/object, whereas light colors represent the virtual body/object seen on the HMD. Illustration by Martin Boyer. (For B/W version, see page 234 in the volume.)
• So?

• Visual and proprioceptive stimulations are used to construct an integrated proprioceptive-perceptual experience.

• The experience is constructed.

• The ownership element of the experience is constructed.

• And the ownership represented in experience can be illusory – you do not have that body.
The Narrow Point...

• The point is NOT that proprioception (or introspection) can be illusory – in fact, under most conditions it (they) are reliable.

• The point I want to draw from these cases is that proprioceptive experience is a constructed representation including its ownership elements.

• With this in mind, we can then ask ourselves what individual has the property of experiencing in this way? Which individual has this representation?
...and the Wider Point

- Once again, versions of the Crude Argument from Scientific Roles then show that episodic remembering, or proprioceptive-perceptual experience, with all its represented ownership relations, are actually instantiated in the brain.

- But applying the Thinker Thesis, this conclusion about proprioceptive experience supports the further conclusion that you are the relevant brain. (Similar points hold about introspection...
• We have a VERY STRONG intuitive tendency to take our experienced boundaries as OUR boundaries (though again we have other intuitive tendencies in conflicting, mentalistic, directions). Hence we assume that we are our bodies – and the very idea that we are an internal organ such as the brain is literally alien to our experience and hence to us.

• BUT you are a brain and NOT an animal
...and the Same Points Hold about Introspection

- Basically the same points about proprioception apply to introspection.

- You represent your inner monolog as owned, yours, or just you – but in this case such experience is not represented as located at all.

- So you are inclined by such experience to take yourself to be a mind – hence inclining us to neo-Lockean psychological theories or substance dualism.

- But again such experiences are instantiated in brains (I will say more about this case shortly).
The Response to the Most Compelling Objection... and its Import

- We have lots of good arguments, driven by recent empirical findings, that brains instantiate rich psychological properties. And hence that you are such an expansive brain.

- We are all resistant to the conclusion that we are brains since this conflicts with our lived experience, but we have good reasons, built again on empirical findings, to conclude that our lived experience leads to false inferences about what we are and should not be trusted.

- Rather paradoxically, you are a brain, although your experience in no way represents this and is structure to deeply point in other directions about what you are
Our Substantive Alienation...

• We appear to be what I term ‘Substantively Alienated’ – that is our neurocognitive construction leads us to conclude that we are animals, or minds or souls, and disinclines us to think we are brains, when in fact what we are is an expansive brain.

• So, to use Marx’s term, we are “alienated” from our true substantial nature.

• (Do we have “false consciousness” to use another Marxist term? That is does what we think we are work against our own good? That is an interesting question I leave to Q&A.)
(VII) Your neurocognitive nature means that you are strongly inclined to mistakenly conclude that you are an animal, or a psychological individual or immaterial soul leads, and your neurocognitive nature also strongly inclines you to reject the claim that you are identical to brain and hence reject the substance that you actually. (Substantive Alienation)
The Lessons of Dante and the Nail-Gun... (& NOT Dante Alligheri!)
• *The Guardian* reports that:

Dante Autullo of Chicago thought doctors were joking, feeling sure he had only been grazed by the nail when it flew past as he was building a shed. Even when hospital medics produced an X-ray he was skeptical.

"When they brought in the picture, I said to the doctor 'Is this a joke? Did you get that out of the doctors joke file?'" the 32-year-old said. "The doctor said 'No man, that's in your head.'" (The Guardian.com (2012))
Figure. Dante Autullo who thought his skull was only grazed in a nailgun accident. (Gaurdian.com (2012). Photograph: M Spencer Green/AP)
Figure. An x-ray showing the nail in Dante Autullo's. (Guardian.com (2012), Photograph: Associated Press.)
You cannot literally represent your own location and boundaries in your own experience...

• Notice the implications of this given our findings about what you are.

• You are a brain – so you cannot represent your own location in your experience. (Note this is also why you cannot represent the locations of your mental properties which are experienced as unlocated)
...and you do represent the boundaries of something else as your own in experience.

But as we have seen, you do represent the boundaries of an individual – the body or animal – in your experience.

And you represent this individual’s boundaries as yours.

But you are not a body or animal!

So you represent the boundaries of some other individual in your experience and represent these boundaries as yours or owned by you.
• That the brain and other organs is off the experiential grid is not news in the sciences, but it is shocking to each of us given our proprioceptive set-up as we see from this all-too-common type of case.

• But it is truly shocking once we realize we are identical to brains – since WE are off our own experiential grid!
• Really, could it be more messed-up?
• Actually, it could be more messed-up because it is...

• Consider your introspective experience for a moment
• You cannot represent the location of your (the brain’s) psychological properties in experience since you cannot represent your own location in experience

• So psychological properties are not represented as located in experience, that is as having a specific location (though they are experience as being in a certain region)
• Furthermore, we cannot represent the parts of organs, or their properties, in our experience – so we do not represent our parts or their properties or their locations in our experience (since we are an organ)

• So our psychological properties are not represented as located in experience AND represented as partless and/or uncomposed by the properties of other individuals
Given these features of lived experience, each of us has a strong inclination to wrongly conclude we are a psychological entity – whether mind or soul...

...and to conclude we are unlocated...

...and to conclude we are partless, uncomposed and hence simple...

...all mistaken conclusions resulting from drawing conclusions from our lived experience
• You might question whether anyone has ever followed such a methodology?

• Let me briefly digress to give a quite famous case where just this type of inference from lived experience to what we are leads to mistaken conclusions.
Unsurprisingly we find philosophers like Descartes arguing that:

“When I consider the mind, that is to say, myself in as much as I am only a thinking thing, I cannot distinguish in myself any parts, but apprehend myself to be clearly one and entire.”

• And:

“there is a great difference between a mind and a body, because the body, by its very nature, is something divisible, whereas the mind is plainly indivisible . . . insofar as I am only a thing that thinks, I cannot distinguish any parts in me . . .. Although the whole mind seems to be united to the whole body, nevertheless, were a foot or an arm or any other bodily part amputated, I know that nothing would be taken away from the mind . . .” (1980, p. 97).
(VI) You should not trust your imaginative abilities or intuitive judgments about what you are driven by your lived experience or the neurocognitive machinery that underpin it, nor should you consequently use the method of cases or thought experiments to draw conclusions about what you are which are apparently built on such imaginative abilities or intuitive judgments.
So, what you are is this...
..but this picture actually better represents our situation (minus the “atomic”, skin ripping, flying saucers etc.)
• To sum up...

• (a) rich psychological properties are instantiated in the brain

• (b) what you are is an expansive brain

• (c) the brain you are has memories, fears, desires, experiences a body as its own, experiences psychology as its own, makes decisions, controls a body that it causes to act, experiences its agency and control, etc etc

• (d) we are “Substantively Alienated” – our neurocognitive natures deeply incline us to conclude we are animals, or disembodied minds, so that we are unreliable in our judgments about our deeper natures
One Shocking Conclusion about What We Are... Against the Background Confirmation of So Much of What We Experienced and Thought about Ourselves

Scientific revolutions are like that – they lead to some shocking conclusions contrary to some of our deeply held theories about the world, including ourselves.

- It is very, very odd that we could be so wrong about our substance – but it increasingly appears we are and our empirical accounts are beginning to illuminate why we are so resistant to the conclusion and find it so strange.
- However, the neuroscience revolution also, I contend, confirms a very great deal of what we actually experience about our psychological properties and natures.

- There is a self, it has most of the properties you thought, but it is just the last thing you are neurocognitively built to think it is – you are a brain.