

---

# Why We See What We Do An Empirical Theory Of Visio

---

Find Your Why  
 Vision and Brain  
 How Vision Works  
 All the Light We Cannot See  
 Vision: How, Why, and what We See  
 The Vision Revolution  
 Ways of Seeing  
 Visual Intelligence  
 Paranormality  
 What We See and Don't See  
 What We See When We Read  
 Biased  
 A Natural History of Color  
 Why We Do What We Do  
 All the Colors We Will See  
 Now You See It  
 The Book of Minds  
 Seeing Ourselves Through Technology  
 We See Everything  
 The Fruit, the Tree, and the Serpent  
 Why We Snap  
 Why We Do What We Do  
 Why We See what We Do  
 Why We Sleep  
 Paranormality  
 The Vision Revolution  
 What We See  
 What We See in the Stars  
 We Know It When We See It  
 Why We See What We Do Redux  
 Why We Believe What We Believe  
 How We Learn  
 The Energy We See  
 This Is Why We Can't Have Nice Things  
 Scene Vision  
 Factfulness  
 The Power of Habit: by Charles Duhigg | Summary & Analysis  
 See Where We Come From!  
 Objects Vision  
 Why We Make Mistakes

*Why We See What We Do  
 An Empirical Theory Of  
 Visio*

Downloaded from  
[ftp.bonide.com](http://ftp.bonide.com) by guest

---

## GARRETT CAMACHO

---

Find Your Why Sinauer Associates  
 Incorporated

'People are emotionally drawn to the supernatural. They actively want weird, spooky things to be true . . . Wiseman shows us a higher joy as he deftly skewers the paranormal charlatans, blows away the psychic fog and lets in the clear light of reason.' Richard Dawkins Professor Richard Wiseman is clear about one thing: paranormal phenomena don't exist. But in the same way that the science of space travel transforms our everyday lives, so research into telepathy, fortune-telling and out-of-body experiences produces remarkable insights into our brains,

behaviour and beliefs. Paranormality embarks on a wild ghost chase into this new science of the supernatural and is packed with activities that allow you to experience the impossible. So throw away your crystals, ditch your lucky charms and cancel your subscription to Reincarnation Weekly. It is time to discover the real secrets of the paranormal. Learn how to control your dreams -- and leave your body behind Convince complete strangers that you know all about them Unleash the power of your unconscious mind *Vision and Brain* Penn State University Press

Contains seven essays. Three of them use only pictures. Examines the relationship between what we see and what we know. *How Vision Works* Penguin

This book is open access under a CC BY license. Selfies, blogs and lifelogging

devices help us understand ourselves, building on long histories of written, visual and quantitative modes of self-representations. This book uses examples to explore the balance between using technology to see ourselves and allowing our machines to tell us who we are.

**All the Light We Cannot See** MIT Press Light shines through your kitchen window. A campfire brightens the dark woods. You see light all around you. But where does most light come from? And how does it travel? Read this book to find out! Learn all about matter, energy, and forces in the Exploring Physical Science series—part of the Lightning Bolt Books™ collection. With high-energy designs, exciting photos, and fun text, Lightning Bolt Books™ bring nonfiction topics to life!

*Vision: How, Why, and what We See* Pan Macmillan

Draws on neurobiological and societal research to present a scientific analysis of how the brain perceives and transforms reality into a wide range of personal, moral, creative, and spiritual beliefs.

**The Vision Revolution** Penguin

"Sleep is one of the most important but least understood aspects of our life, wellness, and longevity ... An explosion of scientific discoveries in the last twenty years has shed new light on this fundamental aspect of our lives. Now ... neuroscientist and sleep expert Matthew Walker gives us a new understanding of the vital importance of sleep and dreaming"--Amazon.com.

Ways of Seeing OUP USA

The startling new science behind sudden acts of violence and the nine triggers this groundbreaking researcher has uncovered We all have a rage circuit we can't fully control once it is engaged as R. Douglas Fields, PhD, reveals in this essential book for our time. The daily headlines are filled with examples of otherwise rational people with no history of violence or mental illness suddenly snapping in a domestic dispute, an altercation with police, or road rage attack. We all wish to believe that we are in control of our actions, but the fact is, in certain circumstances we are not. The sad truth is that the right trigger in the right circumstance can unleash a fit of rage in almost anyone. But there is a twist: Essentially the same pathway in the brain that can result in a violent outburst can also enable us to act heroically and altruistically before our conscious brain knows what we are doing. Think of the stranger who dives into a frigid winter lake to save a drowning child. Dr. Fields is an internationally recognized neurobiologist and authority on the brain and the cellular mechanisms of memory. He has spent years trying to understand the biological basis of rage and anomalous violence, and he has concluded that our culture's understanding of the problem is based on an erroneous assumption: that rage attacks are the product of morally or mentally defective individuals, rather than a capacity that we all possess. Fields shows that violent behavior is the result of the clash between our evolutionary hardwiring and triggers in our contemporary world. Our personal space is more crowded than ever, we get less sleep, and we just aren't as fit as our ancestors. We need to understand how the hardwiring works and how to recognize the nine triggers. With a totally new perspective, engaging narrative, and practical advice, *Why We Snap* uncovers the biological roots of the rage response and how we can protect ourselves—and

others.

Visual Intelligence New Village Press

Internet trolls live to upset as many people as possible, using all the technical and psychological tools at their disposal. They gleefully whip the media into a frenzy over a fake teen drug crisis; they post offensive messages on Facebook memorial pages, traumatizing grief-stricken friends and family; they use unabashedly racist language and images. They take pleasure in ruining a complete stranger's day and find amusement in their victim's anguish. In short, trolling is the obstacle to a kinder, gentler Internet. To quote a famous Internet meme, trolling is why we can't have nice things online. Or at least that's what we have been led to believe. In this provocative book, Whitney Phillips argues that trolling, widely condemned as obscene and deviant, actually fits comfortably within the contemporary media landscape. Trolling may be obscene, but, Phillips argues, it isn't all that deviant. Trolls' actions are born of and fueled by culturally sanctioned impulses -- which are just as damaging as the trolls' most disruptive behaviors. Phillips describes, for example, the relationship between trolling and sensationalist corporate media -- pointing out that for trolls, exploitation is a leisure activity; for media, it's a business strategy. She shows how trolls, "the grimacing poster children for a socially networked world," align with social media. And she documents how trolls, in addition to parroting media tropes, also offer a grotesque pantomime of dominant cultural tropes, including gendered notions of dominance and success and an ideology of entitlement. We don't just have a trolling problem, Phillips argues; we have a culture problem. This *Is Why We Can't Have Nice Things* isn't only about trolls; it's about a culture in which trolls thrive.

**Paranormality** Kids Can Press Ltd

NOMINATED FOR THE CILIP CARNEGIE MEDAL 2019 SHORTLISTED FOR THE RED TENTACLE AT THE KITSCHIES 2017 A gripping and powerfully relevant thriller set in a reimagined London where constant surveillance is the norm, *We See* Everything simmers with tension and emotion. From internationally bestselling author William Sutcliffe, this is perfect for fans of Patrick Ness and Malorie Blackman. Lex lives on The Strip - the overcrowded, closed-off, bombed-out shell of London. He's used to the watchful enemy drones that buzz in the air above him. Alan's talent as a gamer has landed him the job of his dreams. At a military base in a secret location, he is about to start work as a drone pilot. These two young men will

never meet, but their lives are destined to collide. Because Alan has just been assigned a high-profile target. Alan knows him only as #K622. But Lex calls him Dad. **What We See and Don't See** John Wiley & Sons

In the tradition of *The Power of Habit* and *Thinking, Fast and Slow* comes a practical, playful, and endlessly fascinating guide to what we really know about learning and memory today—and how we can apply it to our own lives. From an early age, it is drilled into our heads: Restlessness, distraction, and ignorance are the enemies of success. We're told that learning is all self-discipline, that we must confine ourselves to designated study areas, turn off the music, and maintain a strict ritual if we want to ace that test, memorize that presentation, or nail that piano recital. But what if almost everything we were told about learning is wrong? And what if there was a way to achieve more with less effort? In *How We Learn*, award-winning science reporter Benedict Carey sifts through decades of education research and landmark studies to uncover the truth about how our brains absorb and retain information. What he discovers is that, from the moment we are born, we are all learning quickly, efficiently, and automatically; but in our zeal to systematize the process we have ignored valuable, naturally enjoyable learning tools like forgetting, sleeping, and daydreaming. Is a dedicated desk in a quiet room really the best way to study? Can altering your routine improve your recall? Are there times when distraction is good? Is repetition necessary? Carey's search for answers to these questions yields a wealth of strategies that make learning more a part of our everyday lives—and less of a chore. By road testing many of the counterintuitive techniques described in this book, Carey shows how we can flex the neural muscles that make deep learning possible. Along the way he reveals why teachers should give final exams on the first day of class, why it's wise to interleave subjects and concepts when learning any new skill, and when it's smarter to stay up late prepping for that presentation than to rise early for one last cram session. And if this requires some suspension of disbelief, that's because the research defies what we've been told, throughout our lives, about how best to learn. The brain is not like a muscle, at least not in any straightforward sense. It is something else altogether, sensitive to mood, to timing, to circadian rhythms, as well as to location and environment. It doesn't take orders well, to put it mildly. If the brain is a learning machine, then it is

an eccentric one. In *How We Learn*, Benedict Carey shows us how to exploit its quirks to our advantage.

*What We See When We Read* Pan Macmillan Adult

An engaging introduction to the science of vision that offers a coherent account of vision based on general information processing principles. In this accessible and engaging introduction to modern vision science, James Stone uses visual illusions to explore how the brain sees the world. Understanding vision, Stone argues, is not simply a question of knowing which neurons respond to particular visual features, but also requires a computational theory of vision. Stone draws together results from David Marr's computational framework, Barlow's efficient coding hypothesis, Bayesian inference, Shannon's information theory, and signal processing to construct a coherent account of vision that explains not only how the brain is fooled by particular visual illusions, but also why any biological or computer vision system should also be fooled by these illusions. This short text includes chapters on the eye and its evolution, how and why visual neurons from different species encode the retinal image in the same way, how information theory explains color aftereffects, how different visual cues provide depth information, how the imperfect visual information received by the eye and brain can be rescued by Bayesian inference, how different brain regions process visual information, and the bizarre perceptual consequences that result from damage to these brain regions. The tutorial style emphasizes key conceptual insights, rather than mathematical details, making the book accessible to the nonscientist and suitable for undergraduate or postgraduate study.

**Biased** Penguin

Cutting-edge research on the visual cognition of scenes, covering issues that include spatial vision, context, emotion, attention, memory, and neural mechanisms underlying scene representation. For many years, researchers have studied visual recognition with objects—single, clean, clear, and isolated objects, presented to subjects at the center of the screen. In our real environment, however, objects do not appear so neatly. Our visual world is a stimulating scenery mess; fragments, colors, occlusions, motions, eye movements, context, and distraction all affect perception. In this volume, pioneering researchers address the visual cognition of scenes from neuroimaging, psychology, modeling, electrophysiology,

and computer vision perspectives. Building on past research—and accepting the challenge of applying what we have learned from the study of object recognition to the visual cognition of scenes—these leading scholars consider issues of spatial vision, context, rapid perception, emotion, attention, memory, and the neural mechanisms underlying scene representation. Taken together, their contributions offer a snapshot of our current knowledge of how we understand scenes and the visual world around us. Contributors Elissa M. Aminoff, Moshe Bar, Margaret Bradley, Daniel I. Brooks, Marvin M. Chun, Ritendra Datta, Russell A. Epstein, Michèle Fabre-Thorpe, Elena Fedorovskaya, Jack L. Gallant, Helene Intraub, Dhiraj Joshi, Kestutis Kveraga, Peter J. Lang, Jia Li Xin Lu, Jiebo Luo, Quang-Tuan Luong, George L. Malcolm, Shahin Nasr, Soojin Park, Mary C. Potter, Reza Rajimehr, Dean Sabatinelli, Philippe G. Schyns, David L. Sheinberg, Heida Maria Sigurdardottir, Dustin Stansbury, Simon Thorpe, Roger Tootell, James Z. Wang

*A Natural History of Color* Bloomsbury Publishing

When we look at an object, do we see what's really there? In this follow-up to the highly provocative *Why We See What We Do*, D. Purves and R. Beau Lotto argue that visual perceptions are reflexive manifestations of past behavioural success, rather than the result of a logical processing of present stimuli. The authors draw on a wealth of new evidence to support their argument, while retaining the clarity and energy that made the first edition so popular. Packed with diagrams and real-life examples, this text can be understood by those who are new to the subject as well as more advanced readers, making it an ideal resource for neuroscience and psychology students at any level.

*Why We Do What We Do* BenBella Books  
In *The Vision Revolution: How the Latest Research Overturns Everything We Thought We Knew About Human Vision*, Mark Changizi, prominent neuroscientist and vision expert, addresses four areas of human vision and provides explanations for why we have those particular abilities, complete with a number of full-color illustrations to demonstrate his conclusions and to engage the reader. Written for both the casual reader and the science buff hungry for new information, *The Vision Revolution* is a resource that dispels commonly believed perceptions about sight and offers answers drawn from the field's most recent research. Changizi focuses on four "why" questions: 1. Why

do we see in color? 2. Why do our eyes face forward? 3. Why do we see illusions? 4. Why does reading come so naturally to us? *Why Do We See in Color?* It was commonly believed that color vision evolved to help our primitive ancestors identify ripe fruit. Changizi says we should look closer to home: ourselves. Human color vision evolved to give us greater insights into the mental states and health of other people. People who can see color changes in skin have an advantage over their color-blind counterparts; they can see when people are blushing with embarrassment, purple-faced with exertion or the reddening of rashes. Changizi's research reveals that the cones in our eyes that allow us to see color are exquisitely designed exactly for seeing color changes in the skin. And it's no coincidence that the primates with color vision are the ones with bare spots on their faces and other body parts; Changizi shows that the development of color vision in higher primates closely parallels the loss of facial hair, culminating in the near hairlessness and highly developed color vision of humans. *Why Do Our Eyes Face Forward?* Forward-facing eyes set us apart from most mammals, and there is much dispute as to why we have them. While some speculate that we evolved this feature to give us depth perception available through stereo vision, this type of vision only allows us to see short distances, and we already have other mechanisms that help us to estimate distance. Changizi's research shows that with two forward-facing eyes, primates and humans have an x-ray ability. Specifically, we're able to see through the cluttered leaves of the forest environment in which we evolved. This feature helps primates see their targets in a crowded, encroached environment. To see how this works, hold a finger in front of your eyes. You'll find that you're able to look "through" it, at what is beyond your finger. One of the most amazing feats of two forward-facing eyes? Our views aren't blocked by our noses, beaks, etc. *Why Do We See Illusions?* We evolved to see moving objects, not where they are, but where they are going to be. Without this ability, we couldn't catch a ball because the brain's ability to process visual information isn't fast enough to allow us to put our hands in the right place to intersect for a rapidly approaching baseball. "If our brains simply created a perception of the way the world was at the time light hit the eye, then by the time that perception was elicited—which takes about a tenth of a second for the brain to do—time would have marched on, and the

perception would be of the recent past," Changizi explains. Simply put, illusions occur when our brain is tricked into thinking that a stationary two-dimensional picture has an element that is moving. Our brains project the "moving" element into the future and, as a result, we don't see what's on the page, but what our brain thinks will be the case a fraction of a second into the future. *Why Does Reading Come So Naturally to Us?* We can read faster than we can hear, which is odd, considering that reading is relatively recent,

*All the Colors We Will See* Thomas Nelson  
Popular science writer Philip Ball explores a range of sciences to map our answers to a huge, philosophically rich question: How do we even begin to think about minds that are not human? Sciences from zoology to astrobiology, computer science to neuroscience, are seeking to understand minds in their own distinct disciplinary realms. Taking a uniquely broad view of minds and where to find them—including in plants, aliens, and God—Philip Ball pulls the pieces together to explore what sorts of minds we might expect to find in the universe. In so doing, he offers for the first time a unified way of thinking about what minds are and what they can do, by locating them in what he calls the "space of possible minds." By identifying and mapping out properties of mind without prioritizing the human, Ball sheds new light on a host of fascinating questions: What moral rights should we afford animals, and can we understand their thoughts? Should we worry that AI is going to take over society? If there are intelligent aliens out there, how could we communicate with them? Should we? Understanding the space of possible minds also reveals ways of making advances in understanding some of the most challenging questions in contemporary science: What is thought? What is consciousness? And what (if anything) is free will? Informed by conversations with leading researchers, Ball's brilliant survey of current views about the nature and existence of minds is more mind-expanding than we could imagine. In this fascinating panorama of other minds, we come to better know our own.

*Now You See It* Penguin

This provocative book reviews a broad range of evidence leading to the conclusion that the visual system is not organised to generate a veridical representation of the physical world, but rather a statistical reflection of the visual history of the species and the individual observer. Thus, what humans actually see is a reflexive manifestation of past rather

than a logical analysis of the present. The idea that the images we consciously entertain represent the historical significance of visual stimuli follows from the inability to decipher ambiguous retinal information analytically, and has far-reaching consequences not only for vision but brain function generally. The immediate benefit of this approach is that it provides a framework by which to understand a variety of fundamental visual illusions that are otherwise difficult, if not impossible, to explain.

*The Book of Minds* MIT Press

What motivates us as students, employees, and individuals? If you reward your children for doing their homework, they will usually respond by getting it done. But is this the most effective method of motivation? No, says psychologist Edward L. Deci, who challenges traditional thinking and shows that this method actually works against performance. The best way to motivate people—at school, at work, or at home—is to support their sense of autonomy. Explaining the reasons why a task is important and then allowing as much personal freedom as possible in carrying out the task will stimulate interest and commitment, and is a much more effective approach than the standard system of reward and punishment. We are all inherently interested in the world, argues Deci, so why not nurture that interest in each other? Instead of asking, "How can I motivate people?" we should be asking, "How can I create the conditions within which people will motivate themselves?" "An insightful and provocative meditation on how people can become more genuinely engaged and successful in pursuing their goals." —*Publisher's Weekly*  
*Seeing Ourselves Through Technology* Harvard University Press

Bestselling psychologist Richard Wiseman unravels the science behind our beliefs in telepathy, clairvoyants, mediums, ghosts, and more... "People are emotionally drawn to the supernatural. They actively want weird, spooky things to be true . . . Wiseman shows us a higher joy as he deftly skewers the paranormal charlatans, blows away the psychic fog and lets in the clear light of reason." --Richard Dawkins  
Professor Richard Wiseman is clear about one thing: paranormal phenomena don't exist. But in the same way that the science of space travel transforms our everyday lives, so research into telepathy, fortune-telling and out-of-body experiences produces remarkable insights into our brains, behaviour and beliefs. Paranormality embarks on a wild ghost chase into this new science of the

supernatural and is packed with activities that allow you to experience the impossible. So throw away your crystals, ditch your lucky charms and cancel your subscription to *Reincarnation Weekly*. It is time to discover the real secrets of the paranormal. Learn how to control your dreams -- and leave your body behind. Convince complete strangers that you know all about them. Unleash the power of your unconscious mind.

*We See Everything* BenBella Books, Inc.

Examines a series of linked case studies that not only highlight moments of seeming disconnect between seeing and believing, including hoaxes, miracles, spirit paintings, manipulated photographs, and holograms, but also offer a sensory history of ways of seeing.

*The Fruit, the Tree, and the Serpent* Vintage

In *The Vision Revolution: How the Latest Research Overturns Everything We Thought We Knew About Human Vision*, Mark Changizi, prominent neuroscientist and vision expert, addresses four areas of human vision and provides explanations for why we have those particular abilities, complete with a number of full-color illustrations to demonstrate his conclusions and to engage the reader. Written for both the casual reader and the science buff hungry for new information, *The Vision Revolution* is a resource that dispels commonly believed perceptions about sight and offers answers drawn from the field's most recent research. Changizi focuses on four "why" questions: 1. Why do we see in color? 2. Why do our eyes face forward? 3. Why do we see illusions? 4. Why does reading come so naturally to us? *Why Do We See in Color?* It was commonly believed that color vision evolved to help our primitive ancestors identify ripe fruit. Changizi says we should look closer to home: ourselves. Human color vision evolved to give us greater insights into the mental states and health of other people. People who can see color changes in skin have an advantage over their color-blind counterparts; they can see when people are blushing with embarrassment, purple-faced with exertion or the reddening of rashes. Changizi's research reveals that the cones in our eyes that allow us to see color are exquisitely designed exactly for seeing color changes in the skin. And it's no coincidence that the primates with color vision are the ones with bare spots on their faces and other body parts; Changizi shows that the development of color vision in higher primates closely parallels the loss of facial hair, culminating in the near hairlessness and highly developed color

vision of humans. Why Do Our Eyes Face Forward? Forward-facing eyes set us apart from most mammals, and there is much dispute as to why we have them. While some speculate that we evolved this feature to give us depth perception available through stereo vision, this type of vision only allows us to see short distances, and we already have other mechanisms that help us to estimate distance. Changizi's research shows that with two forward-facing eyes, primates and humans have an x-ray ability. Specifically, we're able to see through the cluttered leaves of the forest environment in which we evolved. This feature helps primates see their targets in a crowded,

encroached environment. To see how this works, hold a finger in front of your eyes. You'll find that you're able to look "through" it, at what is beyond your finger. One of the most amazing feats of two forward-facing eyes? Our views aren't blocked by our noses, beaks, etc. Why Do We See Illusions? We evolved to see moving objects, not where they are, but where they are going to be. Without this ability, we couldn't catch a ball because the brain's ability to process visual information isn't fast enough to allow us to put our hands in the right place to intersect for a rapidly approaching baseball. "If our brains simply created a perception of the way the world was at the time light hit the eye, then by the time

that perception was elicited—which takes about a tenth of a second for the brain to do—time would have marched on, and the perception would be of the recent past," Changizi explains. Simply put, illusions occur when our brain is tricked into thinking that a stationary two-dimensional picture has an element that is moving. Our brains project the "moving" element into the future and, as a result, we don't see what's on the page, but what our brain thinks will be the case a fraction of a second into the future. Why Does Reading Come So Naturally to Us? We can read faster than we can hear, which is odd, considering that reading is relatively recent,