

informed understanding of the natural world. In the current era of increasing environmental peril, it is more imperative than ever that we strike the right balance here.

#### References

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10.1126/science.1192566

## PSYCHOLOGY

# Seeing and Thinking in the Mist

Aude Oliva

In a scene reminiscent of “Candid Camera,” a disoriented “journalist” holding a map asks a pedestrian for directions while events are captured on video. As the pedestrian diligently points along the map, two “workers” carrying a large door rudely walk between the interlocutors, disrupting the face-to-face conversation. Behind the door, out of the sight of the pedestrian, one worker changes places with the journalist and proceeds to continue the conversation. Amazingly, more than half of the pedestrians who had unknowingly walked into this experiment failed to notice that they were now talking to someone new.

In *The Invisible Gorilla*, cognitive psychologists Christopher Chabris (Union College, New York) and Daniel Simons (University of Illinois) describe psychology experiments, historical facts, and interesting anecdotes that reveal the fallibility of our intuitions about what we see, remember, know, think, predict, and believe. The book explores illusions of attention, memory, confidence, knowledge, cause, and potential, which in essence work in concert and construct the mind. With each chapter, the reader’s self-awareness grows as previously neglected dimensions of our everyday experience are witnessed.

The reviewer is at the Department of Brain and Cognitive Sciences, Massachusetts Institute of Technology, Cambridge, MA 02139, USA. E-mail: oliva@mit.edu

Dating back to Ronald Rensink’s 1997 demonstration of “change blindness” (1), many of the visual illusions described in the book have become popular teaching tools featured in countless lectures and videos. The authors’ infamous gorilla experiment (2), now a staple in vision sciences studies, asks the participant to count the number of times a basketball passes between members of one of two distinct teams while a “gorilla” walks through the scene. Surprisingly enough, most participants miss the imposing gorilla, even though it stops to bang its chest, as they are too focused on the assigned task. I have probably ruined the effect for you, but try it on a friend.

The gorilla illusion is an elegant demonstration of inattention blindness, a phenomenon describing how people can miss unexpected objects that appear right where they are looking. The belief that we can see and remember more than we actually do creates an illusion of control, one that can be dangerous when talking on the phone while driving or texting while crossing a street. We are never completely in charge when we are multitasking. We have limited mental resources and the more demanding a task is, the less resources are available to catch the wandering gorillas. Our mind is faithful to one thing at a time.

Take the illusion of memory: Because the world is consistent and predictable most of the time, we rely on our past experiences to fill in the proverbial blanks of what was actually seen with what we think we saw. Failure to recall exact details can lead to continuity errors. The authors discuss the job of the script supervisor, who is supposed to ensure consistency between scenes by tracking all

of their details. Do script supervisors have a superior memory? Perhaps not, but critically important details are better remembered when we have feedback about what was missed, such as a script supervisor’s notes. Real life, for better or for worse, does not often provide such feedback.

Chabris and Simons explain the illusion of confidence (the tendencies to overestimate our own abilities and to confuse other people’s confidence levels with their real capabilities) through tightly reasoned descriptions of tournament games, competitive reality shows, and other group decision processes.



Frequently missed. A frame from the gorilla experiment.

The authors describe ingenious experiments on the “confidence inflation phenomenon”: individuals who all independently register low levels of confidence about an option will regardless choose that option with high confidence by simply deliberating among themselves. In addition, groups such as juries who must reach a collective decision are susceptible to arriving at the wrong conclusion because it was argued for by someone extremely confident in their logic, despite its flaws. Inflated confidence can defeat the purpose of a group meeting (to combine knowledge to arrive at the best possible decision).

The illusion of potential leads people to believe that there are mental exercises that can make them smarter, faster, prettier, or stronger. That conviction is even more inflated when merged with the illusion of knowledge, where people confuse the mere familiarity they acquired from repeated exposures to a concept with a true understanding of the process. Add the other illusions to the false beliefs and you can picture how the mind functions: the six illusions work together, one for all and all for one. Altogether, I applaud Chabris and Simons’s articulate communication of the many ways our minds fail us.

What have we learned? Vision can be blind, memory egocentric, knowledge sparse, reasoning false, and thoughts doubtful. So, are our minds hoaxes? No, these illusions are the consequences of how our brains work. Most of these failures are shortcuts that our minds use to deal with the overflow of information. The danger is not that our minds work this way but that we often wrongly estimate our capabilities and limitations. By making us aware of the realm of everyday illusions, *The Invisible Gorilla* teaches us a lesson of cognitive modesty: think before you leap.

#### References

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10.1126/science.1192289