



Connectome: How the Brain's Wiring Makes Us Who We Are

By Sebastian Seung

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We know that each of us is unique, but science has struggled to pinpoint where, precisely, our uniqueness resides. Is it in our genes? The structure of our brains? Our genome may determine our eye color and even aspects of our personality. But our friendships, failures, and passions also shape who we are. The question is: how?

Sebastian Seung, a dynamic professor at MIT, is on a quest to discover the biological basis of identity. He believes it lies in the pattern of connections between the brain's neurons, which change slowly over time as we learn and grow. The connectome, as it's called, is where our genetic inheritance intersects with our life experience. It's where nature meets nurture.

Seung introduces us to the dedicated researchers who are mapping the brain's connections, neuron by neuron, synapse by synapse. It is a monumental undertaking the scientific equivalent of climbing Mount Everest but if they succeed, it could reveal the basis of personality, intelligence, memory, and perhaps even mental disorders. Many scientists speculate that people with anorexia, autism, and schizophrenia are "wired differently," but nobody knows for sure. The brain's wiring has never been clearly seen.

In sparkingly clear prose, Seung reveals the amazing technological advances that will soon help us map connectomes. He also examines the evidence that these maps will someday allow humans to "upload" their minds into computers, achieving a kind of immortality.

Connectome is a mind-bending adventure story, told with great passion and authority. It presents a daring scientific and technological vision for at last understanding what makes us who we are. Welcome to the future of neuroscience.

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Editorial Review

Review

An amiable guide, witty and exceptionally clear in describing complex matters for the general reader...fascinating...beautifully explained and analyzed-as I might have expected from a writer who has produced the best lay book on brain science I've ever read -- Daniel J Levitin *Wall Street Journal* This is complicated stuff, and it is a testament to Dr. Seung's remarkable clarity of exposition that the reader is swept along with his enthusiasm, as he moves from the basics of neuroscience out to the farthest regions of the hypothetical, sketching out a spectacularly illustrated giant map of the universe of man -- Abigail Zuger *New York Times* An elegant primer on what's known about how the brain is organized and how it grows, wires its neurons, perceives its environment, modifies or repairs itself, and stores information. Seung is a clear, lively writer who chooses vivid examples -- Susan Okie *Washington Post*

Review

Publishers Weekly Top Ten in Science for Spring 2012

“the best lay book on brain science I’ve ever read.” — *Wall Street Journal* by Daniel Levitin, Professor, McGill University; author of *This Is Your Brain on Music* and *The World in Six Songs*.

“?This is complicated stuff, and it is a testament to Dr. Seung’s remarkable clarity of exposition that the reader is swept along with his enthusiasm, as he moves from the basics of neuroscience out to the farthest regions of the hypothetical, sketching out a spectacularly illustrated giant map of the universe of man.” — *New York Times*

“[A] bracing, mind-expanding report from neuroscience’s razor edge. Accessible, witty, [e]minently logical and at times poetic, *Connectome* establishes Seung as an important new researcher, philosopher and popularizer of brain science. It puts him on par with cosmology’s Brian Greene and the late Carl Sagan.” — *Cleveland Plain Dealer*

“Seung argues intelligently and powerfully that the self lies in the totality of the brain’s wiring.” — *Nature* by Christof Koch, Professor, California Institute of Technology; Chief Scientific Officer, Allen Institute for Brain Science; author of *Quest for Consciousness* and *Consciousness: Confessions of a Romantic Reductionist*

“With the first-person flavour of James Watson’s *Double Helix*—an account of how DNA’s structure was discovered—*Connectome* gives a sense of the excitement on the cutting edge of neuroscience.” — *NewScientist* by Terry Sejnowski, Professor and Director, Computational Neurobiology Lab, Salk Institute; Investigator, Howard Hughes Medical Institute; Member, National Academy of Sciences and National Academy of Engineering USA.

“an elegant primer on what’s known about how the brain is organized and how it grows, wires its neurons, perceives its environment, modifies or repairs itself, and stores information. Seung is a clear, lively writer who chooses vivid examples.” — *Washington Post*

From the Inside Flap

The bold and thrilling quest to finally understand the brain

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