

Look at your hand. How do you know it's really yours? It seems obvious, unless you've experienced the rubber hand illusion. In this experiment, a dummy hand is placed in front of you and your real hand is hidden behind a curtain and are simultaneously stroked with a paint brush. No matter how much you remind yourself the dummy hand isn't yours, you eventually start to feel like it is, and inevitably flinch when it's threatened with a knife. That may just be a temporary trick, but it speaks to a larger truth: our bodies, the physical, biological parts of us, and our minds, the thinking, conscious part, have a complicated, tangled relationship. Which one primarily defines you or yourself? Are you a physical body that only experiences thoughts and motions as a result of biochemical interactions in the brain? That would be a body with a mind. Or is there some non-physical part of you that's pulling the strings that could live outside of your biological body? That would be a mind in a body. That takes us to an old question of whether the body and mind are two separate things. In a famous thought experiment, 16th-century philosopher René Descartes pointed out that even if all our physical sensations were just a hallucinatory dream, our mind and thoughts would still be there. That, for him, was the ultimate proof of our existence. And it led him to conclude that the conscious mind is something separate from the material world that forms the core of our identity. The notion of a non-physical consciousness challenges the belief of many religions in an immaterial soul for which the body is only a temporary shell. If we accept this, another problem emerges. How can a non-physical mind have any interaction with the physical world if the mind has no shape, weight, or motion, how can it move your body if we assume it can, why can your mind only move your body and not others? Some thinkers have found creative ways to get around this dilemma. For example, the French priest and philosopher Nicolas Malebranche claimed that when we think about reaching for a fork, it's actually God who moves our hand. Another priest philosopher named George Berkeley concluded that the material world is an illusion, existing only as mental perceptions. This question of mind versus body isn't just the domain of philosophers. With the development of psychology and neuroscience, scientists have weighed in, as well. Many modern scientists reject the idea that there's any distinction between the mind and body. Neuroscience suggests that our bodies, along with their physical processes, are deeply integrated with the activity in our brains to form what we call consciousness. From the day we're born, our mental development is formed through our body's interaction with the external world. Every sight, sound, and touch create new maps and representations in the brain that eventually become responsible for regulating our experience of self. And

we have other senses, besides the typical five, such as the sense of balance and a sense of the relative location of our body parts. The rubber hand illusion, and similar virtual reality experiments, show that our senses can easily mislead us in our judgment of self. They also suggest that our bodies and external sensations are inseparable from our subjective consciousness. If this is true, then perhaps Descartes' experiment was mistaken from the start. After all, if we close our eyes in a silent room, the feeling of having a body isn't something we can just imagine away. This question of mind and body becomes particularly interesting at a time when we're considering future technologies, such as neural prosthetics and wearable robots that could become extended parts of our bodies. Or the slightly more radical idea of uploading, which dangles the possibility of immortal life without a body by transferring a human consciousness into a computer. If the body is deeply encoded in the brain, then by extending our sense of self to new wearable devices, our brains may eventually adapt to a restructured version with new sensory representations. Or perhaps uploading our consciousness into a computer might not even be possible unless we can also simulate a body capable of delivering physical sensations. The idea that our bodies are part of our consciousness and vice versa also isn't new. It's found extensively in Buddhist thought, as well as the writings of philosophers from Heidegger to Aristotle. But for now, we're still left with the open question of what exactly we are. Are we a mind equipped with a physical body as Descartes suggested? Or a complex organism that's gained consciousness over millions of years of evolution thanks to a bigger brain and more neurons than our distant ancestors? Or something else entirely that no one's yet dreamed up?