



Vatted dreams: neurophilosophy and the politics of phenomenal internalism

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Despite much social-scientific work on the neurosciences, little ethnographic and historical attention has been paid to the field of neurophilosophy. Yet anthropologists studying brain research occasionally critique neurophilosophers for reducing the mind to the brain while affirmatively citing philosophers of mind who present the mind as emerging from interactions between brain, body, and environment. This article examines the ostracized camp of so-called ‘phenomenal internalists’ – neurophilosophers who believe that consciousness can supervene on the brain alone. This ontological commitment is driven by certain existential and political experiences from false awakenings to disenchantment with the counterculture of the 1970s. But it also draws from neuroscientific research on the dreaming brain. The inquiry concludes with a plea to anthropologists to attend to relations of detachment, both social and neural, and to reconsider their own ontological commitment to externalism in the light of dream research.

This article examines the lives and works of neurophilosophers who regard the dreaming brain as a model of phenomenal consciousness – a world of inner experience as detached from its surroundings as a brain in a vat. Convinced that conscious experiences are intrinsic to the brain, they call themselves phenomenal internalists. Phenomenal internalism does not at all preclude that the so-called ‘intentional’ content of conscious experience refers to things outside of the brain such as the philosopher’s dyspeptic stomach, *JRAI* readers, glass tanks, or irrational numbers. The underlying naturalist metaphysics of the mental draws empirical support from neuroscientific dream research. The article examines how this metaphysics is constructed as neuroscientists and neurophilosophers exchange empirical findings and philosophical concepts. But, like all metaphysical theories, phenomenal internalism is underdetermined by scientific evidence. An ethnographic and historical inquiry into the ontological commitment to the mind-brain reveals how it has also been shaped by its advocates’ political and existential engagements and disengagements. Case studies of two neurophilosophers, Thomas Metzinger and Antti Revonsuo, show how a strongly political and an almost apolitical thinker arrive at almost the same ontology of consciousness, which raises the question of the explanatory power of what we call context. The theoretical goal of this article is to explain the dedication to phenomenal internalism as a branch of

contemporary materialism in a way that acknowledges a partial continuity between scientific findings and metaphysical speculation and uses social research to fill the remaining explanatory gap between the two. Thereby, the article contributes to an anthropological controversy about the question of how to study different ontologies and their relations to first-hand experience and empirical knowledge. But let us first consider why this account of phenomenal internalism touches a sensitive spot in the discipline of anthropology.

Internalism as anthropology's other

All beginnings are difficult. In February 2009, I was sitting next to an irate philosopher on a train from Berlin to Hanover, where the European Platform for Life Sciences, Mind Sciences, and the Humanities was about to convene. For the following week, my colleagues Fernando Vidal, Nikolas Rose, Joëlle Abi-Rached, and I had invited Thomas Metzinger, the philosopher in question, to a workshop at the Max Planck Institute for the History of Science on the mushrooming 'neuro-' fields, such as neurotheology, neuropsychanalysis, neuroeconomics, or neurophilosophy, which had set out to reform the human sciences on the basis of knowledge about the brain. Metzinger lashed out: 'I don't understand what you're aiming at with this workshop! Who has ever claimed that they were their brain? You're building up a bogeyman! "The" neuroscientists, "the" neurophilosophers – this is bordering on character assassination!'

Metzinger's sense that his field was under attack was not unfounded. The confinement of mind to brain, most prominently advocated by Patricia Churchland (1986: ix), was irking social scientists and humanities scholars like few other ideas. Part of this backlash to the naturalization of the human was politically motivated. Neuroreductionism, it had been argued, could promote racist and sexist discrimination and the exclusion of neurologically abnormal individuals (Martin 2004: 202). The reduction of social problems to brain disorders served a neoliberal ideology replacing an ethic of state care with an emphasis on individual responsibility, catering to the expectation that citizens would govern themselves through various self-management practices, including the consumption of mood-stabilizing and cognitive-enhancing drugs (Assheuer 2005; Maasen 2007; Malabou 2008; Martin 2010; Pitts-Taylor 2010). Thus, it served the business interests of the pharmaceutical industry (Martin 2004).

This concern for the common good had been mixed with disciplinary interests and a passionately defended philosophical anthropology. In the face of the ebullient self-confidence displayed by many brain researchers and neurophilosophers, anthropologist Emily Martin worried that cultural anthropologists might 'feel like a deer in the headlights of a Mack truck, realizing how the new neuroscience is eradicating the social and cultural (by reducing them to more fundamental processes in the brain)' (2000: 577). While the heuristic individualism of cognitive neuroscience experiments looked at human beings as isolated test subjects, ethnography countered such biologism 'by insisting on imagining human consciousness as made up of the social and the cultural' (2000: 585).

While Martin maintained that 'we are only human insofar as we are connected to others' (2000: 585), Bruno Latour put equal weight on how humans were defined by their connections with things as mediators of human relations. He was sympathetic with the fact that neurophilosopher Paul Churchland carried a CT scan of his wife Patricia's brain instead of her photo in his wallet: 'Paul may be perfectly right in saying that we should all become sensitive to electrical [*sic*] differences in each other's brains and that this

sensitivity, this learning to be affected, will make us have a richer and more interesting understanding of others' personality than mere boring facial expressions' (Latour 2004: 225). But, in opposition to the Churchlands' reductionism and eliminativism, Latour advocated a normative epistemology in which the neuroscientific perspective on humans only *adds* one more articulation to what it is to be somebody. It does not rule out alternative accounts. Ontologically, Latour's (1993) actor-network theory maintains that the association of one entity (say, a human brain) with other entities (e.g. brain researchers, laboratory assistants, scientific instruments, and neuroimages) not only determines the representation of an experimentally tested entity, but also transforms the very being of all entities involved.

I could point to further variants of such relational anthropologies and ontologies, but the basic point has been made: for reasons that would need to be explored further, anthropologists, sociologists, and historians frequently take issue with the reduction of mind to brain because it appears to disconnect human consciousness from the surrounding socio-cultural and material world. This has led many anthropologists studying the neurosciences to join the ongoing struggle of so-called 'externalists' against 'internalists' in the philosophy of mind. Broadly speaking, internalists take mental contents to be an intrinsic property of the mind, which supervenes on the brain, while externalists see mental contents as contingent on an organism's relationship to the external world.

For social scientists, the most prominent point of reference in the multifaceted externalist camp has been the extended-mind hypothesis. Clifford Geertz followed Andy Clark's (1998) agenda to put 'brain, mind, and world together again': 'Our brains are not in a vat, but in our bodies. Our minds are not in our bodies, but in the world. And as for the world, it is not in our brains, our bodies, or our minds: they are, along with gods, verbs, rocks, and politics, in it' (Geertz 2000: 205) Clark's central claim that the mind is neither confined to the skull nor detached from its environment but co-constituted by external objects has also been taken up by ethnographers of the neurosciences. Jonna Brenninkmeijer describes how clients of neurofeedback therapists do not learn to identify with their brain, but come to conceive of their brain alongside visualizations of their brain waves on a computer monitor as an extension of the self. She likens this construct to Clark's 'soft self' as 'a rough-and-tumble, control-sharing coalition of processes – some neural, some bodily, some technological' (Brenninkmeijer 2013: 16). In his study of social neuroscience, Simon Cohn points out that the assumption that mental activity was not confined to the brain, but had to be attributed to the whole body, the local environment, and intersubjective relations, might first appear as 'the direct antithesis of the neuroscientific endeavour' (2008: 90). But, cued by Andy Clark and David Chalmers (1998), close attention to the *practice* of neuroscience reveals that an externalist conception of the mind was tacitly acknowledged in the ways researchers interacted with subjects:

What finally appears as an area of activation in the final brain scan of a volunteer is actually the combined response of the person in the scanner, the physical provisions of the experiment, and the thinking of the scientist who not only has to prime the volunteer, but who also establishes an essential level of intimacy with him or her in order for the experiment to be conducted in the first place (Cohn 2008: 101).

In their edited volume on the agency of the material world, Carl Knappett and Lambros Malafouris (2008) recommend Andy Clark's work as a suitable anchor for a broad range

of positions in this field. Among these I could count my own amalgamation of actor-network theory and the philosophy of mind of Clark and Chalmers (1998) as well as of Alva Noë (2004). The ethnographic observation of two neuropsychopharmacology laboratories studying psychedelic drugs suggested an explanation of drug experiences as relational phenomena attributable not to brain or drug alone, but to complex interactions between psychoactive compounds, embodied brains, the experimental setting, and the scientists' behaviour (Langlitz 2012: 116–26, 185–92).

The disciplinary identity of socio-cultural anthropology has been built around various forms of alterity, especially cultural difference. Considering the widespread alignment of anthropologists – myself included – with externalist philosophies of mind, this article approaches a domain that has been constitutive of internalism as anthropology's other.

Fieldwork in neurophilosophy

From 2006 to 2010, I was a participant observer of the Volkswagen Foundation's European Platform for Life Sciences, Mind Sciences, and the Humanities. Directed by the philosopher Thomas Metzinger, the psychologist Thomas Goschke, and the neurologist Kai Vogeley, this initiative provided a framework for collaborations between young brain researchers, psychologists, and philosophers. Although anthropologists had not been invited, the organizers accepted my initiative to document the coming of age of this cohort of more interdisciplinarily orientated scholars. As the approximately sixty doctoral and postdoctoral researchers broke up into smaller groups to develop transdisciplinary research projects, I joined one focusing on the dreaming brain, for neuroscientific dream research has been key to philosophical arguments in favour of phenomenal internalism.

This fieldwork in neurophilosophy combines an ethnographic foray into the world of philosophers of mind with a reflection on the philosophical anthropology embraced by anthropologists (see also Langlitz forthcoming; for a closely related account of 'fieldwork in philosophy', see Langlitz 2012: 243–66). Since both aspects defy certain disciplinary expectations, I should briefly explain the approach. While I was doing fieldwork in a Swiss neuropsychopharmacology laboratory studying psychedelic drugs, lab head Franz Vollenweider introduced me to his philosophical interlocutor, Thomas Metzinger, at the 2006 LSD Symposium in Basel. Since I had examined the 'trading zone' (Galison 1999) between neuroscience and the philosophy of mind from the brain researchers' side (Langlitz 2012: 204–41), I was curious to learn more about how neurophilosophers received neuroscientific knowledge, especially about altered states of consciousness such as psychedelic experiences and dreams. Science studies scholars and anthropologists have paid a great deal of attention to neuroscience, but not to philosophy. To my knowledge, this article is the first to study the group of people who, on the level of academic philosophy, have recently been giving scholarly substance to a materialist *logos* of *anthropos* in the light of the most recent advances in brain research. Sharing Martin's (2010) curiosity about people who presumably identify with their brains, it adds to an ethnographic archive of ontologies a case study of a peculiar variety of Euro-American naturalism (Candea & Alcayna-Stevens 2012; Descola 2013; Viveiros de Castro 2004). If we were to believe Philippe Descola (2006: 140), the advent of materialist theories of consciousness in the late twentieth century would require particular ethnographic attention as it represented a deviation from the supposedly universal distinction between body and mind – a genuine anthropological anomaly.

In terms of ethnography, many readers of this journal will notice that this article lacks an aesthetic quality that we have come to expect of anthropological writing: a penchant for significant details presented in the form of vignettes that would give the text a feel of thickness. After having written about the imponderabilia of laboratory life in all its facets, I wondered why no such texture was forthcoming in the new project. A number of contingencies aside, the main reason seems to be that the work of philosophers does not lend itself to ethnographic observation in the same way as does neuroscientific research. The most consequential things these thinkers do happen in their heads, often while they are sitting at their desks at home. The possibility of the ethnographer installing himself in the study of the lone scholar mostly evoked references to the Norwegian comedy *Kitchen stories* and was the subject of joking rather than serious methodological consideration. The group of philosophers and neuroscientists with whom I worked only met about twice a year, often at conferences such as the annual meeting of the International Association for the Study of Dreaming or in Antti Revonsuo's sleep laboratory in Turku, Finland. With one of my Volkswagen collaborators, the German-American philosopher Jennifer Windt, I used these opportunities to conduct a series of interviews with senior researchers who have shaped the current controversy over the dreaming brain. The rest of the time we communicated via email or Skype. Contributing early on to the budding studies of social science and humanities (Dayé 2014), Anne Beaulieu started a conversation about how to examine non-lab-based fields and suggested that ethnographic approaches would have to loosen their grip on the Malinowskian paradigm of co-residence in a place over a prolonged period of time as a necessary requirement for 'being in the field'. Of course, there is a price to pay. For example, without co-location it will become difficult to produce the thick, detailed descriptions that convey a sense of 'being there', which has endowed so many anthropologists with authorial authority as it animated their ethnographic writing. But anthropologists would be ill advised to ignore important new fields of research simply because they do not fit their old ways. More important than the ethnographic aesthetic of thickness is the intellectually transformative power of ethnographic encounters. Years of brief trips and long calls have generated a deeper understanding through relations of trust and mutual investments in individuals, which the often polemical text-based engagements with neurophilosophy lack.

This experience has transcended parochial barriers on two levels. Ethnographically, it has allowed light to be shed on phenomenal internalists as a group usually ignored or ostracized by socio-cultural anthropologists. Who are they and what inspires their respective commitments to this variety of materialism? What practices give shape to the mind-brain as an epistemic object? How stable has this object become in the process? However, considering that most anthropologists and science studies scholars, including myself, have subscribed to an externalist philosophy of mind, a better understanding of the internalist field might not only engender more tolerance towards the strange beliefs of a neighbouring discipline. It also renders thinkable a reasonable alternative to our own ontological commitments. Understanding the other's reasons is always an invitation to reassess one's own. Thus, at least implicitly, this article suggests thoroughly scrutinizing our anthropological commitment to externalism as well as the limits of the socio-cultural or, more generally, relational constitution of consciousness.

Disenchanted revolutionaries

In modern times, materialism has had a rich political history, swinging back and forth between left and right, between conservatives, liberals, and revolutionaries. Instead of reducing the contemporary identification of mind and brain to yet another expression of neoliberal subjectivity, a cultural anthropology of internalism needs to generate a series of case studies that locate individual thinkers in the cultural matrix engendered by this history. Thomas Metzinger, for instance, arguably Germany's most prominent neurophilosopher, came of age in the buzzing alternative culture of 1970s Frankfurt. As a high schooler, he took part in the escalating environmentalist demonstrations against the expansion of Frankfurt's international airport and the tear-gas-fogged street battles between the squatting movement and the police. When he started to meditate at age 18, he thought of this unchurched spiritual practice as politically revolutionary. After ninety minutes of yoga in the morning, Metzinger recalled in a conversation, he attended his first lecture at Frankfurt's renowned Department of Philosophy and immediately clashed with the professor. 'Consciousness is always consciousness of something', Rüdiger Bubner declared. 'There is no such thing as pure consciousness'. When Metzinger insisted that he had experienced consciousness without cognitive content just before class, Bubner called out, 'I cannot understand you and I do not wish to understand you', before turning his back on the impertinent freshman. Being part of a counterculture that called into question the entire political system, the philosophy student was also put off by the moderate stance of Jürgen Habermas, who had argued against the student 'actionists' of 1968 and publicly supported the Social Democratic Party (Specter 2010: 112–13). 'I felt that we had already gone so much further in our social laboratory', Metzinger remembered.

But soon the young radical came to realize that many of these bold experiments failed to produce the blissful forms of life hoped for. The peaceful demonstrations were overshadowed by the violent tactics of groups the German media labelled *der schwarze Block* ('the black block'). Living in a commune, Metzinger noted that 'we agreed about everything, from Tim Leary to the world revolution, but we didn't even manage to keep the kitchen clean, not to speak of tending a garden or being in a non-possessive relationship without jealousy'. Although he continued to feel alienated from the social milieu gathering around the celebrities of the Frankfurt School, he began to respect Habermas's political philosophy: 'He prevented a large part of this generation from drifting off into terrorism. To people like myself who felt nothing but contempt for Germany and its history and institutions he offered a concept like "constitutional patriotism"'. Revisiting his youthful convictions, Metzinger conceded to conservatives that 'the image of human beings presupposed by leftist utopias is descriptively false'. It was not neoliberalism (in Germany also a response to the experience of the Third Reich and its statist economic policies), but the disillusionment with the Frankfurt counterculture that led him to break with the anti-biologism of his friends on the left. While Timothy Leary and the corner of the US counterculture that he represented advocated the neurochemical liberation of the self from the constraints of culture and society (Langlitz 2012: 30–7), Germany's rebellious youth associated biology with Nazi racial theory and eugenics. Metzinger's alignment of his persistent interest in consciousness with the neuroscientifically orientated analytic philosophy of mind newly emerging in America and Australia broke with the local left's rejection of so-called 'biologism' and could be read as a minuscule stretch of way along the 'long road west'

(Winkler 2007) that Germans took after the Second World War. But his neurophilosophy maintained a revolutionary momentum:

We have to understand the deep structures of the human mind if we want to realize any social utopias or reforms. If you don't want to stay at the surface, if you really want to be radical, you cannot stop short at capital flows or political institutions, but have to consider fields such as evolutionary psychology and examine the determinants of human behaviour.

By attaching his insurgent politics to a biologically orientated anthropology, Metzinger took up the tradition of scientific materialism that had led to the *Materialismstreit* of the 1850s. Just like the historical materialists Marx and Engels, the advocates of scientific materialism had been defeated supporters of Germany's 1848 revolution. This uprising against the autocratic political structure of thirty-nine independent German states and for national unification, political freedom, and democracy had been crushed by military force. The Prussian army effectively dispersed the hope for steady historical progress driven by philosophical thought, which idealist philosophers had inherited from their Enlightenment forebears. Despite their contempt for idealism, scientific materialists like Karl Vogt, Jacob Molleschott, and Ludwig Büchner maintained faith in the power of ideas to change minds and thus the course of history. Politically repressed and often driven into exile, not much else was left to these scientists than the aggressive and fiercely contested popularization of a materialist philosophy unmasking the irrational and illusory grounds on which the authority of throne and altar rested. If people only realized, as Vogt put it, that thoughts stood in the same relation to the brain as urine did to the kidneys, they would rid themselves of their blind faith in an immortal soul and the catechism, of their obedience to bourgeois law and the king, and instead support the anarchist, liberal, and socialist opposition to the Christian state (Gregory 1977; Hagner 2007).

Scientific and historical materialists were already at odds with each other in the 1850s (Gregory 1977: 189–212). Gathering from his attacks on Vogt, Marx would have denounced as bourgeois the new consciousness culture advocated by Metzinger (2003a; 2006a; 2009: 207–40), by now a professor at the University of Mainz: school classes on meditation and lucid dreaming instead of a *coup d'état*, and a 'driving licence' for the use of psychedelic drugs instead of the world revolution (Langlitz forthcoming). But the political and economic failure of state socialism on display in East Germany and the sobering outcomes of the countercultural experiments of living in West Germany had been among the very reasons for returning to a different kind of materialism. By contrast to the proverbial Enlightenment optimism displayed by French materialists such as La Mettrie, d'Holbach, or Diderot on the eve of 1789 as they challenged the Christian moral order that lent support to the rule of divinely ordained monarchs, there had already been an air of resignation to scientific materialism as it emerged in the aftermath of 1848 (Blom 2011; Mensching 2007). Following 1968, this sense of disenchantment was aggravated by the fact that the failure to put radical leftist visions of society into practice could no longer be blamed on brute repression alone.

False awakenings

But there is more to the commitment to materialism in general and phenomenal internalism in particular than politics. In an email exchange, the neuroscientist and philosopher Antti Revonsuo, who runs a sleep laboratory in Finland, rejected political interpretations of his work on the dreaming brain:

I cannot see any connection between political convictions of mine and my philosophical or scientific work or positions. This is because I have never been particularly active politically, and have never been strongly committed to any particular political position or party. I am interested in following political discussions and arguments, but even then I am more interested in how good the arguments are for or against some particular position rather than in committing myself to any view very strongly . . . Thus, at least I myself cannot identify any strong political or ethical contexts from which my fondness for internalism might have emerged. The strongest forces that led me to this path have been my own (dream) experiences, and influences from popular culture, especially science fiction literature and movies that suggested philosophical ideas.

The significance of inner experience was already discernible in the young yogi Thomas Metzinger's precocious challenge to Professor Bubner's externalist definition of consciousness as constituted by its objects. In an interview, Revonsuo related how his fascination with the dream world had begun when he was still a child:

I woke up in my bed and was convinced that I was awake. I went to the kitchen. My parents were there having breakfast. They read out something from the newspaper that sounded really weird and I questioned it. 'That can't be correct'. They looked at me and they looked at each other: 'Ah, he has gone insane, he has lost his mind'. I got really worried: Oh my God, can it really be that they are right? Or is this a dream? I tried to find evidence for the fact that I was dreaming. I looked out of the window, but everything seemed pretty real. I looked into the cupboards of the kitchen, I knocked on the table. And I thought, I must have gone crazy. Eventually, however, I forgot about it and other things started to happen in the dream. Then I woke up in my bed thinking: 'Okay, I'm here again. Where is it this time? Is it the real world or some other world?' These dreams made me really, really wonder: How can it be that there is another world that looks exactly like this one? It seemed to me that there is some big mystery or secret.

Significantly, Metzinger's internalist intuitions had also been fuelled by such a false awakening in his youth. Like all dreamers, Revonsuo and Metzinger had experienced interactions with people and physical environments that did not correspond to the world around them. They attributed their more profound existential unsettlement and philosophical sense of wonder to the realization that their waking up to the hallucinatory nature of these experiences again turned out to be a mere hallucination. In an article on the philosophy of dreaming, Metzinger and his doctoral student Jennifer Windt concluded, with reference to a false awakening dream of Bertrand Russell, 'that the classical philosophical problem of dream scepticism is much more than an armchair exercise of purely theoretical doubt – in fact, the false awakening, more so than other types of dream contents, may actually be the paradigm example of vividly experienced doubt and tangible dream deception' (Windt & Metzinger 2007: 237). This kind of deeply troubling, at times almost terrifying, uncertainty is what Ian Hacking refers to as 'existential' or 'live scepticism' (2002: 240–1). 'The actual benefit I had from undergoing this episode as a researcher', Metzinger remembered,

was that it shattered many of my theoretical intuitions about consciousness, for instance that the vividness, the coherence, and the crispness of a conscious experience is any indicator of the fact that you are really in touch with reality. Apparently, what we call 'waking up' is something that can happen to you at any point in phenomenological time (2006b: 4).

The result is an insurmountable dream scepticism with no Cartesian God to guarantee true knowledge of the world: 'False awakenings demonstrate that consciousness is never more than the appearance of a world', Metzinger (2009: 135) argued. Or, in Revonsuo's words: 'The world we experience is a world simulation in the brain' (2006: 118). In opposition to the extended-mind hypothesis, so popular among anthropologists and science and technology studies scholars, this world-simulation metaphor denies that any

external object relations are constitutive of phenomenal consciousness: ‘Phenomenality as bare presence is nonrelational and self-contained rather than relational and object-directed’ (2006: 126; see also 132–3). That is to say: ‘Our direct experienced presence in the external world is but a massive, biologically programmed user illusion that the brain has entangled itself with’ (2006: 119).

Note that Revonsuo spoke about his own dreams when we interviewed him in his sleep laboratory in 2008, but he hardly ever mentions them in his publications. Nor does he consider individual dream reports to be of much scientific significance:

When I present a theoretical idea, people often respond by saying, yes, but my dreams are not like that. It’s really funny because I have seen a lot of good scientists come up with this counterargument. With any other theory they would check the literature and the data. Or maybe they don’t realize how big the database in dream research is, that there are hundreds of studies that show you what the contents of dreams really are. I try to base my argument on the statistical data.

Metzinger was equally reserved. His reports of false awakenings and lucid dreams only appeared in response to the eminent American dream researcher J. Allan Hobson, who bullied him into publicly revealing his experiences as a lucid dreamer. Having collected and analysed dream reports, including his own, throughout his career in neuroscience, Hobson argued that ‘such accounts must be accorded data status if we are to make any progress in solving the mind-brain problem’ (2005a: 1). In his review of Metzinger’s magnum opus *Being no one* (2003b), Hobson called the philosopher ‘a third-person half-someone’ who is ‘too modest or too shy to blow his own phenomenological horn’ (2005a: 6–7). In response, Metzinger gave in, but only to challenge Hobson’s epistemology. He readily expressed his conviction that scientific research on consciousness and its neural correlates would greatly profit ‘if researchers were well travelled in phenomenal state space, if they were cultivated in terms of the richness of their own inner experience as well. But not’, he added, ‘because this would give them a mysterious kind of first-person “data” – more likely because it would thoroughly shatter their folk-phenomenological intuitions and endow them with completely new theoretical intuitions’ (Metzinger 2006b: 2–3). In his eyes, Hobson’s notion of first-person data was an oxymoron: whereas phenomenal content is only privately accessible, ‘data are things that are extracted from the physical world by technical measuring devices’ and generated in an intersubjective process within scientific communities: ‘The epistemological problem regarding phenomenological, first-person approaches of “data generation” is that inconsistencies in two individual “data sets” should appear, there is no way to settle the conflict’ (Metzinger 2003b: 591). Gravely concerned about the radical privacy of the subjective – a problem nowhere as pressing as in dream research – both Revonsuo and Metzinger detached themselves from their personal experiences and emphatically resorted to objectivity.

Philosophy contra neuroscience

Neuroscientific studies of the dreaming brain have provided crucial support to phenomenal internalism. In the mid-twentieth century, however, philosophers doubted whether dreams could even serve as an object of brain research. In 1956, Norman Malcolm, an American follower of Wittgenstein’s, published an article in which he refuted Cartesian dream scepticism on conceptual grounds alone. In the style of ordinary-language philosophy, Malcolm claimed that Descartes got confused simply

because he had failed to pay attention to everyday language. Descartes's error, according to Malcolm, was to assume continuity between dreams and mental life and to presuppose that there was mental activity during sleep. In American colloquial speech (maybe not quite Descartes's mother tongue), being sound asleep was synonymous with 'being dead to the world', Malcolm maintained. Sleep had no experiential content. Thus dreams, if they occurred during sleep, could not be conscious experiences. Malcolm did not deny that people dreamed. But, from his ordinary-language perspective, dreams were nothing but dream reports – that is, the Wittgensteinian language game of 'I dreamed that ...' – provided upon awakening. Since Malcolm saw no way of verifying whether someone experienced mental activity during sleep other than through his or her subsequent report, the claim that dreams took place during sleep seemed not even false to him, but altogether 'meaningless' (Malcolm 1956).

Three years earlier, the neurophysiologists Eugene Aserinsky and Nathaniel Kleitman (1953) had discovered REM sleep. They suggested that the EEG pattern typical of REM sleep periods constituted the neural correlate of dreaming. When they woke their subjects from REM sleep, the latter reported dreams much more frequently than after non-REM (NREM) sleep (Kroker 2007: 306–24). Malcolm (1959) knew about this neurophysiological work, but in his eyes it was as confused as Descartes's dream scepticism. If there were an objectively measurable physiological substrate of the subjective experience of dreaming, the word 'dreaming' would be used in new ways. For example, it would make sense to say of someone, 'He is halfway through his dream!' In contrast to current neurophilosophy, Malcolm did not conceive of this as a reason to advocate a novel scientifically enlightened manner of speaking, but as an argument against the philosophical relevance of science. His message to brain researchers was that dreaming could not be an epistemic object of neuroscientific sleep research. Whatever Aserinsky and Kleitman had recorded with their EEG, it was not dreaming. And if dreaming was actually not what they had investigated, then their findings could not possibly be taken as an incentive for conceptual change. Consequently, the authority of ordinary language could not be challenged by empirical findings. Malcolm's account soon gained canonical status. Almost every philosophical article on dreaming published since the late 1950s has addressed his work (Dunlop 1977). Prominent analytic philosophers from Thomas Nagel (1959) to Daniel Dennett (1976) and Peter Hacker (Bennett & Hacker 2003: 247) followed his claim that dreams were not experiences.

When Hobson, Revonsuo, Metzinger, and others re-animated empirical research and philosophical reflection on dreaming as a state of consciousness, they first had to overcome the behaviourist fixation on publicly observable linguistic usage. Allan Hobson and Robert McCarley (1977) highlighted studies demonstrating that, while in other sleep phases electrophysiological brain activity was synchronized and reduced, the supposedly dreaming brain of REM sleep showed the same high levels of desynchronized activity found in the waking brain, suggesting equally high levels of mental activity. Moreover, Revonsuo was able to point to research by Stephen LaBerge, Lynn Nagel, William Dement, and Vincent Zarcone (1981) on lucid dreamers. Although all physiological measurements indicated that LaBerge et al.'s test subjects were sound asleep, they were able to signal to experimenters when they became conscious of the fact that they were dreaming by moving their eyes back and forth in a previously agreed upon way. These findings, Revonsuo argued, disproved the 'internal world skepticism' of Malcolm and Dennett 'for all practical purposes' (1995: 41).

Revonsuo (1995) and Metzinger (1993: 147–8) followed Hobson and McCarley's (1977) claim that, in the dream state, the central nervous system generated a hallucinoid experience of immersion in complex surroundings while being physiologically cut off from sensory input and motor output. Perceptual thresholds are heightened and inhibition of spinal cord motoneurons prevents dreams from being acted out. Normally, only the ocular muscles enabling the rapid eye movements characteristic of REM sleep are exempt from this paralysis and allow lucid dreamers to communicate with awake scientists (although Parkinson's patients and cats with experimental lesions in the pontine brain stem lose this motor inhibition and enact their dreams). Isolated from the noise of action and perception, the dreaming brain was taken as the best model of pure consciousness (Revonsuo 1995) – or, at least in Metzinger's (2013) less assuming version, of the simplest form of self-consciousness: almost a brain in a vat. Thus, Hobson's depiction of the neurophysiology of dreams as both conscious and detached came to serve as a cornerstone of phenomenal internalism.

Killing Freud, liberating the autocreative brain

It was the usual round of introductions at a conference dinner in Turku in 2010. At a scholarly meeting dedicated to the dreaming brain, Hobson would hardly have needed such a formal presentation. When it was his turn, he said: 'I'm Allan Hobson and I'm still trying to kill Freud'. Although the institutional predominance of psychoanalysts in American psychiatry has long faded away, their interpretation of dreams as expressions of unconscious fears and desires lingers on in the popular Euro-American imagination. For decades, Hobson had fought against the assumption of such hidden meanings that had turned scientific attention away from the manifest phenomenology and biology of dreams. Against neuropsychologists, most prominently the South African Mark Solms, he had also maintained that, neurophysiologically, dreams were not latently meaningful products of the cognitive areas of the cerebrum that required careful interpretative decoding. Instead, they were caused by waves of neural excitation surging up from the evolutionarily ancient lower brain during REM sleep 'with little or no primary ideational, volitional, or emotional content'. The forebrain was 'making the best of a bad job in producing even partially coherent dream imagery from the relatively noisy signals' (Hobson & McCarley 1977: 1347). Thus the symbolic significance of dreams was not its primary motivating force, but a secondary cortical projection. The controversy between Hobson and Solms was staged as a clash of worldviews when the protagonists debated each other in front of a broad, partly lay audience at the Tucson Science of Consciousness conference in 2006. Even among the dream researchers, 'most people don't understand the field well enough to contribute to the debate', their colleague Tore Nielsen later explained the appeal of this scientific boxing match in an interview, 'and therefore they take sides'.

The conflict between Hobsonians and psychoanalysts could be interpreted as infighting within the internalist camp. Early on, Freud had decided to ignore whether or not incest and other events had actually taken place in his patients' lives. Instead he focused on their respective 'psychic realities': the dreams, fantasies, and symptoms they constructed around real or imaginary incidents (Langlitz 2005: 132–3, 243). He vatted the mind just as phenomenal internalists now vat the brain. His *Interpretation of dreams* (Freud 1955 [1900]) gave rise to a modern *cultura animi*: a cultivation of the soul through careful exegesis of the expressions of the unconscious. As Hobson sought to replace psychoanalytic dream theory by his neuroscientific account, no substitute for

this waning consciousness culture seemed to be forthcoming. When I noted this in my own presentation at the Turku conference, this staunch anti-ecclesiast was delighted: ‘You couldn’t have paid me a bigger compliment than saying that there is no Hobsonian consciousness culture. If people will still remember me in 200 years, I want them to remember me as a scientist – not the founder of a religious movement’.

But for Hobson the camp of his opponents was not confined to psychoanalysis. When the early Freud postulated in his *Project for a scientific psychology* (1966 [1895]) that psychological trauma was the result of excessive external stimulation which the organism could not integrate, he followed a much broader neurological tradition, which Hobson (2005*b*) sought to replace alongside psychoanalysis. Charles Scott Sherrington and Ivan Pavlov modelled the working of the brain on the reflex arc. Cerebral processes were seen as responses to external stimuli. Therefore, Sherrington assumed that neuronal activity would die down during sleep. In Hobson’s (1988) whig history, this paradigm was overthrown when, in 1949, the neurophysiologists Giuseppe Moruzzi and Horace Magoun established an experimental basis for brain activation in sleep. Four years later, as we have seen, Aserinsky and Kleitman (1953) associated pronounced electroencephalographic activity during REM sleep with dreaming. Building on the tradition of *cerveau isolé* and *encéphale isolé* research on cats (Bremer 1975), which Hobson knew first-hand from his work in Michel Jouvet’s laboratory, Hobson and McCarley (1977) eventually presented their activation-synthesis hypothesis to explain how a decoupled central nervous system conjured up its own dream world. Hobson suggested replacing the Sherringtonian stimulus-response model by the anthropologically momentous notion of an ‘autocreative’ brain:

Recognizing the autocreativity of REM sleep dreams is important to our view of ourselves as humans. Although we are automata in the sense that to survive we must eat, we must sleep, and we must maintain body temperature, it is delightful to learn that in managing these functions without our thinking about them, our brains are capable of the most ingenious inventions . . . Artistic processes are natural to all of us. Life is short. And art is long. Society and civilizations are built on the creativity that goes with the flow of imagination that comes to the surface in our dreams (Hobson 2005*b*: 47).

The dream catcher

Antti Revonsuo is known for two things. First, he developed an evolutionary psychology theory suggesting that dreams had evolved as a mechanism of simulating threatening situations ‘off-line’ to be better prepared for their occurrence in the actual world – his ‘Threat Simulation Theory’. Second, he argued that owing to its ostensible isolation and autonomy, the dreaming brain would serve as the key to ‘the most fundamental question’: ‘Why is there something rather than nothing, for me?’ (Revonsuo 2006: xv). This is the problem of consciousness. To identify its material basis experimentally, the dreaming brain seemed to him a more promising model than the waking brain because its activity was uncontaminated by interactions with the environment.

At the beginning of Revonsuo’s quest for the neural correlates of consciousness stood a thought experiment, which – almost ironically – he called after a Native American artefact, extracted from a radically different cosmology: the dream catcher. Originally, dream catchers were spider web-like charms, which the Ojibwe hung above cradles and beds. As dreams were flying around at night, only good dreams could filter into the sleeper, who would thereby be protected against the bad ones. Just as the anthropologists Eduardo Viveiros de Castro (2004) and Philippe Descola (2006) have described Amerindian animism as an ontological inversion of Euro-American

naturalism, Revonsuo's thought experiment turns the dream catcher topsy-turvy: instead of being hallucinatory out-of-brain experiences of a solipsistic mind-brain, dreams here appear to come to the subject from the outside. They serve as the prime medium of human contact with nonhuman persons, especially guardian spirits appearing in the dream as animals or inanimate natural objects. These entities are not taken to be nocturnal hallucinations, but are regarded as powerful beings to be engaged in reciprocal social relations and to be called upon in times of danger (Danziger 1990: 152; Densmore 1929: 78–87; Hallowell 1960; Warren 2009: 65).

By contrast, Revonsuo's imaginary 'dream catcher/presenter' is a neuroimaging technology that does not shield subjects from dreams roaming the night. Instead it extracts them from inside the subject. The device is supposed to enable researchers to relive their test subjects' instrumentally recorded dreams in the medium of a virtual reality environment. This science fiction scenario, prefigured by Douglas Trumbull's 1983 movie *Brainstorm*, contains a serious philosophical argument: only if neuroscientists succeed in reconstructing subjective experience from objective data can they claim to have genuinely discovered consciousness in the brain (Revonsuo 2006: 301–2). However, in contrast to theoretical accounts, which try to close the explanatory gap by developing a set of propositions laying out causal relationships between neural and psychological processes, the dream catcher provides experiential rather than theoretical access to its object. Mediated by neurophysiological measurements, the mind-brain is eventually represented in the medium of another mind-brain. Whereas a PET scanner produces a representation of the brain that is located on a different level than what it represents, the epistemology of the dream catcher/presenter is perfectly flat.

In his sleep laboratory, Revonsuo translated this thought experiment into a much more modest actual experiment. To test the materialist identification of mind and brain, he aimed at identifying the occurrence of dreams *qua* conscious states in EEG recordings. The idea was that electrophysiological markers distinguishing dreaming from dreamless sleep within one and the same sleep phase could count as neural correlates of consciousness. Since Aserinsky and Kleitman's (1953) association of dreaming with REM sleep, it had become evident that dreams also occurred during NREM sleep, although at a lower frequency. For the dream catcher experiment, Revonsuo's lab primarily collected data from NREM sleep. They were looking for equal numbers of recordings of dreamful and dreamless sleep, and awakenings from NREM sleep produced dream reports in approximately 40 per cent of cases whereas REM sleep should have been closer to 90 per cent. So the choice of NREM sleep made it easier to balance the two data sets. But there was also a more mundane reason for this approach: NREM sleep occurs early in the night and allows researchers to drive subjects home at 4 a.m. while they would have had to stay in the lab until much later to get enough REM sleep awakenings. The lab could not afford to hire assistants as chauffeurs.

When data from early night serial awakenings of nine subjects had been collected, they were split up. Introspective reports and EEG recordings were given to different judges who did not know which electroencephalographic sequences had led to dream reports and which ones had not. An external EEG research group used the statistical method of spectral analysis to identify the signature of those recordings, which were followed by dream reports. But the accuracy of their predictions turned out to be no better than chance. The graduate student researcher presenting these results at the Turku conference explained that there were four different explanations for the failure:

‘Subjective experience: (a) is not in the brain; (b) is in the brain, but not in the EEG; (c) is in the EEG, but not in our data; or (d) is in the data, but needs more complex and novel methods of analysis.’ In an interview, Revonsuo freely admitted:

We still haven’t found any objective sign indicating the presence or absence of consciousness in the dreaming brain. Maybe that’s something that Descartes would have predicted: that you cannot objectively capture consciousness because it is this immaterial, non-spatial, and imperceptible thing. We haven’t been able to disprove the Cartesian position. The dream catcher experiment is a test of the whole emergent materialist position and the idea that the contents of consciousness are inside the brain, that they supervene on brain activities. We will continue our analysis, but if we can’t find anything then we have a real problem where to go.

Empirical inquiry and detachment, social and neural

In his historical study of the *Materialismustreit*, Frederick Gregory arrives at a social explanation of this nineteenth-century controversy. It was not science that shaped the materialists’ conception of society – quite the opposite: their appeal to science was really ‘a symptom of a deeper antireligious, or at least antiauthoritarian temperament’ formed by their political experience of the failed 1848 revolution (Gregory 1977: 189). My own research on phenomenal internalism as a variant of present-day materialism has revealed some striking continuities. Especially, a passionate anti-ecclesiasticism is still ubiquitous. To the extent that its ontology is political, the dreaming brain has come to be associated with the leftist and liberal traditions already embraced by nineteenth-century scientific materialists. It is neither inherently neoliberal nor inherently sexist or racist. Set free from its historical origins, the identification of mind and brain has travelled through different political contexts, before eventually spreading to a twenty-first-century Finnish sleep laboratory, far removed from the social upheavals of 1848 and 1968 and the political concerns of German sociologists and American anthropologists. Considering the broad spectrum of political implications that have been read into the mind-brain raises the question of how constitutive this epistemic object’s links to politics have been: after all, an apolitical philosopher like Revonsuo arrived at an internalist ontology of consciousness very similar to that of a highly political thinker like Metzinger. What explanatory power does ethnographic and historical contextualization then yield?

Contextual explanations of changes in the contents of scientific worldviews as socially or existentially determined are what historians of science used to call ‘externalist’. However, a naturalistic history of science, Steven Shapin (1992) has argued, must not presuppose what is internal and external to science (or philosophy), but needs to study how a field of knowledge is entwined with, say, religion and politics, or professionalized and insulated as it develops its own values and practices. The social and existential factors discussed in the first half of this article are important to explain the ontological commitment to materialism because the scientific data alone do not provide sufficient support for any metaphysical position.

And yet, for neurophilosophy, scientific findings are more vital than social explanations allow for. The quoted professions of objectivity should not be dismissed as empty rhetoric. The cultivation of this epistemic virtue does not produce a ‘view from nowhere’, but informs practices of detachment (Candea 2010; Daston & Galison 2007). It makes a significant difference whether one’s own experience serves as the epistemic foundation, as in certain strands of philosophical phenomenology, or whether it merely provides intuitions to be instrumentally tested in the brains of other human beings.

By enabling research objects to contradict the researcher's personal experience and intersubjectively formed presuppositions, the moral economy of objectivity loosens the connection between science and philosophy and neighbouring domains of cultural life. But this detachment from subjectivity and the wider society is driven by an attachment, which allows the objects of science to transform the researcher's account.

More object-orientated anthropologies and histories of science have reckoned with this insight by examining how research objects gradually come to the fore as researchers associate them with other human and nonhuman entities (Latour 1987; Rheinberger 1997). For example, the dreaming brain shows itself when connected to an EEG as its electrical activity makes the needle scribble a distinctive curve that is frequently associated with the reporting of dreams upon awakening. And yet it is an object that is more difficult to capture than others in this ontological framework, for the dreaming brain generates a state of consciousness more isolated from its immediate social, cultural, and physical context than, say, visual awareness, which continues to be the most prominent model of consciousness.

Analogous to the demarcation of science, the research discussed in this article has shown that where to draw the line between what is internal and what is external to the mind is not a purely conceptual question but also contingent on empirical research. This has consequences for the anthropology of neuroscience. The extended-mind hypothesis allowed ethnographers such as Cohn (2008) and myself (Langlitz 2012) to explain how test subjects' social interactions with scientists and their engagement with the 'culture of no culture' of the laboratory shaped their experiences, which neuroscientists sought to correlate to their brain states. But such interactions are very significantly reduced in sleep. In the 1960s and 1970s, dream content analysts debated how strongly dream reports were affected by experimental settings. About 10 per cent of subjects dreamed of the laboratory, 90 per cent did not. A more recent statistical re-evaluation of this controversy concluded that differences between dreams collected in the sleep lab and at home were negligible (Domhoff & Schneider 1999). Although an unwavering externalist like Alva Noë rightly refuses the evidence provided by dream research as proof that the brain is the minimal substrate of normal perceptual experience, he admits that dreams represent a class of experience that 'can and must occur when an animal whose life is normally spent on close engagement with the world is for a time decoupled in sleep' (2009: 180).¹ At night, the extended mind seems to retract.

In their seclusion, dreamers make even poorer ethnographic subjects than do philosophers. Thereby they invite anthropologists to revisit our not sufficiently differentiated insistence on the social and cultural make-up of human consciousness. Methodologically, this does not require us to discard Marilyn Strathern's dictum that 'anthropologists use relationships to uncover relationships' (2005: vii). In this study of neurophilosophy, it is precisely the obstacles to ethnographic engagement that have been the most revelatory. Lorraine Daston and Peter Galison (2007) as well as Matei Candea (2010) have shown that dissociation from other people and surrounding objects can be as constitutive of epistemic things as association. What we can learn from the neurophilosophy of dreaming is not necessarily to commit to phenomenal internalism, but that the anthropological study of relations needs to attend equally to attachment and detachment, both social and neural.

Eduardo Viveiros de Castro suggested that anthropologists took seriously alien forms of thought located opposite 'the Western bank', whereas 'almost all of the things that we must *not* take seriously are near to or inside of us' (2011: 132–3, original emphasis).

In response, Matei Candea (2011) argued that ‘anthropology at home’ reminded us that the contrast between ‘us’ and ‘them’ was not self-evident, that there was always more difference within, and that the anthropological endeavour extended to taking seriously the multiplicities internal to what we thought was simply ‘us’. Many socio-cultural anthropologists seem to experience otherness more powerfully in relation to internalist neurophilosophers than to their Amerindian interlocutors. In a cosmopolitan world, there are other ways to draw the lines than between the West and the rest.

The point where my understanding of anthropology might diverge from both Viveiros de Castro and Candea is that I do not assume that ontologies deserve to be ‘taken seriously’ by virtue of being held by us or by other people, however broad or narrow these categories are defined. As the boundary between ‘us’ and ‘them’ becomes porous, there is no need to reserve practices of validation for our own claims to knowledge while sustaining ‘their’ views as untested ‘possible expressions of alien thought’, as Viveiros de Castro (2011: 137) put it. Like Metzinger, he came of age in the wake of 1968, but this political experience led him to regard anthropology as ‘the absolute opposite of a reformer’s science or a Reason police’. Instead the discipline was re-purposed as ‘the instrument of a certain revolutionary utopia which fought for the conceptual self-determination of all the planet’s minorities’ (Viveiros de Castro 2003). It would require a lot more space to lay out the post-positivist case for a partial continuity between metaphysical frameworks, empirical research, and experience that important parts of science studies share with neurophilosophy. In a nutshell, this argument suggests that, to the extent that ontology is speculative, it certainly allows for more self-determination than the sciences, but empirically this autonomy is constrained by the nature of things (Langlitz 2015). For example, LaBerge’s work on lucid dreaming does suggest that dreams actually are conscious experiences and claims to the contrary have become more difficult to defend. And if Revonsuo’s dream catcher experiment were to work out one day, it would suggest locating dreaming, and possibly phenomenal consciousness at large, in the brain rather than in the space surrounding the sleeper. Some ontologies are to be taken more seriously than others, depending on their empirical support.

As anthropologists, we go to the field with our own ontologies and conceptions of the human. But whether or not and in what ways consciousness is made up of the social and the cultural and whether externalist philosophies of mind are better than internalist ones at accounting for different kinds of conscious experiences are matters of rational and empirically informed debate, which will only get richer as it becomes more inclusive. In this respect, neurophilosophers – with all their internal differences, which Metzinger insisted upon and Candea urges us to recognize – should be taken seriously as anthropology’s other. To engage in meaningful dialogue, we need to understand the existential and political contexts that pervade their ontological commitments, as these contexts might be very different or surprisingly similar to our own. But we also need to understand how philosophers of mind have drawn from brain research to cultivate an epistemically fertile relationship to human phenomena such as dreams or drug experiences that are also the objects of anthropology by detaching these phenomena from their political and existential contexts. Readers who have read *Science in action* to the very end might have learned from Latour (1987) that this is what it takes to free epistemic things from the moorings of local knowledge. It is the precondition for a wider circulation beyond their places of origin, which makes the symmetry between most competing alternatives an ephemeral phenomenon.

To return to Emily Martin's image, if the neurosciences had really gained the horsepower of a Mack truck, which philosophers have since learned to drive, they might have done so by turning inwards – by retreating from the streets to the laboratory and the armchair. And maybe to the marvellous land of dreams? At the break of day, however, the difficulties that neuroscientific dream researchers and empirically orientated philosophers of mind are struggling with themselves seem to indicate that the vision of the cultural anthropologist as roadkill was just a nightmare, although one that simulates very real threats, which the discipline is facing as it positions itself in opposition to the sciences.

NOTES

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¹ In the social studies of neuroscience, Noë's critique (but not its qualification) of Revonsuo's internalism was adopted by Vidal and Ortega (2011).

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Rêves en fût : la neurophilosophie et la politique de l'internalisme phénoménologique

Résumé

Alors que les sciences sociales se sont abondamment penchées sur les neurosciences, la neurophilosophie n'a attiré que peu d'attention ethnographique ou historique. Pourtant, les anthropologues qui étudient le cerveau critiquent parfois les neurophilosophes, qu'ils accusent de réduire l'esprit au cerveau, tout en citant avec vigueur des philosophes de l'esprit qui présentent celui-ci comme le produit des interactions entre le cerveau, le corps et l'environnement. L'auteur examine ici le camp tant dénigré des « internalistes phénoménologiques », des neurophilosophes qui pensent que la conscience peut survenir uniquement dans le cerveau. Cet engagement ontologique s'appuie sur certaines expériences existentielles et politiques, des faux éveils au désenchantement d'avec la contre-culture des années 1970. Dans le même temps, il emprunte aussi à la recherche neuroscientifique sur le cerveau pendant le rêve. L'examen se conclut par un plaidoyer pour que les anthropologues s'intéressent aux relations de détachement, social aussi bien que neural, et réexaminent leur propre engagement ontologique envers l'externalisme, à la leur des recherches sur le rêve.

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