

The *hard problem* lies in understanding why some of these physical processes have an experience associated with them at all.

INTUITIONS AND ILLUSIONS

An intuition is simply the powerful sense that something is true without our having an awareness or an understanding of the reasons behind this feeling—it may or may not represent something true about the world.

LOCKED-IN SYNDROME

This condition was made famous by Jean-Dominique Bauby, the late editor in chief of French Elle, who ingeniously devised a way to write about his personal story of being “locked in.” After a stroke left him paralyzed, Bauby retained only the ability to blink his left eye.



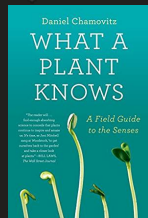
„The Diving Bell and the Butterfly,” wrote in about two hundred thousand blinks.



As an advanced system could become conscious but has no way of convincingly communicating this to us. But one thing is certain: it’s possible for a vivid experience of consciousness to exist undetected from the outside.

COMPLEX BEHAVIOR

Consider the types of behavior we usually attribute to conscious life, such as reacting to physical harm or caring for others. Research reveals that plants do both of these things in complex ways—though, of course, we conclude that they do so without feeling pain or love (i.e., without consciousness).



The book describes how the stimulation of a plant can cause reactions similar to those in animals under analogous conditions.

Chamovitz discovered which genes are responsible for a plant’s ability to determine whether it’s in the dark or the light, and these genes, it turns out, are also part of human DNA. In animals, these same genes regulate responses to light and are involved in “the timing of cell division, the axonal growth of neurons, and the proper functioning of the immune system.” Analogous mechanisms exist in plants for detecting sounds, scents, and location, and even for forming memories.

CONSCIOUS-NONCONSCIOUS

The problem is that both conscious and nonconscious states seem to be compatible with any behavior, even those associated with emotion, so a behavior itself doesn’t necessarily signal the presence of consciousness.

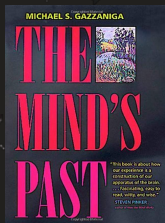
when we trick ourselves into imagining that people lack consciousness, we can begin to wonder if we’re in fact tricking ourselves all the time when we deem other living systems to be without it

IS CONSCIOUSNESS FREE?

We become conscious of physical events in the world slightly after they have occurred. In fact, one of the most startling findings in neuroscience has been that consciousness is often “the last to know.”

Your perception of reality is the end result of fancy editing tricks: the brain hides the difference in arrival times. (...) The strange consequence of all this is that you live in the past.

David Eagleman



“The Brain Knows Before You Do”

We now have reason to believe that with access to certain activity inside your brain, another person can know what you’re going to do before you do.

FALSE INTUITIONS

Illusion that consciousness is the will itself?

It’s easy to see how human beings across the globe, generation after generation, have effortlessly constructed various notions of a “soul” and descriptions of life after death that bear a striking resemblance to life before death.

(...)

The concept of a conscious will that is free seems to be incoherent—it suggests that one’s will is separate and isolated from the rest of its environment, yet paradoxically able to influence its environment by making choices within it.

CONSCIOUSNESS EXPERIENCING THE SYSTEM

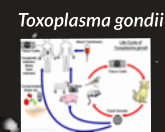
„Understanding the intentions behind violent behavior gives us relevant information about what kind of “software” someone’s brain is running”

Consciousness itself isn’t necessarily controlling the system; all we know is that consciousness is experiencing the system. It is no contradiction to say that consciousness is essential to ethical concerns, yet irrelevant when it comes to will.

(...)

It seems clear that we can’t decide what to think or feel any more than we can decide what to see or hear. A highly complicated convergence of factors and past events—including our genes, our personal life history, our immediate environment, and the state of our brain is responsible for each next thought.

ALONG FOR THE RIDE



Toxoplasma affects the behavior of the infected rats, causing them to forsake their fear of cats and in many cases to walk (or even run) directly toward their enemy. Toxoplasma creates hundreds of cysts in the brain of its host, causing dopamine levels to rise.

“Neurons harboring the parasite were making 3.5 times more dopamine. (...) Toxoplasma can cause a variety of behavioral changes in humans

Jaroslav Flegr’s test on two groups of people, one showing immunological signs of a prior Toxoplasma infection and the other not. Infected men scored comparatively higher than uninfected men in traits like suspicion of authority and a propensity to break rules, while infected women ranked relatively higher than noninfected women in measures of warmth, self-assurance and chattiness.

With so many behind-the-scenes forces at work (...) it’s hard to see how our behavior, preferences, and even choices could be under the control of our conscious will in any real sense! It seems much more accurate to say that consciousness is along for the ride—watching the show, rather than creating or controlling it.

DEFAULT MODE NETWORK

an area of the brain known as the default mode network, which scientists believe contributes to our sense of self, has been found to be suppressed during meditation.

Psychedelic drugs are known to quiet a circuit in the brain that connects the parahippocampus and the retrosplenial cortex in the default mode network, which explains why people describe losing their sense of self while under their influence.

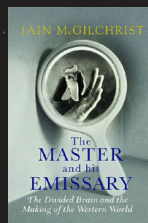
UMWELT

introduced by the biologist Jakob von Uexküll in 1909, to describe the given experience of any particular animal, based on the senses used by that organism to navigate its environment. Bats have one umwelt, bees experience another, humans another, and someone using a technology like the BrainPort experiences yet another.

“THE INTERPRETER”

The split-brain literature contains many examples suggesting that two conscious points of view can reside in a single brain. Most of them also topple the typical notion of free will, by exposing a phenomenon generated by the left hemisphere that Gazzaniga and his colleague Joseph LeDoux dubbed “the interpreter.” 18 This phenomenon occurs when the right hemisphere takes action based on information it has access to that the left hemisphere doesn’t, and the left hemisphere then gives an instantaneous and false explanation

the phenomenon of “the interpreter” is further confirmation that the feeling we have of executing consciously willed actions, at least in some instances, is sheer illusion.



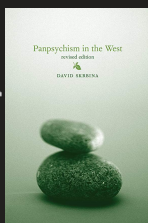
The Master and His Emissary, about the possibility that consciousness originates much deeper in the structures of the brain

It seems to me more fruitful to think of consciousness not as something with sharp edges that is suddenly arrived at once one reaches the very top of mental functioning, but as a process that is gradual, rather than all-or-nothing, and begins low down in the brain. ... The problem then becomes not how two wills can become one unified consciousness, but how one field of consciousness can accommodate two wills. Consciousness is not a bird, as it often seems to be in the literature—hovering, detached, coming in at the top level and alighting on the brain somewhere in the frontal lobes—but a tree, its roots deep inside us.

IS CONSCIOUSNESS EVERYWHERE?

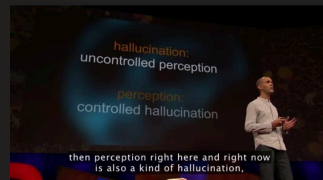
the possibility that all matter is imbued with consciousness in some sense—a view referred to as panpsychism.

One branch of modern panpsychism proposes that consciousness is intrinsic to all forms of information processing, even inanimate forms such as technological devices; another goes so far as to suggest that consciousness stands alongside the other fundamental forces and fields that physics has revealed to us—like gravity, electromagnetism, and the strong and weak nuclear forces.



Panpsychism in the West, the philosopher David Skrbina provides a survey of the history of scientific arguments for panpsychism

from Johannes Kepler to Roger Penrose—who take a scientific approach to panpsychism, many of whom arrive at the conclusion that the simplest explanation of consciousness is in fact a panpsychic one.



CONSCIOUSNESS-AS-A-ILLUSION

The stark division between living and nonliving systems is blurred, and a mistaken distinction likely carries over to the boundaries of conscious experience as well.

All emergent phenomena—like ant colonies, snowflakes, and waves—are still descriptions of matter and how it behaves, as witnessed from the outside. What a collection of matter is like from the inside and whether or not there is an experience associated with it is something the term “emergence” doesn’t cover.

“How could anybody have been led to something so silly as to deny the existence of conscious experience, the only general thing we know for certain exists?”

GALEN STRAWSON
“The Consciousness Deniers,”

QUALIA

“qualia” (the experiential qualities of consciousness that we can label, such as what it’s like to see the color blue or feel something sharp) will remain a puzzle:

„Qualia are vexing to philosophers and scientists alike because even though they are palpably real and seem to lie at the very core of mental experience”

ZAP AND ZIP

This method attempts to detect consciousness in subjects whose level of awareness is hard to decipher from external cues.

The method establishes a “perturbational complexity index” (PCI) cutoff value “as a critical threshold—the minimum measure of complex brain activity—supporting consciousness.”

In the procedure, transcranial magnetic stimulation (TMS) is used to deliver a pulse of magnetic energy to the brain, and the activity of the subsequent electric current running through the cortical neurons is then read by EEG.

OUTSIDE OF ANIMAL LIFE

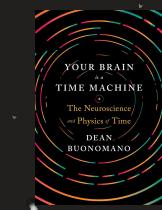
it’s actually hard to intuit the logic that any amount of information processing, no matter how complex, would suddenly cause those processes to become conscious.

(...)

The correct resolution to the mystery of consciousness, whether or not we can ever achieve a true understanding, is still currently split between a brain-based explanation and a panpsychic one.

“Why does the infinity of parallel universes in the many-worlds interpretation get associated with the sober, hard-nosed position, while including the perceiving subject [consciousness] gets condemned as crossing over to the shores of anti-science at best, or mysticism at worst?” (...) the term still carries the stink of the New Age.

...it seems quite hard for us to drop the intuition that consciousness equals complex thought.



mystery of consciousness is related to the mystery of time: our awareness is experienced across time and cannot be separated from it.

THE HARD PROBLEM OF MATTER

“Conscious is in fact the only thing in the universe that is not a mystery—in the sense that it is the only thing we truly understand firsthand.”

According to Strawson, it is matter that’s utterly mysterious, because we have no understanding of its intrinsic nature. And he has dubbed this “the hard problem of matter”