

My New Scientist

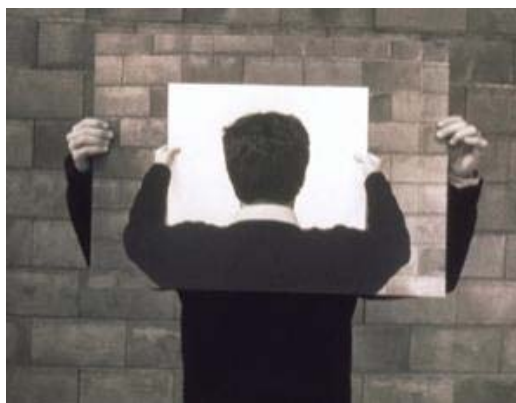
[Home](#) | [In-Depth Articles](#) | [Back to article](#)

Existence: What is the self?

20 July 2011 by [Anil Ananthaswamy](#)
Magazine issue [2822](#). [Subscribe and save](#)

Read more: *Subscribers can read all 13 parts of our [Existence Special](#) now. Other readers can read the first seven articles for free now; the remaining six will be available on 1 August.*

IT'S THERE when we wake up and slips away when we fall asleep, maybe to reappear in our dreams. It's that feeling we have of being anchored in a body we own and control and perceive the world from within. It's the feeling of personal identity that stretches across time, from our first memories, via the here and now, to some imagined future. It's all of these tied into a coherent whole. It's our sense of self.



Self on self (Image: Christian Lichtenberg/Getty)

Humans have pondered the nature of the self for millennia. Is it real or an illusion? And if real, what is it, and where do we find it?

Different philosophical traditions have reached radically different conclusions. At one extreme is the Buddhist concept of "no self", in which you are merely a fleeting collection of thoughts and sensations. At the other are dualist ideas, most recently associated with the philosopher Karl Popper and Nobel laureate and neuroscientist John Eccles. They argued that the self exists as a separate "field" which interacts with and controls the brain.

Modern science, if anything, is leaning towards Buddhism. Our sense of self is not an entity in its own right, but emerges from general purpose processes in the brain.

Seth Gillihan and Martha Farah of the University of Pennsylvania in Philadelphia have proposed a view of the self that has three strands: the physical self (which arises from our sense of embodiment); the psychological self (which comprises our subjective point-of-view, our autobiographical memories and the ability to differentiate between self and others); and a higher level sense of agency, which attributes the actions of the physical self to the psychological self (*Psychological Bulletin*, vol 131, p 76).

We are now uncovering some of the brain processes underlying these strands. For instance, Olaf Blanke of the Swiss Federal Institute of Technology in Lausanne and colleagues have shown that the physical sense of self is centred on the temporo-parietal cortex. It integrates information from your senses to create a sense of embodiment, a feeling of being located in a particular body in a particular place. That feeling can be spectacularly disrupted if the temporo-parietal cortex receives contradictory inputs, causing it to generate out-of-body experiences (*New Scientist*, 10 October 2009, p 34).

Being in charge

It is proving harder to find the site of our sense of agency - that feeling of being in charge of our actions. In one functional MRI study volunteers with joysticks moved images around on a computer screen. When the volunteer felt he had initiated the action, the brain's anterior insula was activated but the right inferior parietal cortex lit up when the volunteer attributed the action to the experimenter (*Neuroimage*, vol 15, p 596).

But other researchers, using different experiments, have identified many more brain regions that seem to be responsible for the sense of agency.

ADVERTISEMENT

Within the brain, it seems, the self is both everywhere and nowhere. "If you make a list [for what's needed for a sense of self], there is hardly a brain region untouched," says cognitive philosopher Thomas Metzinger of Johannes Gutenberg University in Mainz, Germany. Metzinger interprets this as meaning the self is an illusion. We are, he says, fooled by our brains into believing that we are substantial and unchanging.

Mental disorders also make it abundantly clear that this entity that we regard as inviolate is not so. For example, those suffering from schizophrenia harbour delusions that experiences and thoughts are being implanted in their brain by someone or something else. "In some sense, it's a disorder of the self, because these people are doing things, but they are not feeling as if they themselves are doing them," says Anil Seth of the University of Sussex in the UK. "That's a disorder of agency."

Another striking condition is depersonalisation disorder, in which people feel a persistent sense of detachment from their body and thoughts. Even the narrative we have of ourselves as children growing up, becoming adults and growing old, which is carefully constructed from our bank of autobiographical memories, is error prone. Studies have shown that each time we recall an episode from our past, we remember the details differently, thus altering ourselves (*Physics of Life Reviews*, vol 7, p 88).

So the self, despite its seeming constancy and solidity, is constantly changing. We are not the same person we were a year ago and we will be different tomorrow or a year from now. And the only reason we believe otherwise is because the brain does such a stellar job of pulling the wool over our eyes.

Read previous article: ["Existence: What happens when computers overtake us?"](#)

Read next article: ["Existence: How will it all end?"](#)

Your temporary body

YOUR lifelong sense of self is intimately tied to your body, but how much of that body stays with you for life? The answer is surprisingly little. If you live to be, say, 75 years old, the vast majority of your body will be younger than "you" are.

The cells lining your gut, for example, are replaced about every five days. The outer layer of your skin turns over every two weeks and you get a new set of red blood cells every four months. That is not so surprising given that these cells are on the frontline of wear and tear. But the rest of your body also needs a refit from time to time.

Using a variant of carbon dating, a team led by Jonas Frisén at the Karolinska Institute in Stockholm, Sweden, have discovered that the average age of a bone cell is 10 years, a muscle cell 15 years and a fat cell about 9.5 years. Your heart cells are on average six years younger than you; if you live beyond 50 about half of the cells in your heart will have been replaced.

The exception is your brain, most of which stays with you for life. But renewal happens here too. There are cells in your cerebellum and hippocampus that are younger than you.

All of which puts the idea of lifelong personal identity into perspective. Imagine being given a car on the day you are born. Over the next 70 years you gradually replace almost every part, from the tail pipe to the headlights. A few bits and pieces remain, but is it really the same car? Think about it. **Graham Lawton**

From issue [2822](#) of New Scientist magazine, page 41-42.

As a subscriber, you have unlimited access to our online archive.

Why not [browse past issues](#) of New Scientist magazine?

0
tweets
tweet

Like



If you would like **to reuse any content** from New Scientist, either in print or online, please [contact the syndication](#) department first for permission. New Scientist does not own rights to photos, but there are a [variety of licensing options](#) available for use of articles and graphics we own the copyright to.

[Back to article](#)



ADVERTISEMENT