Nonlinear Dynamics, Psychology, and Life Sciences, Vol. 21, No. 1, pp. 117-119.
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Books Reviewed

Consciousness by Rocco J. Gennaro. Routledge, London and New York, 2017. ISBN 978-1-138-82771-4 pbk, 243 pages.

A day in the life of the brain: The neuroscience of consciousness from dawn to dusk by Susan Greenfield. Allen Lane, Penguin Books, London, 2017. ISBN 978-0-141-98504-6 pbk, 274 pages.

I am coupling two books here because the two were published independently about the same time, around October 2016, and on precisely the same topic. Each book emphasises that it covers some of all of philosophy, psychology and science, together. Both could be on your bookshelf together until you have time to read at least one.

Rocco Gennaro has written a carefully structured review of a wide range of philosophical theories about consciousness, which is valuable for graduate-level students and others considering adding to the very wide and rapidly growing new models in philosophical and psychological journals. Susan Greenfield's new book covers much the same topics, in a lighter style, but with more awareness of the variability and discontinuity of consciousness, because she is more free from the endless philosophical word-games that persist in the work of Gennaro. Greenfield explicitly refers to psychophysics with mathematical models, but I nowhere find them mentioned by Gennaro. In both books the notes, with over 450 cited references, and a glossary, are extensive and indeed necessary for any beginner on the topic.

Gennaro begins by reviewing the difficulties associated with words used for varieties of consciousnesss, and "qualia" is immediately on the scene. Then dualism and materialism in various forms get a thorough attention, he eventually later settles on a multilevel form of materialism where higher–order thought seems to be his preferred cautious choice. Helpfully Gennaro uses his section titles as his main topics, and refers to the work by Blanke in Geneva, Switzerland, that shows how out-of-body experiences can be induced experimentally using PET. He continues with the "hard problem," zombies, free will, and Libet's experiments.

A long coverage of the brain structure follows, and neural theories of consciousness, the binding problem and the unity of consciousness. In chapter four we reach psychopathology, and split-brain cases, autism, synesthesia and schizophrenia. His philosophical perspective leads him to consider consciousness and moral responsibility, which again is related to free will.

The last chapter 5 is about minds in animals, machines, and the Turing test. The Chinese room problem has created a long series of disputes, invented and contested by John Searle, which gets a detailed discussion. In fairness to Gennaro, he covers references up to the year 2015, and AI (artificial intelligence), which is popularly alive again and discussed more deeply by Greenfield to whom we now turn.

Unfortunately many models are quite sterile, and so one value of Gennaro's book is to warn us off spending time in considering ideas that have been critically found to be useless. They were created centuries before one knew anything of value about how brains function.

Susan Greenfield does get involved in doing real experiments, using fMRI and EEG, and shows some recorded work with fine coloured images. It makes it possible to see why some statistical models can be inadequate, and non-Gaussian and time–series processes arise in the fluctuations of consciousness (see in Gregson, 2013, 2015). The chapters are about what happens as we move through the day, and change the information we both create and receive in our life and work, when we learn, use our memories, and process events. We have more than one sort of functioning consciousness (recently see Pritchard et al, 2016) and a lot of activity that may be said to be pre- and post- consciousness in the working brain. Chapter 5 gives detailed attention to the difficulties in defining differences between self-consciousness and consciousness, and related development from infancy to adulthood. The relevance of the pre-frontal regions developing during adolescence, with a related theory of creativity, is perhaps novel to some readers and arises in Greenfield's previous books. We with a background in clinical psychology would know some form of the theory.

Chapter 7 on dreaming is unusual, "One theory is that, during sleep, a frontal brain area deactivates the motor system. As a result of having this route blocked, cerebral activity is somehow diverted backwards to stimulate the posterior brain areas linked to perception, but without the normal sensory input" (p.162). This could also happen in non-dreaming, so some other process must be involved as well. Another theory is that the thalamus acts like a block so that sensory signals just cannot get through. The book is using consciousness and neurophysiology strongly mixed in constructively reviewing depression and dementia, and covers many sources dated up to 2014, which are valuable collected together. Parallels between dreaming and schizophrenia, and pain thresholds, are discussed along with more differences between infants and adults in top-down processes. There is work on animal brain activity, but done differently from Gennaro's treatment, "a close correlation between high levels of REM sleep and whether a mammal is 'altricial' (e.g., cats, rats, humans) and born completely helpless, or 'precocial' (e.g. horses, cows and guinea pigs) and walk almost immediately after birth" (p. 160).

The last part in chapter 9 on time perception, and the critical role of the parietal cortex, is extensive. We should abandon the idea that there is one sort of perceived time, "time perception is not a unified, blanket process but is instead composed of independent neural operations that would usually be subcon-

sciously coordinated but can actually be overtly differentiated under laboratory conditions“ (p. 188).

She ends with a speculatory discussion on meta-assembly on whole brain states which notes the duration of consciousness thresholds around 270 millisecs. Perhaps “we would be liberated from the counterintuitive and intellectually unsatisfying task of forever trying to pin consciousness down to anatomically defined bits of brain” (p.198). In a way this mood matches some of Gennaro’s mainly philosophical conclusions.

Note; I have not been able to find any examples where the two authors (Gennaro and Greenfield) have explicitly cited each other’s published work.

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