In an article of the same name in 2004, Bruno Latour asked the question ‘Why Has Critique Run out of Steam’? He expressed his concern that the critical and deconstructive energy of the humanities had become overzealous and misapplied, and noted the increasing marshalling of the same style of arguments by rightwing politicians and intellectuals to discredit and ignore scientific evidence. In a remarkable passage, he notes that the hermeneutics of suspicion are becoming harder and harder to distinguish from conspiracy theories.

Latour’s words echoed in my head again and again as I made my way through John Modern’s Neuromatic, a book that is in equal turns frustrating, fascinating, and unique. This is truly a book that demonstrates Andrew Pickering’s description of cybernetics as a true Deleuzian ‘nomad science’ wandering across disciplines, countries, and institutions, linking together strange networks and transgressing and reformulating the nature of the real even as it sought to render the mind visible in greater levels of precision and accuracy. The key problem with Neuromatic, however, is that it always attempts to weave the discordance of its subject into a coherent narrative of power and domination; in Modern’s hands, cognitive science and neuroscience become a vast Leviathan of systematization and control. As a history of specific figures in the story of modern conceptions of the brain, and the linkages between certain technologies and theorizations of the self, the book succeeds admirably. As a wide-angle lens story of the history and philosophy of the cognitive sciences, however, the book largely fails to properly educate the reader or engage with a number of central ideas and controversies within the study of the mind, which makes its claims to offer an incisive analysis of the neuromatic world less than convincing.

Modern begins with an insider account of his own participation in the neuroscientific studies on the relationship between Parkinson’s and religiosity conducted by Patrick McNamara and his team at Boston University. As he engages with the advanced technological apparatus of the MRI involved in this research, he invites the reader to come with him on a tour of the histories of machinery and theorization of the self behind this clinical scenario. Throughout Neuromatic, Modern relies heavily on a Foucauldian notion of ‘discourse’ as a master concept, treating brains, machines, and electric waves as different instantiations of the discursive interplay between key concepts in the production of modernity and secularism, particularly those involving the negation or purification of religion or spirituality.

Chapter I, ‘Thinking About Cognitive Scientists Thinking About Religion’, is a fast-
paced and somewhat disjointed tour through the invention of electroencephalography (EEG), contemporary research in the cognitive science of religion, and the theological ruminations of Jonathan Edwards in the eighteenth century on the nature of divine agency. Chapter 2 takes the reader through a tangled landscape of discourse about consciousness, and specifically repeated efforts to quantify and systematize consciousness within study of intangible substances ranging from the ether of spiritualists up to contemporary theories of information.

Chapter 3 takes as its focus the ‘more unhinged renderings of information theory and neural networks’ by focusing on the network of relationships between professional scientists like Walter, Claude Shannon, and Warren McCulloch and more entrepreneurial figures such as Brion Gysin, William S. Burroughs, and L. Ron Hubbard (p. 222). Chapter 4 turns to institutional and forceful applications of electric models of the brain, particularly focusing on the uses and abuses of electroshock therapy. In particular, Modern focuses on the discursive formulation of electroshock as a ‘machine bent on purification, blasting out the bad, the blurry, and the loose feelings that stubbornly refused to fit into prescribed categories’ (p. 296).

I think the core problem with this book is that it is somewhat misnamed. Rather than being a history of the neuromatic, or the complex relationship between conceptualizing the brain and theorizing the religious, it instead functions more admirably as a story of the electromatic, or how the inner self became electric. The most compelling sections of the book are those which dig deep into the idiosyncratic histories of certain techniques and devices, such as Burrough’s Dream Machine or Tien’s Electronic Love Therapy. These episodes clearly show the murky and often bizarre entanglement between technology, spirituality, and the therapeutic, which themselves are being buoyed along by the enchanting materiality of electronically realized signals from the brain. Along with other recent works discussing the inadequacy of Weberian disenchantment narratives, Modern clearly demonstrates Latour’s claim that we have never been modern and purified the dichotomies between nature and culture, science and religion, technology and the human, but rather exist in a world of endlessly proliferating hybrids.

No history of any single discipline can pretend towards completeness, let alone the complex set of fields under the banner of the cognitive sciences, and Modern should not be held to such an unreachable standard. But as a history of these sciences, there are gaps in this account that are impossible to ignore. William James never comes up in the entire volume, which is somewhat baffling considering the wide-ranging influence he has on work at the intersection of religion and the brain. More troublingly, at no point does Modern discuss the Chomskyan revolution against behaviorism and the consequent ascendance of cognitive psychology and linguistics, a watershed moment in the twentieth-century history of the mind. There is an ongoing tendency of the text to misrepresent cognitive science and neuroscience as hegemonic and cohesive wholes, when the reality is far more diverse and messy than Modern seems willing to concede. Similar issues abound in Modern’s discussion of systems theory and cybernetics, in which he never discusses the fundamental transformation of these fields over the second half of the twentieth century by issues forced by non-linear dynamics, chaos, and complexity theory, which fundamentally destabilized the totalizing framework of systems sciences.
These issues are also at play in Modern’s analysis of cognitive science of religion, which is also accompanied by an unmistakably aggrieved tone and an uncharitable attitude. Rather than defend the value of cognitive science of religion here, I instead direct readers to Armin Geertz’s spirited rebuttal to Ivan Strenki’s dismissal of the field (Geertz 2020). In the case of *Neuromatic*, I will attempt to limit my critique to two major points. First, Modern’s tendency to skip back and forth between time periods, methodologies, and researchers invites the reader to draw connections that are somewhat dubious when given deeper examination. The most overt example is the rapid move from the origins of EEG to the cognitive science of religion, a transition Modern justifies by claiming that EEG is central to CSR, citing a recent study by Michiel van Elk. The vast majority of CSR practitioners he then goes on to discuss, however, rarely use EEG in their research. In fact, Pascal Boyer, who serves as Modern’s main target, has long utilized an evolutionary algorithmic model of the mind that is deeply embedded within the Chomskyean lineage and which is markedly not a connectionist model of mind. The network/EEG model of mind that is core to Modern’s overall vision of the neuromatic is thus markedly absent from the very cognitive scientists he is attempting to discuss!

The second issue, which I will only touch on briefly, is the thoroughgoing conspiratorial associations made throughout Modern’s critique. In his discussion of Boyer he remarks that ‘a subtle strain of paranoia laces Boyer’s recognition of such dysfunction, a pose he also shares with new atheists writing in an age of simmering Islamophobia’, to which he append a citation of Glenn Greenwald discussing the Islamophobia of figures such as Daniel Dennett, Sam Harris, and Richard Dawkins (p. 95). To call this a bad-faith comparison is putting it lightly, and it comes amidst a sea of other innuendos and implications about Boyer and other cognitive science of religion researchers. This is frustrating, because Modern’s observation that CSR researchers tend to neglect the influence of politics and history is, in my view, undoubtedly correct, and the frustrations of many humanists and social scientists with the field’s tendency towards reductionism is often warranted. But Modern seems uninterested in digging into the tangible differences and inner complexities of CSR (as well as cognitive science writ large) in favor of telling a more totalizing narrative that fits his overall negativity towards the entire enterprise, which makes his overall critique less compelling than it should have been.

Finally, as an embodied realist, I view this book as a key example of what Thomas Csordas has called the ‘hungry metaphor’ of textualism. As Csordas remarks, textualism reduces ‘experience to language, or discourse, or representation’, swallowing up body and world into the interplay of symbols (Csordas 1999: 145). The battle for the soul of the modern world Modern depicts this book is often one between discourse and information, between the world as linguistic and symbolic register and the world as quantized systematics. But at the heart of the story of the brain is not words, or mathematical graphs, but rather the pulsing organ itself, shaped by millennia of biological evolution and sculpted and transformed by social contexts. While the discovery of electronic brainwaves has given rise to a panoply of discourse, as Modern skillfully depicts, the interplay between EEG machines and the brain is the consequence of an irreducibly material fact of the brain itself. Thus, while I applaud Modern for giving us a number of
valuable puzzle pieces in the ongoing story of the brain, *Neuromatic* should be viewed as only a piece of this larger story, with many gaps and new stories remaining yet to be told on the intricate interconnection between our embodied minds and the sociopolitical dynamics of modernity.

**John Balch**  
*Boston University*  
*jbalch@bu.edu*

**References**

