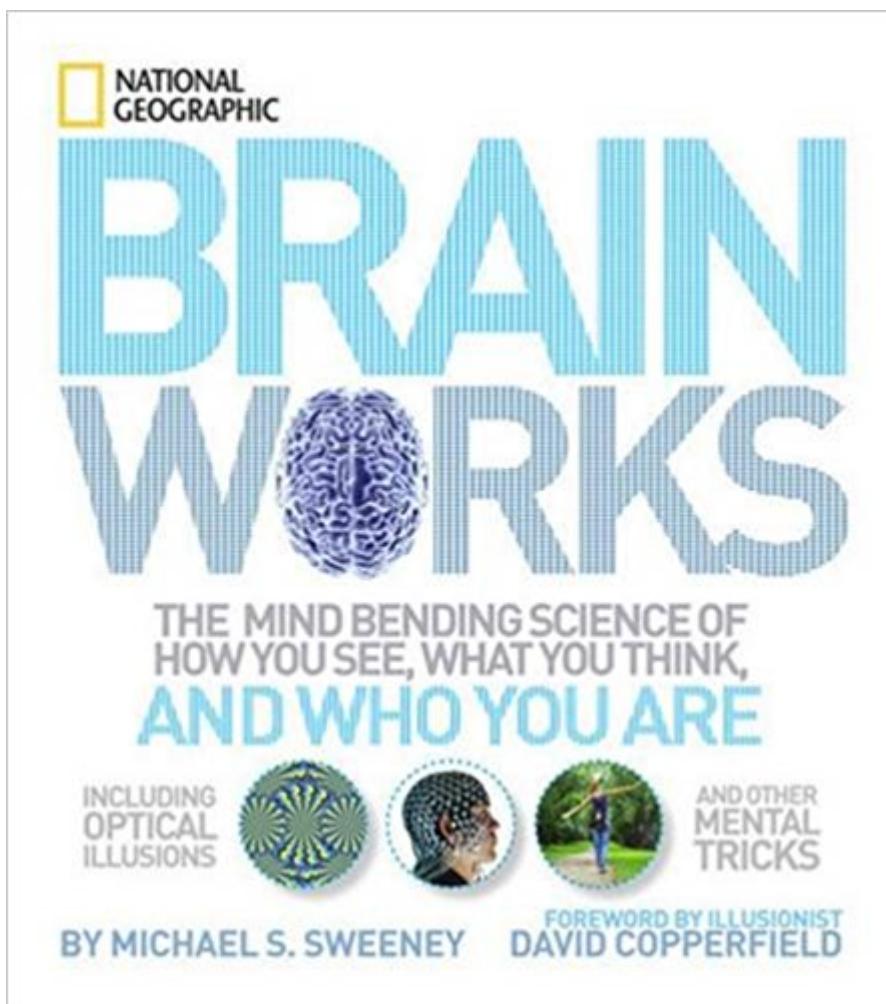


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# Brainworks: The Mind-bending Science Of How You See, What You Think, And Who You Are



## Synopsis

Admit it. When you hear the word "neuroscience," you expect something abstract and remote, very complex, of little practical value. But this time...it's personal. In a highly anticipated, three-part series airing on the National Geographic Channel in Fall 2011, National Geographic's Brainworks makes YOU the test subject in an array of astonishing challenges and experiments. Your brain will be stimulated, fooled, and ultimately amazed, as scientists and other experts show you how this three-pound blob of gray matter effectively makes you, you. The television program brings together a crack team of scientists and researchers from a wide range of fields, including neurology, psychology, and ophthalmology. Awareness expert Dan Simons and memory expert Elizabeth Loftus are just two of the notables who lend their considerable brainpower to this unprecedented project. The program also draws on the know-how of those who traffic in brain tricks—illusionists such as David Copperfield and Apollo Robbins and artists such as color expert Beau Lotto—to bring each mind-bending illusion to life. The captivating companion book further messes with your head through the visual illusions discovered and perfected by masters of fine art as well as through deceptively simple illustrations that are finely crafted by psychologists to highlight the way we take in and process the world around us. In three sections—"Seeing," "Thinking," and "Being"—you'll see for yourself why these visual illusions and experiments hoodwink the brain. You'll find out how the structure of the eye influences what you see. And you'll think of events that may not have actually happened, in order to learn how the mind can create a false memory. Rather than simply displaying a collection of puzzlers or visual illusions, each chapter guides you through a series of perceptual and thought experiments firsthand and then walks you through your brain's reaction in clear, user-friendly language—providing every reader with a compelling personal interest in finding out why his or her mind acts the way it does. Smart, exciting, and deeply engaging, Brainworks pulls you in, manipulates your mind, and leaves you with a better understanding—as well as a richer appreciation—of the mental marvels that we take for granted.

## Book Information

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## Customer Reviews

Michael Sweeney, a graduate of the University of Nebraska-Lincoln, received his Ph.D. in Journalism from Ohio University's E.W. Scripps School of Journalism and his Master's in Journalism at the University of North Texas. He reported for nationalgeographic.com on Dr. Robert Ballard's Titanic expedition. Sweeney's numerous books include The Ultimate Survival Book, Peace: The Biography of a Symbol, God Grew Tired of Us, and Mind: The Complete Brain. A member of the exclusive club of world-famous magicians, David Copperfield is known for staging whopper illusions, including making the Statue of Liberty disappear before a live audience and millions of TV viewers. In addition to performing worldwide, he has had a hit on Broadway (Dreams and Nightmares), founded an organization to help rehabilitate disabled people (Project Magic), and published books (Beyond Imagination and David Copperfield's Tales of the Impossible).

Good misdirection is mostly psychological, with the magician tricking different parts of the audience's brain. With good misdirection, the viewers don't even know that they've missed anything or been deceived; they just experience the magic. If I take an envelope and lick the flap and seal it, the viewers will assume the envelope is sealed and nothing can be slipped into it. It might be completely open on one side, but because I casually show it and close it, the assumption is that the envelope is undoctored. But if I picked it up and said, "This is an ordinary envelope, nothing fake about this," I'm casting suspicion on it by calling attention to it, by making it a part of the viewer's focus. Science is now labeling and analyzing things that magicians have known for centuries. For instance, some of the most deceiving moments involve what scientists refer to as change blindness, as demonstrated in illusions where audience members don't notice obvious changes in their visual field when their focus is narrowed to a specific scope or task. Sometimes, the closer you look, the less you see. And that is what makes magic so fun. A Then, too, there are straight-up optical illusions

that deceive the eye and, therefore, the brain. Hundreds of years ago, magicians discovered, for example, that if a stage is draped in black, anything on the stage that's also black can't be seen by the naked eye. This principle, which magicians call black art, delighted and perplexed me as a kid when I first encountered it in the form of a mouse with an Italian accent on The Ed Sullivan Show. Topo Gigio, the mouse puppet, was unlike any puppet I'd seen: He had no visible means of support. He stood on his own two paws and often crawled up Sullivan's sleeve to give him a good-night peck on the cheek. Topo Gigio was like a cartoon come to life. *What I didn't know, and wouldn't learn until I checked a book on magic out of the library in the sixth grade, is that Topo did have handlers, but they were invisible because they were dressed entirely in black, with black hoods and black gloves.* Topo was brought to life by puppeteers in plain view and yet completely invisible to the camera and the studio audience. *Optical illusions like that are well understood. But one of the most fascinating features of this book and the companion television special, Brain Games, is their exploration of illusions and brain processes that magicians have known and exploited but never completely understood.* Reading these explanations of why a certain perceptual manipulation works has deepened my appreciation for what we illusionists do and sharpened my use of the tools we keep in our toolbox. *As an illusionist, I help people recapture their sense of wonder by creating amazing things they've never seen before* •what actors call the illusion of the first time. Except, for my audience, it's no illusion. It's a real feeling of awe and raw astonishment. A sense of enchantment•that's what so many of us are missing, particularly now that we have so much wonderful technology at our fingertips. We can create near miracles with our laptops and our tablets and our smart phones. When I can unplug the audience for an hour or two and give them back that sense of total enchantment, it's the greatest feeling. It's the reason why I became an illusionist, and it's what gets me on stage day after day, year after year. *This book is an extraordinarily powerful and fun tool for enriching your knowledge of perception and capacity to wonder. You will learn not only to look closer but to see and experience more.* I'm honored to be a part of this project, which confirmed many things I had come to know through my work but couldn't quite articulate and which taught me things that are both useful and entirely fascinating. I'm delighted to be on this journey with you. *--David Copperfield*

It's tough to put this book down once you pick it up! It is an easy read, yet extremely interesting. If you have a reasonable curiosity about the human body and are in utter amazement of the

engineering marvel that our bodies are, you will love this book. The authors have done an excellent job of explaining the science behind the illusions in a lucid fashion. I was on a flight recently and devoured the entire 3 hours of it reading this book.

Have you ever wondered how two people can look at a cloud and visualize the same shape? Or how about the way your mind creates your personality? Michael S Sweeney will keep you entertained and enthusiastic about learning the answers to these and many more questions in his book "Brainworks". Sweeney graduated with a PhD in journalism from Ohio University, and has taught at many universities around the U.S. including the E.W. Scripps School of Journalism at Ohio University. Some of his earlier work included writing online articles for National Geographic, where many of his books have been published recently. Apart from "Brainworks", Sweeney has written many knowledgeable books on a large span of topics. Some of these include: ""Brain: The Complete Mind" and "The Complete Survival Manual", and "Last Unspoiled Place". Though this book seems better fit for a younger audience, his way with words makes it simple to retain information with ease. I gave this book four stars for Sweeney's way of presenting material, even though for me it lacked more advanced topics. A book on the neuroscience of our minds and self, "Brainworks" takes the way our mind understands and perceives the world around us by using interactive techniques. Every section includes tests and illusions to help explain the complexity of the human mind. Throughout the book, Sweeney uses tests, fun facts, and examples that support, enhance, and better explain the text and that are surprisingly relatable to everyone. The book is divided into four sections: background information, "Seeing", "Thinking", and "Being". The introduction of the book focuses mainly on the basics of neuroscience, including anatomy and bits and pieces of neuron physiology. It discusses how action potentials are the basis for all brain function, and how neurons transform these electrical signals into chemicals (neurotransmitters), which cross from presynaptic to post synaptic portions of the cell. Sweeney starts with this information to show how these little electrical impulses are the basis of how we perceive and act. "Seeing" focuses on how our eyes view colors and shapes, and how our minds can play visual tricks on us. At the beginning of each section, you are given a visual stimulus and directions on what to focus on. The pages following explain what you saw, and the physiology behind it. For example, in one experiment you are given a painting of a bowl of vegetables. Upon turning the book upside down, the vegetables form the shape of a face. It turns out that the human brain finds faces in objects as a mechanism for survival. The fusiform face area is introduced, which is described as being part of the visual system of the brain in which our recognition of faces is formed and

processed. Other aspects of this section include facts about face recognition, examples of what can happen if these recognition areas (such as the fusiform face area) are damaged, and give insight into the neurons that respond to our face and eyes. The second topic of the book, "Thinking", gives insight to the way we use our memory and the importance of thought in the actions our bodies make. In this section, scenarios are given in which you get to choose which path or option you would take. It also includes memorization tasks. Sweeney explores how the human brain memorizes and organizes information in similar ways. The text discusses how our minds can be "tricked" into forming false memories or associating unrelated topics from our perception, and cognition forming associations that may not always be correct. For example, you are asked to look at a group of words on a page. When you turn the page you are given a list of words and asked to pick the ones on the previous list. Looking at words that are associated such as bed, pillow and sleep, may cause the mind to remember all words, even though sleep may not have been one of them. It is described that people remember all three words as a way of the brain associating a list of words into a coherent structure. My favorite portion of the book was the final section, "Being". Sweeney stresses the importance of our unconscious in building who we are and how we act. Topics discussed include the illusions of control, unconscious will, intelligence, emotion, and pain. I found it especially interesting how Sweeney discusses pain. In one scenario, you are given a choice between a period of intense pain, and a period of intense pain followed by a slightly less intense pain. Surprisingly, our brain interprets the second option to be overall less painful. It was described that duration of pain and pleasure is almost irrelevant; we evaluate pain as the greatest intensity and the final sensation. Even though I enjoyed this portion of "Brainworks" the most, Sweeney did a poor job of giving an introduction to painful and non-painful sensations. It would have been nice for a reader with little background in neuroscience if he included information on how pain and touch involved different pathways to the brain, and were not essentially the same. Overall this book deserves four out of five stars. Sweeney does a great job of making a complicated topic easy to understand, and his examples and interactive portions make retaining the information as simple as spelling your name. The format of the text and the depth of the material however, make it more suitable for high school to early college students, or readers who have no background in neuroscience. If you're looking for breakthrough research on the subject of mind and being, this is most likely not the book for you. If you are looking for a basic understanding of conceptual topics on the brain, you've chosen the right text. Once you open this book, you will not only be hooked on what activity will test your way of thinking next, but you will also get lost in learning how such a small organ in the body can enable you to see, hear and act both as a population and an individual.

A great book for those interested in fundamental insights into the working of the eyes and interpretation of messages from vision receptors by the brain. Wonderful illustrations (visual examples) for self-testing and self-convincing about the eyes and working of the brain in providing us a view of our surroundings. Written for those with little scientific background, but can be enjoyed by those that love science.

I am not a Psych major, but before giving it to my best friend for her birthday, I read it. It is fascinating and easy to understand for those not in the Psych field (but I am interested). It has interesting bits included and the format is well set up. I recommend this as a gift for anyone who enjoys Psychology, including experts and for beginners.

Love the diagrams and color illustrations in this book. It is clear and interesting enough for grade school through college grads & seniors.

Great information in a great visual book that discover how the "greatest machine of all" works and how the world around is shaped by how and for what we see

I purchased this as a gift for our 10-year old granddaughter who watches the show and is interested in science. She was very pleased to receive it.

Love it

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