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Fieldwork in skepticism: how an anthropologist learns to cultivate doubt and other virtues in a French neuroscience laboratory

Rees, Tobias. *Plastic Reason: An Anthropology of Brain Science in Embryogenetic Terms*. 352 pp. Berkeley: University of California Press, 2016, £27.95.

Nicolas Langlitz[1]

Tobias Rees' first single-author book *Plastic Reason*, an anthropological study of a French neuroscience laboratory that played a key role in the discovery of embryogenetic neuroplasticity in the human brain, is a book of many virtues and some vices and of vices that double as virtues. Let us start with patience and impatience: after 14 years of painstaking labor, its author could not wait for his readers to engage and wrote a response to a kind and generous book review not yet written that got everything wrong about his book—"like all book reviews, always" (Rees 2016b). Rees makes clear that he does not want to be lauded for having written the most comprehensive and yet enviably animated history of how adult neurogenesis came to be established as a scientific fact, proving the brain to be forever changing rather than fixed. Even though that is what Rees did.

Or maybe he did not. At least, such a narrative would miss the native's point of view. Just as Rees does not want to be praised for having written the history of a great discovery, his most important interlocutor, Alain Prochiantz, did not want the anthropologist of his laboratory to praise him for having made that great discovery, either. "I am not a man of truth, but a man of doubt," he once proclaimed. "Of doubt, because doubt assures movement." (Rees 2016a: 222). Rees (2016b) found that the peculiar style of experimentation to which Prochiantz and his coworkers introduced him at their benches aimed at the cultivation of uncertainty: "What matters is the art of making uncertainty productive – of letting it derail yet another set up, of opening yet another, unforeseen horizon." Thus, *Plastic Reason* is not primarily about the neuroscientists' discovery of adult neurogenesis, but about the anthropologist's discovery of a rather idiosyncratic style of scientific thinking and doing.

✉ Nicolas Langlitz
LanglitN@newschool.edu

[1] Department of Anthropology, The New School for Social Research, New York, NY, USA

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If I wanted to confirm Rees' suspicion that book reviews, all of them, always, get everything wrong about the books they discuss, I would say that the ethnographic sensitivity with which he shows rather than tells us about the Frenchness of Prochiantz's laboratory makes *Plastic Reason* a formidable ethnography. I would be hard pressed to imagine any of the American brain researchers I worked with comparing their discovery of a cellular process with the flirtatious encounter of a happy family man with "a blond" in the *métro*, deciding on a whim to give up the security of married life for a sexual adventure of uncertain consequences. It takes skill to describe such moments without lapsing into clichés about the national character of the French or the sexism of a man on his way to the very top of the academic hierarchy and to get the reader to understand this episode as part of an "erotic conversation" between an openly bisexual brain researcher and a straight anthropologist about the passions of the scientific life (Rees 2016a, 35–36).

Yet *Plastic Reason* is less an ethnography that takes a particular *ethnos* as its object of study than a "fieldwork in philosophy" (Rabinow 2003, 84–85). To be more precise, it is a form of fieldwork in skepticism. It describes an epistemic culture of doubt. In academic philosophy, skepticism tends to be discussed as a theory of knowledge, which calls into question any theory of knowledge. In Prochiantz's lab, however, skepticism is not just a theory but also a way of life, not just an epistemology, but also an ethics. If we follow Pierre Hadot (2002) in thinking of philosophies as different sets of spiritual exercises that aim at therapy of the human condition, the skeptics' never-ending struggle against dogmatism is meant to be liberating and pacifying. But it often turns out to be exhausting (Gabriel 2008, 91). So exhausting that, as good skeptics, we might even doubt its therapeutic efficacy.

Maybe the most eye-opening moment of Rees' research occurred in a conversation with Prochiantz toward the very end of his year of dissertation fieldwork in the Paris lab when Prochiantz admitted the possibility of having gotten everything wrong: "Never would it have occurred to me that, all along, he had been haunted by doubts and despair – until that day in early May 2003," noted Rees (2016a, 221). *Plastic Reason* provides an intimate account of the existential price that Prochiantz and his few allies had to pay for challenging the twentieth-century dogma that the adult brain no longer underwent any significant morphogenetic changes. They were ostracized, ridiculed, pitied. At one point in the early 1990s, Prochiantz gave an interview in which he even considered suicide to preserve his dignity should he be proven wrong (Rees 2016a, 41). Skepticism cannot always live up to the promise of *ataraxia* or peace of mind that should come with being cured of our will to truth, overcoming our attachment to certainties, which might be shattered any time.

In Rees' story, however, what is at stake here is not just the transient self-doubts of a mid-career neuroscientist and the misgivings of Prochiantz's enemies, which were largely dissipated as more evidence for adult neurogenesis accumulated in the course of the 2000s, eventually winning Prochiantz a position at the pinnacle of the French academic hierarchy when the *Collège de France* elected him in 2007 and even made him its director in 2015. It is about a more principled self-doubt. Prochiantz urged the anthropologist: "I don't want to appear as if I am right. [...] Please don't write as if I am right." (Rees 2016a, 221). Stylizing himself as a man of doubt, he advocated skepticism not as an obstacle to be overcome but as the very heart of his philosophy of science. Abstracting from what he learned during his stay in Prochiantz's laboratory, Rees (2016a, 222) concludes: "It is the doubt vis-à-vis all truth claims, especially one's own, that opens up the possibility of novelty".

This abstraction reveals an important point about *Plastic Reason*. It is not predominantly a study *of* people—in this case, neuroscientists who adopted skepticism as a way of life—but a

study *with* people (Ingold 2008, 82). It is not just fieldwork in philosophy, but also philosophy in the field—a kind of field philosophy, if you like. At the end of the day, it is not only the book's main character who is a man of doubt but its author emerged from his fieldwork as a skeptic, too. While Prochiantz and his colleagues cultivate uncertainty through experimentation, Rees cultivates it through fieldwork and historical analysis.

But is uncertainty really a strength anthropologists should foster? The historian of science Lorraine Daston taught us more than anyone about the exercise of epistemic virtues like objectivity in the lives of scientists (Daston 1992; Daston and Galison 2007). I once asked her what her own most cherished epistemic virtue was. After a short moment, she responded in the negative: the one *least* important to her was certainty, she said. Virtue ethics are characterized by the fact that they consist of whole mixes of differently weighted but prudently balanced virtues. It might not be unusual for scholars who see themselves as researchers rather than experts not to care too much about certainty, but Rees' deliberate cultivation of *uncertainty* represents a more extreme stance.

I would like to contrast it with Oreskes and Erik Conway's *Merchants of Doubt* (Oreskes and Conway 2010), which claims to show "how a handful of scientists obscured the truth on issues from tobacco smoke to global warming," as the subtitle reads. Not by proving that cigarettes did *not* cause cancer or that the burning of fossil fuels did *not* engender anthropogenic climate change, but simply by spreading doubt about the genesis of these phenomena. From the perspective of this dogmatist history of science, which breaks with the principle of symmetry that has informed controversy studies for more than three decades by assuming to know the truth about the origins of cancer and global warming, the cultivation of uncertainty would be an epistemic vice rather than a virtue.

At about the time of Rees' fieldwork in Prochiantz's laboratory, another Parisian, Bruno Latour (2004, 226–27), recognized the uncanny parallels between his own constructionist attempts at demonstrating the lack of scientific certainty and those of Republican strategists in the USA emphasizing the incompleteness of evidence for global warming. More than a decade later, at a time when some of the so-called climate skeptics have been awarded cabinet posts in Washington, I cannot help thinking that dogmatists should be taken more seriously than they usually are in anthropology and history of science, which have tended to err on the side of skepticism. But we need to tell apart different ways of cultivating uncertainty. Both *Plastic Reason* and *Merchants of Doubt* could contribute important case studies to a typology of men and women of doubt that would allow us to distinguish between the cultivation of uncertainty as epistemic virtue and vice.

Following Daston's structuralist approach, no epistemic virtue can be understood in isolation. Another epistemic virtue, in more Christian days also a vice (Blumenberg 1983, 309–23), which the author of *Plastic Reason* cultivates and which I find hard to notice among climate skeptics, is an unbridled curiosity—an almost insatiable desire for the new. I venture to say that Rees' skepticism serves his curiosity: by casting doubt on established frameworks, his principled doubt constantly opens up new horizons to be explored. I cannot think of any other anthropological monograph driven by such a flurry of questions—some skeptical, yes, calling into question the science studies dogma of symmetry or visions of the human as fundamentally immutable, but many more questions are asked out of sheer curiosity, concerning the details of adult neurogenesis and their larger philosophical significance. This curiosity prevents doubt from becoming an obstacle and mobilizes its potential to advance knowledge.

At times, Rees' hunger for novelty amounts to gluttony though. Of course, the finding that, even in adult brains, new neurons continue to be born has opened up new perspectives on

many phenomena, including the etiology of mental diseases and the therapeutic mechanisms of psychiatric medicines. But, giving in to the modernist urge to declare radical historical breaks with the past, Rees overstates the newness of what Prochiantz's discovery means for being human. Long before the embryogenetic aspects of neuroplasticity came into relief, in 1948 and 1949, Jerzy Konorsky and Donald Hebb had conceptualized the brain as plastic in terms of changing synaptic connections. To be sure, as an erudite historian of this field of research, Rees does cover the emergence of synaptic plasticity. But, conceptually, he refuses to acknowledge it as plasticity proper and subsumes it under the paradigm of brain fixity (Rees 2016a, 74–86). By contrast, he interprets Prochiantz's later finding of a second mechanism for neural transformations in adult life as a genuine anthropological and ethical revolution, enabling people to conceive of themselves as open to change until their last breath.

At this point, the author seems to shed all skepticism vis-à-vis his own narrative construction and gives in to a penchant for provocation, which he also shares with Prochiantz as the *enfant terrible* of French neuroscience. Although the dogmatic defense of certain historical truth claims is at odds with the cultivation of uncertainty, it adds a stylistic note to *Plastic Reason,* which is both aggressive and inviting. It calls for objections.

So consider this one: although it now looks as if synaptic plasticity had not provided a full account of the underlying mechanisms, it had already opened up the philosophical possibility of conceiving of the brain as malleable, complementing various other understandings of human plasticity at large (think culture!). Consequently, I also have reservations about Rees' claim that the discovery of adult neurogenesis supplanted the neurochemical conception of ourselves that has emerged alongside synaptic plasticity. Rees (2016a, 212) maintains that the neurochemical selves that emerged after the 1950s were as immutable as their predecessors: "Fixity, here too, defined the limits of the possible (the human)." But this seems hard to reconcile with the psychiatric discourse nurturing neurochemical selfhood by presenting psychotropic drugs as transforming people's existence in profound and sometimes lasting ways—from psychedelics changing their consumers' ethical outlooks to the character-deforming consequences of opiate addiction and Prozac making patients "better than well" and altering their spiritual orientations. More recent neuropharmacological research on morphogenetic plasticity suggests that some of these drug effects might not be located on the neurochemical level alone, but could also be mediated by adult neurogenesis, which makes *Plastic Reason* all the more pertinent (e.g., Catlow et al. 2013; Vetencourt et al. 2008). But it is simply not true that neurochemical conceptions of the brain have not allowed for drastic changes in the mind-brains of grown-up human beings.

Although Rees' intense curiosity is mostly a virtue that makes his cultivation of doubt advance knowledge, it also needs to be balanced out by other virtues. In Rees' native language, German, curiosity or *Neugier*, literally "greed for the new," has as its pendant *Altgier*, a neologism coined by Friedrich Nietzsche (1988, 268) to denounce the historicists' epistemic vice of craving for the old, which mummifies life. Such *Altgier* can be another form of *Neugier* since the past is full of old things that are new to us and, despite Nietzsche, it can also enable forays into intellectual *terra incognita* (Raulff 2016). Prochiantz's nocturnal excursions into the history of developmental biology, which paved the way for his discovery of embryogenetic growth in the adult brain, would be a prime example from *Plastic Reason* (Rees 2016a, 106–7). Similarly, Rees' reading of Pyrrhonian skepticism helped him to notice an epistemic culture of doubt in a twenty-first century neuroscience laboratory. But this encounter with the perennial philosophical problem of appearance and reality that has been discussed for more than two millennia now raises the question of how to appreciate continuities, the persistent and

recurrent. Wouldn't they require narrative forms very different from the stories about scientific revolutions, paradigm shifts, and epistemic ruptures that dominated twentieth-century history of science and which are replicated by Rees' account of the discovery of embryogenetic neuroplasticity? Inventing such a form would have allowed Rees to share the excitement about his discoveries in Prochiantz's lab without hyperbolizing the philosophical significance of adult neurogenesis, a scientific fact that had never been the primary concern of his anthropological work anyways.

If the cultivation of uncertainty leads to an incessant questioning of all truth claims and thereby opens up the possibility of novelty, doubt should also be cast on the author's dogmatic provocations. Not at all to dismiss this rich and stimulating book, but to accept the author's invitation to dialogue. For whatever evil demon might have misled my reading of *Plastic Reason* to get everything wrong, like all book reviews, always, the one thing I am sure of is that it is one of the most engaging and quirky anthropological monographs I have read in recent years.

Nicolas Langlitz, The New School for Social Research.

References

Blumenberg, Hans. 1983. *The legitimacy of the modern age*. Cambridge: MIT Press.

Catlow, Briony J., Shijie Song, Daniel A. Paredes, Cheryl L. Kirstein, and Juan Sanchez-Ramos. 2013. Effects of psilocybin on hippocampal neurogenesis and extinction of trace fear conditioning. *Experimental Brain Research* 228 (4): 481–491. doi:10.1007/s00221-013-3579-0.

Daston, Lorraine. 1992. Objectivity and the escape from perspective. *Social Studies of Science* 22: 592–618.

Daston, Lorraine, and Peter Galison. 2007. *Objectivity*. New York: Zone Books.

Gabriel, Markus. 2008. *Antike und moderne Skepsis zur Einführung*. Hamburg: Junius.

Hadot, Pierre. 2002. *What is ancient philosophy?* Cambridge: Harvard University Press.

Ingold, Tim. 2008. Anthropology is not ethnography. Proceedings of the British Academy 154: 69-92.

Latour, Bruno. 2004. Why has critique run out of steam? From matters of fact to matters of concern. *Critical Inquiry* 30 (2): 225–248.

Nietzsche, Friedrich. 1988. *Unzeitgemäße Betrachtungen: Vom Nutzen Und Nachtheil Der Historie Für Das Leben. Kritische Studienausgabe KSA I*. Berlin: Walter de Gruyter.

Oreskes, Naomi, and Erik M. Conway. 2010. *Merchants of doubt: How a handful of scientists obscured the truth on issues from tobacco smoke to global warming*. New York: Bloomsbury Press.

Rabinow, Paul. 2003. *Anthropos today. Reflections on modern equipment*. Princeton: Princeton University Press.

Raulff, Ulrich. 2016. Zum Thema (editorial). *Zeitschrift Für Ideengeschichte* X (1): 4–6.

Rees, Tobias. 2016a. *Plastic reason: An anthropology of brain science in embryogenetic terms*. Berkeley: University of California Press.

Rees, Tobias. 2016b. *Plastic Reason: Blog Post*. University of California Press Blog. November 19. http://www.ucpress.edu/blog/tag/tobias-rees/.

Vetencourt, José Fernando Maya, Alessandro Sale, Alessandro Viegi, Laura Baroncelli, Roberto De Pasquale, Olivia F. O'Leary, Eero Castrén, and Lamberto Maffei. 2008. The antidepressant fluoxetine restores plasticity in the adult visual cortex. *Science* 320 (5874): 385–388. doi:10.1126/science.1150516.