

*Somatosphere Presents*

A Book Forum on

## **Being Brains: Making the Cerebral Subject by Fernando Vidal and Francisco Ortega**

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Fernando Vidal and Francisco Ortega's [Being Brains: Making the Cerebral Subject](#) is a fine-grained account of the "neuro-" in a range of disciplines, and, importantly--crucially--, takes stock of the history and scope of this prefix. But more than this the book is an exploration, a critical engagement with the surge of brain-centered approaches to behavior, to physiology, to mind, to subjectivity, to art and creative enterprises and products--*Being Brains* is an invaluable appraisal of where those waves (many waves, different waves) crash and what they at times wash away. Vidal and Ortega ask (simply, provocatively), "How did the idea that humans are essentially their brains become thinkable?" (1)

The commentaries that follow offer broad and diverse readings of the book. We hope you enjoy.



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## Genealogy of the Cerebral Subject

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Are we our brains? Have we become “cerebral subjects,” our identities located in nothing more, nor less, than the gray matter in our heads? Why have so many—from scientists and scholars to popular writers and Hollywood producers—signed on to what Fernando Vidal and Francisco Ortega call “the *neuro*,” the complex of theories, practices, and institutions that supports cerebral selfhood, thereby sacrificing the messy “phenomenological, embodied, and affective dimension[s] of human experience” (203) for the taut certainties it offers? Ranging over history (from the 17<sup>th</sup> century to the present), the *neuro*’s many constitutive disciplines (from cognitive neuroscience to neuroanthropology and neuroaesthetics), and more mainstream sites of successfully realized and sometimes monetized cerebralization (from brain fitness programs to film and fiction), *Being Brains* addresses these questions as it masterfully charts the contours of a phenomenon that is at once highly visible, as in the much-ballyhooed “Decade of the Brain” (the 1990s), and, as an object of study, slippery and elusive in part because it’s so deeply imbricated into the fabric of our everyday lives.

It is exceptionally difficult to write such an account—not least because the *neuro* is so protean and, as the authors demonstrate, usefully so. Vidal and Ortega argue the *neuro* is best conceptualized as a “cultural resource” (20) and, in line with their treating it in the manner of a “keyword” of modernity, they do not condemn its constitutive practices, such as the broad reliance on neuroimaging in both professional and popular venues (though they have been accused of doing so, and are skeptical of many of the claims attached to it) but, rather, attempt to capture the *neuro* in all its guises and to document its allure. So powerful is this, they show, that simply slapping the prefix “neuro” onto a finding or discipline increases its explanatory power and/or truth value and transforms non-causal “associations” or “correlations” among phenomena into causal claims that find wide acceptance. In their hands, thus, the *neuro* is productively ambiguous. It purports to settle long-standing questions about human nature and consciousness, grounding them in the materiality of the brain, while in fact providing a capacious conceptual space in which they are reframed and argued over anew—a space thick with actors and interests (among others, academics, entrepreneurs, novelists, and flimflam artists). *Being Brains* is a model of how to do intellectual history, argued carefully, precisely,

and close to the evidence while at the same time making bold claims that decisively upend conventional understandings of relations between science and the contexts in which it is practiced.

That the cerebral subject is a new formation, made possible by recent developments in neuroscience that locate consciousness in the brain, is a central plank in the *neuro* program. Yet, Vidal and Ortega argue, this subject does not represent a decisive break from earlier conceptualizations of personhood but, rather, is altogether dependent on the rise, in the 17<sup>th</sup> century, of possessive individualism, the notion that, as put by John Locke, “every Man has a Property in his own Person” (25). Interiority, awareness of self, a capacity for self-reflection, and the ability to stand outside and observe oneself as constitutive of selfhood—in this early modern construal of the human person the brain was made central, the site of memory and consciousness long before the first fMRI was performed. No empirical evidence supported it; it was a metaphysical position—a way of thinking about personhood—not a scientific fact, one that in subordinating the body to the mind laid the groundwork for current understandings of brainhood. The notion that “you are your brain” (34), as enthusiasts of the *neuro* proclaim, took root not yesterday but centuries ago.

What follows from this bold inversion of the received wisdom that modern science has gradually displaced the philosophers’ authority? First, that the histories of brain science and of the cerebral subject must be prised apart (35); one narrative can’t do justice to both. The various brain fitness programs currently on offer to the credulous, among them the Posit Science Corporation’s “non-invasive tools that engage the brain’s natural plasticity into improving brain health” (53), owe as much to 19<sup>th</sup> century phrenologically based self-help as they do to current neuroscience; regular and judicious training of the brain figures centrally in both. In 1844, “education of the cerebral fibres” might be accomplished through a program of mathematical exercise (44); individuals today are invited to marshal the will-power to visit the “brain gym” to hone their cognitive capacities (53). It’s not that nothing has changed; Vidal and Ortega show how much the contexts differ, even if some of the practices of neuro self-making have persisted. And second, just as establishing causation—the *neuro*’s holy grail—has proven stubbornly elusive, it’s unlikely that neuroscience will ever render irrelevant properly psychological issues about consciousness, memory, and self, as a chapter on “cerebralizing distress” makes abundantly clear.

There's much to provoke, engage, and even entertain the reader in this brilliant, capacious genealogy of the current scientific and cultural landscape of the *neuro*. Throughout *Being Brains*, Vidal and Ortega consistently highlight the ambiguities and complexities that characterize this formation without forfeiting clarity. I especially appreciated their alertness to everyday ontologies and to the ways in which individuals seamlessly weave together different understandings of mind, brain, and self—drawn from a range of scientific and popular sites—in fashioning their identities; it's a rare account as sophisticated as theirs on this issue. And I applaud their sensitivity to paradoxes, for example of the competing pulls of neuroplasticity on the one hand and of the homogeneity of brains necessary to undergird brain-based entities (autism, depression) on the other. *Being Brains*, with its amply-supported concluding argument that “the cerebral subject is a product of history, not an organization identified in nature thanks to the advancement of science” and its characterization of the *neuro* as a congeries of “objects, concepts, and practices as well as subjective positions and power relations,” challenges us to resist neuro-reductionism and empowers us to assert the conceptual integrity of the human sciences, broadly conceived. As such, it's a model of engaged scholarship—and a pleasure to read.

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## All of the Other Brains

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A 2008 article on “Swarm Cognition in Honey Bees” promised to “show how several of the key elements underlying cognition in the neuron-based brains of vertebrates are also found in the insect-based swarms of honey bees” (Passino, Seeley, and Visscher 2008, 401). One could read this work as an example of biologists’ tendency to continuously expand the brain’s domain. In this reading, even where there is no single human brain, in a swarm of social insects, a brain somehow emerges as an explanation for perception, action, and decision-making. Another reading is also possible, though, one noting that the article’s authors locate awareness in the absence of anything like a human brain, and happen upon a cognitive acuity that, they argue, might “deepen our understanding of human collective intelligence and enable us to more effectively structure groups to enhance their performance in business, economics, law, and politics,” (413), letting us cultivate our own un-human mental capacity on the model of social insects. Neuroscientific work documents a world crowded with types of awareness. It is at once a frustrating site of reduction of bodily and social complexity to neural structure, and also, by virtue of scientists’ attention to other than human brains, and other than typical human brains, an ethical and intellectual resource.

In *Being Brains: Making the Cerebral Subject*, Fernando Vidal and Francisco Ortega argue that the ideology of “brainhood,” meaning the idea that we are, in essence, our brains, predates the sophisticated research methods or precise knowledge of brain structures that characterize contemporary neuroscience (21). Indeed, contemporary brain science implicitly draws on a modernist concept of the brain as author of the individual and ruler of the body as justification for continued investment in research programs and equipment. That these efforts proceed in the absence of results that provide other than correlational evidence of relations between what happens in the brain and what people feel, think, and do, will never serve as an argument for redirecting scientific attention from brains. This is because the claim that brains rule bodies is a central organizing belief, not a research finding.

For the many neuroscientists and other researchers Vidal and Ortega cite in their wide-ranging text, the brain in question is emphatically a human brain, not that of any other species.

It is also a certain type of human brain, one that is healthy, whole, and functionally typical. This is because the brain's preeminence in the body follows from its ability to produce subjective experience—we are our brains because our brains produce the world for us. As Vidal and Ortega note, the earliest evidence for localization of brain functions emerged from studying patients with brain trauma (38-39), where researchers could compare patients' loss of function to the abilities of those with uninjured brains (although as Vidal and Ortega also note, ideologies of localization preceded concrete evidence of the relationship between brain structures and functions). Thus, the possibility of personhood and its gifts of ethical standing became impossible without the kind of brain that could produce the right kind of self. "The body, while experientially significant, became ontologically derivative. Being an *I* or having a self was equated with memory, consciousness, and self-awareness" (25). Given this ideology's cultural hegemony, it is worthwhile to elaborate on what is distinctively modernist about cerebral subjectivity, how brainhood presumes a subject that is disembodied, has autobiographical memory, and is keenly self-aware. Brainhood's central actor is a human brain with typical contours and functioning, a standard difficult to expect in a world populated by brains that are neither human nor typical in function.

At a first glance, animal brain research could be said to reflect the same tendencies Vidal and Ortega track elsewhere, in film, literature, studies of psychopathology and emotional distress, and research on mindfulness and human enhancement. Researchers seek and valorize those animal cognitive capacities that seem most human. A researcher who trains dogs to participate in MRI studies observed that his own growing understanding of dogs' inner lives made him more resolute in his vegetarianism because his "research makes it clear that animals have brains with the capacity to feel many of the emotions we do" (Dreifus, interviewing Gregory Berns 2017). Animals are presumed to deserve our regard to the extent that they demonstrate a human-like range of emotional response and emotional awareness. Canines, like humans, have become targets for companies marketing what Vidal and Ortega (42-43) call the disciplines of "neuroascensis," brain exercises and brain-training chew toys designed to enhance human-like attributes of intelligence (Hoffman 2017).

But dogs have evolved human-like responses mainly in order to manage human brains and their owners. A scientist training dogs in bomb detection explained to a reporter: "There is something remarkable about dogs...They have this kind of open hyper-sociability. The dog itself wants to give out love" (Hoffman 2017). Dogs are easily trained because they want to ally themselves with humans, not because their intelligence is human-like. The capacities of

octopods, which have independent brains in each of their limbs, or social insects like honey bees, are even more difficult to compare meaningfully to human cognition. Their brains work perfectly for their purposes, but are resolutely nonhuman (Safina 2016, reviewing Godfrey-Smith 2016). For example, in honey bees, the “social brain hypothesis,” which holds that the brain size of a given species increases with level of sociability, does not hold true. Their increases in brain size may be driven by the need to develop more sophisticated ways to analyze sensory inputs (Farris 2016).

One noteworthy example of an attempt to make sense of brains (or “the brain”) across species compared genome scans of those honey bees in hives that appeared less socially motivated to those of humans diagnosed with autism spectrum disorders (Shpigler et al 2017). The researchers found that similar genes were activated in the two groups, reporting that this might ultimately offer “the means to test theory on the biology of human behavior.” Putting aside the correlational nature of such findings, which, as Vidal and Ortega note, suggest possible relationships but offer little insight into mechanisms, the research assumes that a set of honey bees whose functions within a colony bring them into less frequent contact with other bees are comparable to humans with a neurodevelopmental diagnosis. Conversely, they imply that humans with that neurodevelopmental diagnosis lack social motivation (versus other plausible theories, such as that their communicative differences limit their ability to carry out social interactions). The research takes as given the nature of autism as an impairment and insect behavior as comparable to human interaction, and it replicates a longstanding and stigmatizing tendency to compare people with autism and other disabilities to animals. Disability rights activists don’t automatically reject that alignment between animals and disability. They have also appropriated it, in Shannon Walters’s (2014, 476) words, thinking of “ways of considering connections between disability and animality that rest not on dehumanization and devaluation but on liveliness and messiness.” The crowded world of brains includes opportunities to affiliate based on shared experience of difference, not deficit. The assumption made by the honey geneticists, that cognitive differences reflect cognitive deficits, demonstrates another way that the brain in the neuroscience research described and critiqued by Vidal and Ortega is only one brain among many. Vidal and Ortega describe the neurodiversity movement amongst advocates with autism spectrum disorders, and in particular advocates’ insistence that autism is a difference to be accommodated and not a disorder to be ameliorated or cured (166-188). To do this, they draw on neuroscientific research on autism, developing identities as “cerebral subjects.” They argue that autistic identities emerge from neurological difference, not biographical contingency. This creates for

them “a paradoxical situation: While neuroplasticity helps account for neurodiversity, neurodiversity advocates tend to minimize the differences among brains within the autism spectrum so as to support their claims for the existence of a brain-based autistic identity. Thus, the ‘autistic brain’ is displayed as ontologically homogeneous and radically different from the comparably homogeneous ‘neurotypical brain’ (185).” Yet claiming that differences in identity and subjective experience emerge only from brains, and are present from birth, ignores the many lively, healthy, and idiosyncratic ways that people with autism navigate social worlds and develop into adults. It also precludes any attempt to alter aspects of autism as a violation of autistic personhood.

Many neurodiversity activists are comfortable with attempts to treat specific types of psychiatric distress that they experience, for example anxiety, OCD, or depression: “In short, some self-advocates insist that autism itself should not be treated but have a pragmatic attitude toward medical interventions” (172). They may frame these targets of treatment as outcomes of social exclusions and failures of accommodation, or they may understand them as features of their autism that produce suffering. John Elder Robison is a prominent advocate who has written about the many types of pleasure and value he finds in his distinctive cognitive style. His recent (2016) memoir describes how an experimental treatment altered aspects of his autism, making him more emotionally receptive and responsive. This was not without cost. His new emotional awareness destroyed his marriage, as he felt himself overwhelmed by his wife’s clinical depression. “I had fantasized that the emotional cues I was missing in my autism would bring me closer to people. The reality was very different. The signals I now picked up about what my fellow humans were feeling overwhelmed me. They seemed scared, alarmed, worried and even greedy” (Robison 2016b). Robison valued his newly acquired emotional cognition, but came to recognize that it was simply another way of seeing the world, and one that came with its own limitations, including the false sense that he could understand exactly what others were feeling.

Self-advocates are not the only people who describe cognitive identities in autism as multiple. Christopher Gillberg, a psychiatrist who has published on autism for nearly four decades, including a textbook now in its fourth edition (Coleman and Gillberg 2011), now argues that researchers should move away from the search for autism treatments and instead focus on treating autism-related syndromes, including mood disorders, for which treatments exist. He argues that attempting to address core features of autism, for which scientists have identified few interventions that seem to meaningfully affect patients’ wellbeing in the long term, is less

helpful than identifying those characteristics that are a source of subjective suffering, what he calls “autism-plus.” Autism alone, he argues, often doesn’t cross the threshold of pathology, and “[m]any children with autism have parents and siblings with (often marked) autistic features, yet these parents and siblings are often highly successful individuals without major problems in adult life” (2014, 3275). Neuroscientists are just now coming to terms with the idea that future research on autistic cognition may have to abandon the central premise that autistic brains are pathological and instead recognize that, in the words of another prominent social psychologist, “there is no single way for a brain to be normal, as there are many ways for the brain to be wired up and reach adulthood” (Baron-Cohen 2017, 746).

If we live in an intellectual milieu characterized by the ideology of cerebral subjectivity, then that environment is also one populated by a profusion of brainhoods: nonhuman brains, neurodiverse brains, and brains shaped from birth by the brains that abut them. Neuroscientists arrive at these conclusions themselves, although they upset ideals of the cerebral subject as unitary, self-contained, or consistent across individuals. For those studying neuroscientists, then, noting and critiquing the failure to recognize, as Vidal and Ortega put it, that there is no “cortex without context” (129) is one commendable objective. Vidal and Ortega clearly prefer some kinds of neuroscience over others, even as they lament the ways that human complexity is reduced to cerebral subjectivity in general. But other critical observers, like Tobias Rees (2016) and Des Fitzgerald (2017), writing on scientists who study neuroplasticity and autism, respectively, call for researchers in the social sciences to draw out the ethics and politics already folded into neuroscience. This might even extend to collaborations with neuroscientists. We may live in an era of brainhood, but to which kinds of brains we extend our consideration, and thus the protections and respect of personhood, is a site of active, and interesting, debate. Perhaps it is as important to ask not whether we have become brains, but what kind of brains we will be.

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## Historicizing the Brain

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Evelyn Waugh's classic novel, *Brideshead Revisited*, is about love, religion, vice - and about subjectivity: who are we, really, and how did we come to be that way? Towards the middle of the book, as the charming and flamboyant Sebastian Flyte participates in ever more excess, our chief protagonist, Charles Ryder, reflects back on comments made by Sebastian's sister, Julia. "Poor Sebastien", Charles recalls her once remarking: "it's something chemical in him." (Waugh, 1962 [1945], 125). Julia, it seems, was suggesting that Sebastian's alcoholism is in part a consequence of some aspect of his biology - a proposition Charles strongly rebukes. To him, Sebastian's complex family life and commitment to Catholicism caused his present state: talk of "chemicals" was anathema.

That was the cant phrase of the time, derived from heaven knows what misconception of popular science. "There's something chemical between them" was used to explain the over-mastering hate or love of any two people. It was the old concept of determinism, in a new form. I do not believe there was anything chemical in my friend. (Waugh, 1962 [1945], 125)

Such commitments to first, the bodily soma and its epiphenomena as important building blocks of the self, and second, to the rejection of such perspectives, are not, of course, limited to the friends and acquaintances of Captain Charles Ryder. Rather, in Britain, as in many other nations, understandings of the ontogeny of subjectivity - and challenges to these - have waxed and waned across diverse aspects of biology, psychology, and "the environment". The premise of much work in the social sciences and humanities over the last decade is that contemporary subjectivities are going through some form of neurologisation, determined (to great or lesser extents) by developments in, and the related cultural traction of, the 'new brain sciences'. A central argument of *Being Brains* is that, given the histories of phrenology, psychology, and neurology, the playing out of debates around the role neuroscience might have in the production of ourselves should be taken as neither a coincidence or a surprise. Nor is neuroscientific knowledge necessarily deterministic of contemporary forms of selfhood: as Vidal and Ortega meticulously show, "the cerebral subject was enabled by an early modern

reconceptualization of personal identity, independently of any naturalist knowledge about the brain” (21).

It’s a little hard for me to engage critically with *Being Brains*, since I have for some time been part of a community of scholarship that seeks move away from unilateral celebration or denigration of the neurosciences – a community to which Ortega and Vidal have been key contributors. In ways resonant with their intellectual agenda, I’ve sought to locate instances where understandings of the neurological appear to hold some kind of traction, and to interrogate more precisely how, why, to what extent, in what fashion, and with what ramifications. When I was developing my PhD thesis, I took some reassurance in attending meetings on neuroscience and society where these established scholars likewise critiqued (what I felt to be) over-generalizing commentaries on the brain and its import. I was delighted when, in 2009, Vidal published "Brainhood, anthropological figure of modernity" in [History of the Human Sciences](#). It was a breath of fresh air, and I continue to recommend it. I am, then, hardly an unbiased reader of *Being Brains*. To be banally brief: I think it’s great and you should read it. I risk becoming irritatingly self-regarding if I go on at length about why, since any commentary from me on Vidal and Ortega’s work is likely to read as a rather vainglorious summary of things I presume to like about my own. At least, that’s how I’d interpret such a review.

What I can, I hope, safely say is that one thing I find particularly compelling about *Being Brains* (as with much historical writing) is its implicit invitation to historicize the novel. Sociologists and anthropologists are terribly good (read: bad) at finding new things in the world that weren’t previously there: new processes, new understandings, and so on and so forth - and I say that as someone who is, if anything, a sociologist of science, technology and medicine. Notwithstanding obligatory nods to reflexivity, social scientists are, unfortunately, largely less adept at questioning whether these things really are so new, or instead whether they are merely new to the researcher. This propensity to "discover" novelty is strikingly apparent in much commentary on neuroscience and society (though probably far less so in more recent work). Through precise, yet never turgid, historical detail, Ortega and Vidal make abundantly clear why this tendency needs to be challenged.

No book or article is perfect, of course. In the case of *Being Brains*, I sometimes wondered if, somewhat paradoxically, the claim that ideas about the brain preceded scientific work rather than the converse (if the authors will forgive me for eliding their subtlety with this summary)

was just a little over-stated. For instance, in Chapter 1 we are told in some concluding comments about shifting logics of cerebral fitness that “none of this can be explained by invoking neuroscientific advances” (57). This is a bold claim (I’m fixated by the “none”), and I think it needs to be considered more carefully. I don’t think it detracts from the richness of Vidal and Ortega’s arguments to leave at least some room for the possibility that science constructed as novel can exert effects in the world that can be considered significant, precisely because of this ascription. This is by no means an enjoiner towards a thin form of explanation of the kind *Being Brains* articulates frustration with, but is rather an invitation to a thicker form of elucidation that allows for the multi-directionality and non-linearity of traffic between “science” and “society”. Indeed, it is something that Vidal and Ortega note they are themselves orientated towards (4). Maybe I’m being unfair, or a little bit dim. I probably care too much about the “[none](#)”. Perhaps this is the kind of thing Ortega and Vidal will address in further detail in future work. In any case, I enjoyed the book and value its contribution. And I don’t think that’s just because of something chemical.

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# Knowledge about the Brain and Societal Interests

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The bourgeois public sphere may be conceived above all as the sphere of private people come together as a public; they soon claimed the public sphere regulated from above against the public authorities themselves, to engage them in a debate over the general rules governing relations in the basically privatized but publicly relevant sphere of commodity exchange and social labor. The medium of this political confrontation was peculiar and without historical precedent: people's public use of their reason (Habermas 1968, 27; transl. FWS).

In his classic book *Knowledge and Interest*, German social philosopher Juergen Habermas early on pointed out that all human knowledge endeavors are bound to social, economic, and technological interests emerging from larger cultural contexts and social movements. Crafted as a neo-Marxist critique of the very conditions of the modern life world and industrial sphere, Habermas intriguingly recognized the outright reliance of nearly all human relationships and communication forms on scientific developments and technological infrastructures. It therefore hardly comes as a surprise that Fernando Vidal—research professor at the Catalan Institution for Research and Advanced Studies and at the Autonomous University of Barcelona (Spain)—and Francisco Ortega—a professor of social medicine and public health at the State University of Rio de Janeiro (Brazil)—also address the question why the neurocentric view of human subjectivity emerged as one of the most powerful concepts in academic, ethical, intellectual, and political debates since the last century. From this perspective then, the authors tackle the question of the scientific ubiquity of the human brain in many different disciplines and social discourses—reaching from neuroeconomics to neuroaesthetics to neurosociology—, while tracing the economic, societal, and military-related conditions from which these diverse interests have sprung particularly since the 1990s.

Related to questions raised for instance by Michael Hagner in *Ecce Cortex—Beitraege zur Geschichte des modernen Gehirns* (1999) and by Nikolas Rose and Joelle M. Abi-Rached *Neuro: The*

*New Brain Sciences and the Management of Mind* (2013), who emphasized that the social technologies among mind and brain sciences have been importantly related to new forms of human productivity, postmodern living conditions, along with distributed forms of governmentality in international consortia and associations, this new book by two leading historians and philosophers of the neurosciences and psychology offers an intriguingly fresh perspective on the problem of the modern condition of the human brain.

*Being Brains* presents a remarkable investigation of the “encultured brain,” even though both authors take the concept to translate rather into neuroanthropological perspectives emphasizing fieldwork, yet they aim primarily at investigating the problem and challenges in all neuro-disciplines that see that “their assumption that culture is essentially, both ontologically and causally, a by-product of the brain does not equip them well to deal with cultural phenomena—while at the same time it gives them a powerful tool for shaping culture itself” (105). Vidal and Ortega’s take on answering the pertinent questions translates for a large part of the book into a distinct and thorough review of the existing literature. This is a special contribution yet likewise limitation of the approach, since the review style does not offer much room for the personal stances and arguments which the authors themselves hold on the topics in question. *Being Brains* offers a very adequate narrative of the development and implications of the cerebral subject. It at times provides fairly abstract and brief examples from the large array of neuro-disciplines and -fields, rather than delving into more clarifying and descriptive case studies working out how cerebral neurological conditions and brain plasticity came to characterize the meeting place of science and culture, a thread which stays a bit under-explored in the book.

A particular strength is the discussion of cultural diversity and its relationship to neurodiversity that is extended through different cultural settings—both Western and non-Western—having inspired neurological and psychological work, a perspective that has often been missing in the science and technology scholarship. Vidal and Ortega draw particular attention to the translational imperative in this largely philosophical book on the topic, “which demands that research be applicable in the form of products and therapies, is in practice driven by a 'promise of porosity,' by the expectation that, one day in the distant future, laboratory work will lead to clinical interventions.” They point out that the unidirectional model is too simplistic when compared with the forms in which the sociology of science and technology applied this notion before—often invoked by public and political authorities alike (see also in Brosnan and Michael 2014). One may ask, why the meaning of the

neurosciences is principally investigated in the specific direction toward the social and human sciences as “neurology informing history,” instead of posing the question what the humanities really have to be “afraid of” (71)? After all, the neurosciences do not have so much new to offer to explain the contextual factors encultured in the brain beyond traditional psychological knowledge regarding human development, memory, consciousness, and therapy (explained in Borner 2004).

When looking at the general theme of this highly remarkable book by Vidal and Ortega, which details several of the conundrums in disorders of the brain and consciousness from a historical and social medical vantage point, it should be emphasized that it further nuances insights through research on the very foundations of knowledge translation in neurology and the psychology of consciousness. Reconnecting the argument hence with Habermas’ seminal analysis in *Knowledge and Interest*, it really emerges that “neural hermeneutics” (127) can deepen our insights into neurocultures of the cerebral subject. *Being Brains: Making the Cerebral Subject* provides an enriching read with inspiring perspectives on the analysis of social interests in history of neuroscience, psychiatry, and public mental health.

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# The Neuro: Modernity, Community, and Critique

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We are grateful to Todd Meyers and the entire *Somatosphere* team for hosting a forum on *Being Brains*, and to our colleagues for their generous and insightful comments. Our work has been in a variety of ways informed by their historical and sociological work; after reading their contributions, we are reassured by the feeling of having honored their empirical, conceptual and methodological lessons.

Martyn Pickersgill captures what is perhaps the main feature that brings us all together when he writes that it is hard for him to engage critically with *Being Brains* because he has “been part of a community of scholarship that seeks to move away from unilateral celebration or denigration of the neurosciences.” There are two sides to his observation: one concerns the existence of a scholarly community; the other, the nature and challenges of critique. Both touch on issues that go beyond the relatively closed world of *Somatosphere*.

Let us start with the issue of *community*. Most neuroscientists seem to believe that the notion that we are essentially our brains expresses a natural, empirical, neutral, transhistorical and transcultural fact supported by the brain sciences. In contrast, for the community Pickersgill alludes to, which is made up of historians, sociologists or anthropologists, the cerebral subject is an “ideology” in the plain sense of a historically situated and contextually contingent set of notions, beliefs, values, interests and ideals that functions as a guiding principle for being and acting in the world. Pickersgill and Elizabeth Lunbeck in particular underline its historicity, and raise the question of the role of neuroscience. As Pickersgill notes, a central argument of *Being Brains* is that the role “neuroscience might have” in the production of subjectivities is not a coincidence or a surprise – but that neither is it necessary or inevitable; and as Lunbeck observes, although the cerebral subject is a “new formation” that rose to be “a central plank in the *neuro* program,” it embodies a way of thinking about personhood, not a scientific fact. That is why, as she insightfully remarks, the histories of brain science and of the cerebral subject “must be prised apart; one narrative doesn’t do justice to both.”

That is indeed the main historical message of *Being Brains*. It tends to run across the community of scholars who investigate the vast and variegated universe of the *neuro* – a universe that, as our colleagues note, is both imbricated in the fabric of daily life, and characterized by ambiguities and by relations (broadly speaking, between science and society) that are densely crisscross rather than straight and unidirectional. Pickersgill, however, suggests that we have underrated the impact of neuroscience as *science* (rather than as a source of idioms, keywords, images, ipse dixits, or arguments from authority). We indeed claim that neuroscientific advances do not by themselves account for the rise of the cerebral subject.

But this has to be understood differently at different moments.

Knowledge about the brain had no direct significance in the late seventeenth Lockean redefinition of personhood and personal identity, and did not empirically substantiate Charles Bonnet's dictum of 1760, "If a Huron's soul could have inherited Montesquieu's brain, Montesquieu would still create." Two centuries later, however, neuroscience seemed to support and justify Roland Puccetti's clever conclusion, "Where goes a brain, there goes a person" (1969, 70). That, in turn, was before neuroimaging promised to provide the clue to the complex processes and behaviors traditionally investigated by the human sciences and the humanities. Fast-forward half a century, and undeniable neuroscientific advances have made it seem ludicrous to doubt that, as neuroethicist Adina Roskies (2016) recently wrote, "brains give rise to the people that we are and the social structures that we inhabit and create."

So, yes, as Pickersgill remarks, "science constructed as novel can exert effects in the world that can be considered significant, precisely because of this ascription." Nevertheless, placed in relatively long temporal perspective, none of the fundamentally equivalent statements we just quoted *depends* on that science. In spite of their appearance, they do not derive from a scientifically established natural state of affairs, but from a conception of personhood as *brainhood* (Vidal 2009); and this conception, with (as Lunbeck says) *neuro* as a "keyword" of modernity," in turn conveys implicit but normative claims about a hierarchy of forms of knowledge (from neuroscience downward), about causality and explanation (from the brain upward), and about the best ways to organize society (on the basis of brain knowledge). As Chloe Silverman puts it so well, "the claim that brains rule bodies is a central organizing belief, not a research finding." And as she sharply reminds us, "brainhood's central actor is a human brain with typical contours and functioning, a standard difficult to expect in a world populated

by brains that are neither human nor typical in function.” From that point of view, she is right in her thought-provoking remark that we have privileged “some kinds of neuroscience over others.” But the reason for that choice is simple: we have stuck to the kinds that define the contours and range of dissemination of the ideology of the cerebral subject at a global scale. This brings us to the question of *critique*.

Elizabeth Lunbeck rightly notes that while we do not condemn the “constitutive practices” of the *neuro*, our book represents “engaged scholarship.” Indeed, our reading of the *neuro* is by no means “paranoid,” and we need not take a “reparative” attitude. We may associate our form of engagement to Michel Foucault’s ideas about a *history of the present*. Rather than trying to understand the past exclusively “on its own terms,” historians of the present begin with a question about *today*, and in looking for answers, enter a field of power relations and political struggle (see on these matters Roth [1981] and Garland [2014]). For us, doing the history of the cerebral subject and charting the contemporary *neuro* over a territory spanning a broad range of learned and “popular” contexts, discourses and practices did not just open the way to assessing them: they made critique an integral part of the project.

*Critique* is not about fault-finding, judgment or polemics. In a Foucauldian perspective, as Judith Butler (2001, 3) explained, its primary task is not to evaluate its objects, but to ask, “What is the relation of knowledge to power such that our epistemological certainties turn out to support a way of structuring the world that forecloses alternative possibilities of ordering?” Or in Foucault’s own words, critique, as “the movement by which the subject gives himself the right to question truth on its effects of power and question power on its discourses of truth,” is “the art of voluntary insubordination” in the context of “the politics of truth” (Foucault 1978a, 47; *la critique, c’est le mouvement par lequel le sujet se donne le droit d’interroger la vérité sur ses effets de pouvoir et le pouvoir sur ses discours de vérité* [Foucault 1978b, 39]). Critique is therefore tied to “governmentalization” as the process “through which individuals are subjugated in the reality of a social practice through mechanisms of power that adhere to a truth” (Foucault, 1978a, 47). More modestly, but in a Foucauldian spirit, the critical enterprise in *Being Brains* consisted of showing that contemporary categories and notions that look inevitable, natural or necessary are not so, and of describing and analyzing how they operate in different contexts and circumstances.

The story we wanted to tell and the landscapes we tried to depict are far from homogeneous. They nonetheless share, as Frank Stahnisch points out, a focus on “encultured brains” –

*encultured* not in the sense used by neuroanthropologists and cultural neuroscientists when they see culture “inscribed” in the brain while at the same time considering it a product of that organ, but in the sense of approaching the brain (a scientific object and metonymy for the *neuro* universe) as a cultural and historical entity. Stahnisch perceptively wonders why we investigated “the meaning of the neurosciences” mainly in the direction of the social and human sciences, when in fact they contribute hardly anything to explaining the phenomena these sciences study. Yet he provides the reason himself: sustained by science agencies chanting the mantra of interdisciplinarity and by applicants convinced that a *neuro* label increases their chances, that is the direction of the translational imperative, in whose name so much of the “neurologization” of the human science is undertaken. We followed it for no other reason that it was one of the chief mechanisms whereby the ideology of the cerebral subject has spread and become global. Nevertheless, we also emphasized that it is the human sciences, not neuroscience, that provide the main questions to the “neurodisciplines,” from neuroanthropology to neurotheology, which have developed since the 1990s as “humanistic” applications of neuroimaging technologies.

Herein resides one of our critical objectives: to assert, as Lunbeck notices, “the conceptual integrity of the human sciences.” Contrary to what some critics have suggested, this goal is not animated by fears that the human sciences might fall prey of neuroimperialist designs. Neither does it reflect a refusal to consider humans as natural beings largely shaped by evolution and all the biological determinants that come with it. Rather, it manifests the conviction that not everything is best elucidated by neurobiology – that even though the human complex phenomena that fields such as neuroanthropology, neuroaesthetics, neurohistory or neurotheology hope to explain require a brain, neuroscience contributes virtually nothing to studying them in ways that takes their complexity into account.

This, in a manner that returns us to the beginning of our response, says something about the issue of community. Silverman notes that “other critical observers” call human science scholars to engage with neuroscientists and “draw out the ethics and politics already folded into neuroscience.” She imagines that such engagement “might even extend to collaborations with neuroscientists,” may help inspire consideration for “kinds of brains” other than the typical human, and ask “not whether we have become brains, but what kind of brains we will be.” Of course, Silverman’s own commentary confirms that, if anything, we will not *be* any kind of brain, but some kind of person, and that regard can only be shown to persons, not to brains.

Her vocabulary, however, indirectly raises the question of the dialogue between the neurosciences and the human sciences.

The reason why documented attempts at “neurocollaborations” have failed (e.g. Fitzgerald et al. 2014, Littlefield et al. 2014), and why so little has been (and can be) learned from the neurodisciplines is that, although the human sciences may broadly frame the research questions, the *neuro* dictates the investigative practices as well as the methodology and the epistemic rules of description and explanation (even though such practices and rules are not adequate for the objects to which they are applied). Hence the challenge of creating a community including both the neurosciences and the human sciences. Some scholars are happy with such a situation, and defend the idea that we must not aspire to reciprocity, but learn to live with interdisciplinary collaboration as a “practice of subjugation” (Callard and Fitzgerald 2015).

We have not been able to learn to sing to that tune; and we know that there are better ways to think and work across disciplines. It is, for example, important to show how poverty impacts on the brain. Documenting such impact in detail is scientifically significant. Moreover, because of the current authority of the *neuro*, it may help inform public policy and prompt individuals and agencies to action. But demonstrating its neurodevelopmental effects does not make poverty any more real or morally scandalous; and it does nothing to account for poverty, which can be explained, and even defined, only by the tools of the human and social sciences, and will be combatted only thanks to public policies based on moral and political worldviews (see Lipina 2016, which, in spite of its subtitle, maintains a balance between neurobiology and political and ethical thought). Fruitful collaborations thus require renouncing the claim, repeated over and over in different forms, that (as put it a leader of the BRAIN Initiative, the United States’ flagship brain research project) “when we shall understand the brain, humanity will for the first time understand itself from within” (Yuste 2015). The prophet added that such an understanding will “revolutionize culture and transform many things such as education, the legal system and the economy. It will be a new humanism.” With critical determination, *Being Brains* is devoted to sketching the past conditions that made such pronouncements possible, and to exploring their mode of operation in the present.

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