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You're Not Even in There Now:
The Tenuous Tether Holding the Self in the Body*

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Your body is clearly more than the thing that carries your head around from room to room.

The idea that you are more than your just your brain or your body is reflected in the language we regularly use to describe them. When I refer to my body, my brain, my arm, or my earlobe, I am the entity that owns those parts and am more than just a collection of them. Stripped of all those parts, I would simply be a mind, a self, or a consciousness.

The Discontinuous Body

The variable turnover rates of bodily tissues demonstrate that the body associated with the self is actually discontinuous. Neurons in the cerebellum are formed within the postnatal period. On average, microglial cells (the immune scavengers of the central nervous system) are roughly four years old but some last for more than two decades. Circulating white blood cells live on average more than a year. Intestinal epithelial cells live an average of five days; their non-epithelial counterparts live nearly 16 years. The population of insulin-producing β-cells in the pancreas are established by young adulthood. Skin cells turn over every four to five weeks. Sperm cells live two to three days. Tendons are formed during growth spurts and do not get renewed after that. In contrast, skeletal muscle is continuously replaced. Fewer than 50% of the muscle cells of the heart (cardiomyocytes), however, turn over during a normal life span. It can be difficult to date bones and cartilage, but estimates are that most of the adult skeleton is replaced roughly every 10 years. The number of adiopocytes (fat cells) in the body is relatively stable throughout adulthood; changes in weight are reflected in the volume of those cells but not their number. Parts of the body that last a lifetime are very rare: only the lens of the eye and the dental enamel do not change after being formed.

It is clear from these cellular turnover data that the body is constantly fluctuating. These ongoing changes mean the body you have now is not the same as the one you had last year, last week, or even yesterday. Where are you in your body if it's always changing? You're not in there at all.

Little Bugs

A portion of your body isn't even yours whatsoever. The number of cells that make up your body is about the same as the number of bacteria that live there. There are 30 trillion of them and 30 trillion of you (Sender, Fuchs, & Milo, 2016). They are obviously much smaller and take up much less space than your cells, but even so their total mass is nearly half of a pound (0.2 kg). That's the equivalent of the weight of two sticks of butter crawling around on and in you.

Arguably the most important part of this microbiome (certainly my favorite) is the gut flora: the myriad species of bacteria that live in your intestines and help digest food and replace the lining of the gut. They even make hormones and neurotransmitters. This flora is so important to the health of humans that human breast milk contains various oligosaccharides (sugars) that human babies can't digest but that their gut flora gobble up. Evolution made sure human mothers' bodies used energy and resources to keep those little bugs inside their babies happy. Bacteria outside the gut also have essential jobs: they ensure the sanctity of the blood-brain barrier, affect the storage of fat, assist with bone remodeling, and educate and shape the immune system (Yong, 2016).

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The impermanence of the living physical self has been established using protocols such as what's called the carbon-14 bomb-pulse method (Spalding, Bhardwaj, Buchholz, Druid, & Frisén, 2005). The levels of the isotope carbon-14 (^{14}C) have remained relatively constant on the planet over eons, and its radioactive decay is used in archeology to retrospectively date samples. It is not possible to date modern materials this way because the half-life of ^{14}C is nearly 6,000 years. Considerable above ground testing of nuclear weapons in the 1950s and '60s, however, resulted in a large deposit of ^{14}C which was quickly and evenly spread around the globe. The Limited Nuclear Test Ban Treaty in 1963 prevented any new high-yield accumulation of ^{14}C and levels have dropped 50% every 11 years since then due to diffusion within the oceans and atmosphere. This allows for a universal standard to be calculated based on this bomb-curve. Genomic DNA within cells remains stable after cell division and closely parallels atmospheric levels so mass spectroscopy can be used to determine the amount of ^{14}C in purified DNA and reveal cells' birthdates. Research has dated multiple types of cells in the human body.

Body Ownership

So the body is impermanent and only partially you. Moreover, research in the area of body ownership confirms a tenuous and easily disrupted tether between self and body throughout physical life. Body ownership includes the sense of "mineness" (that this body is mine), the sense of agency (that I am initiating and controlling the actions of this body), and the sense of self-location (the experience of where I am in space) (e.g., Braun et al., 2018). The continuous, integrated stream of sensory, interoceptive, proprioceptive, vestibular, visceral, and motor signals indicates to you that you are in your body. This intermodal perceptual correspondence also allows for the body to be distinguished from other objects as belonging to the self. Only through this constant and extensive multimodal feedback are you locally situated in your body.

That system can, however, go awry relatively easily. In the condition known as somatoparaphrenia, a patient with localized brain lesions feels that a paralyzed limb is not part of their body and, in some cases, might belong to another nearby person. They may also experience the limbs of other people as their own. In epileptic patients or those with brain damage, abnormal multisensory integration may evoke a loss of unity between the self and the body (Deroualle et al., 2017). Specific situations can also disrupt self-attribution.

During orbital and parabolic flights involving microgravity, an inversion illusion may occur. This is experienced as the body being upside-down compared to the person's surroundings or vice versa. These illusions can be so compelling that people adopt an inappropriate position when they are preparing for the end of the microgravity situation and this has led to major accidents (Blanke, 2012). In addition, during mindfulness meditation, body ownership weakens, and the sense of bodily boundaries becomes more flexible (Ataria, 2015).

Beyond clinical and situational influences, this connection between the self and the body is also easily disturbed in the laboratory. If conflicts between visual input and tactile sensations or between visual input and motor-proprioceptive signals are introduced, the brain is easily fooled into thinking that the self is now anchored elsewhere. These experimentally induced illusions "demonstrate an astonishing malleability" in body ownership (Braun et al., 2018, p. 13).

The rubber hand illusion was originally described in 1998 (Botvinick & Cohen) but has been extensively replicated since then. In general, a participant is seated at a table, and her, for example, right arm is shielded from her view. A rubber life-sized model of a right hand is placed on the right side of the table where the participant can see it. The rubber hand is stroked with a paintbrush in synchrony with paintbrush strokes to the person's own hidden hand. The brain quickly recalibrates to account for this visual and tactile input and now understands the rubber hand to be "mine." When participants are asked to touch, with their left hands, the underside of the table where their right hands are, a proprioceptive drift occurs: they err closer to the rubber hand than their actual hand. This illusory ownership for the fake hand is only disrupted if the fake hand is placed in a location or orientation that is incongruent with the participant's own hand. Otherwise, if a brain is appropriately doing its job of incorporating incoming signals, it will assign ownership to that rubber hand. "That's just a hand," you might be thinking. "It wouldn't work with a whole body." And you would be utterly wrong.

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The sense of ownership of a part of the body and the sense of full-body ownership are essentially the same, both being highly flexible. In the full body or body swap illusion (Petkova & Ehrsson, 2008), immersive embodied virtual reality is used to align synchronous multisensory and motor stimuli with the first-person perspective of an avatar. This is accomplished through computer generated imaging or stereoscopic video of real people.

Participants in these experiments report feeling as if they were located outside their body, that someone else's body was their own, or that they had two bodies. Proprioceptive drift towards the virtual body also occurs (Cowie et al., 2018). Experimental conditions have involved swapping with various bodies of different shapes, colors, and ages, as well as objects, plastic mannequins, dolls, and digital avatars including animals (Bertrand, Guegan, Robieux, McCall, & Zenasni, 2018; Krekhov, Cmentowski, & Krüger, 2018). Subjective anxiety resulting from threats directed toward the virtual body has been physiologically demonstrated through skin conductance responses (Petkova, Khoshnevis, & Ehrsson, 2011) and participants' pain thresholds are increased during the full-body illusion (Hänsell, Lenggenhagerl, von Känell, Curatolol, & Blankel, 2011).

The body ownership illusion can be induced by presenting only virtual gloves and socks moving in synchrony with the participant's own movements. In fact, body ownership can even be induced with an entirely invisible body when participants observe a paintbrush moving in empty space defining the contours of the invisible body while receiving simultaneous touches on the corresponding parts of their actual body (Kondo et al., 2018).

This extensive body of research indicates that our sense of body ownership is highly flexible. The self is only casually tethered to the body and requires constant feedback to remain there. Taking these findings into account, the concepts that the self exists beyond the physical body and can acquire information and affect physical matter non-locally seem quite logical.

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Psi and Survival

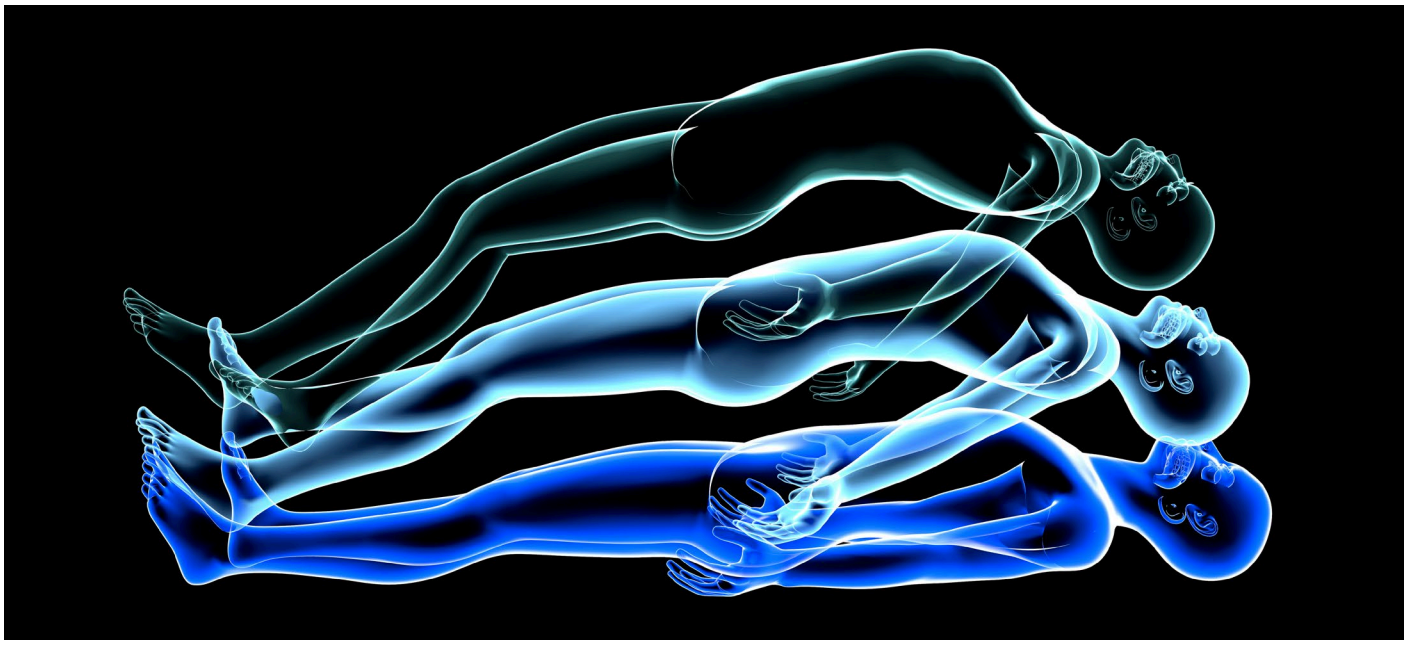
The evidence for the non-materialist, non-locality of consciousness continues to grow and gain more mainstream attention. The term "psi" (the Greek letter ψ) is an umbrella term including the psychic functions of telepathy, clairvoyance, precognition, and mind-matter interactions (psychokinesis). In an American Psychological Association (APA) publication involving a "comprehensive integration of current experimental evidence and theories" about psi phenomena referencing more than 125 published works, Etzel Cardeña, Thorsen Professor of Psychology at Lund University in Sweden, concluded that an extensive amount of quality research exists providing "cumulative support for the reality of psi, which cannot be readily explained away by the quality of the studies, fraud, selective reporting, experimental or analytical incompetence, or other frequent criticisms" (2018, p. 663).

This extensive collection of data implies that the mind can function separately from the body and can transcend space and time. That is, psi is real.

The empirical evidence suggestive of the survival of consciousness after bodily and brain death (or simply: survival) further clarifies the limitless nature of mind and self. Evidential survival data come from several areas of research including reports of children with verifiable past life memories, veridical information acquired during near-death experiences involving brain death, and accurate and specific information about deceased people and animals reported by psychic mediums under controlled laboratory conditions. The following are two stories representative of the types of phenomena that support the reality of survival.

An Australian paramedic, "Frank," shared the following story online (Emergency Medical Paramedic, n.d.). A 49-year-old male developed chest pain and called for an ambulance. Frank and his partner were the first on scene. By the time they arrived, the man was in cardiac arrest and had collapsed and stopped breathing. They applied a monitor and found that he was in asystole, which "means that there is absolutely no electrical activity and is usually a sign that the person has been in cardiac arrest for a while," Frank explained. Patients in this situation will most likely die. Frank and his partner called for back-up, commenced CPR, intubated the patient, and administered IV adrenaline. Their back-up arrived shortly and they continued the resuscitation efforts.

They worked on the patient for 20 minutes without any change. One of the senior paramedics said, "Okay, what do



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you guys reckon? Shall we call it?" Frank was working with a new rookie paramedic and said, "No, he can use some more experience with CPR. Let's run this until we finish the asystole protocol all the way through," which is 30 minutes of CPR. The senior paramedic laughed and said, "Hey, if you want your rookie to get more experience in CPR, there's a mannequin back at the station. He's got just as much chance of resuscitating it as resuscitating this guy."

Frank noted: "Almost as though the out-of-body person had heard that and decided, 'Hey, no, I don't want to die just yet,' we had a miraculous, spontaneous return of circulation. This virtually never happens, and patients still rarely live long-term after this much down time."

They expedited the patient to the hospital. Two days later they found out that the hospital had stented his heart and that he had been extubated and was neurologically intact in the cardiac ICU. "'No way,' we think, 'good for him!'" Frank noted.

That was the last they really thought about it—and probably would have been the last they ever thought about him—if it wasn't for the knock at their station door one early morning. Looking at Frank, the man at the door said, "Hi, Frank. My name's John. I believe we met a couple months ago." Frank looked at him and tried to figure out when he treated him and for what and just couldn't place it. The man noted Frank's confusion. "Last time we met my heart wasn't working. In fact, they tell me it had stopped completely." Frank then recognized who he was and invited him in.

They got to chatting, and eventually John said, "I want to thank you for giving me an extra 10 minutes of CPR…even if it was only so that your rookie could practice CPR."

"Sorry," Frank said, instantly aware of how close this man was to dying because they were going to quit early.

"I was there, you see," said John. "I saw the whole thing and I remember Jack saying that he wanted to 'call it' and you saying that your rookie needed extra work on his CPR anyway, so you may as well keep going."

Frank was shocked and fascinated at the same time. "Really? What else do you remember?"

"Well," John said, "I remember that the other paramedic suggested that there would be just as much likelihood of resuscitating the mannequin back at the station as resuscitating me, and it was about then that I realized that this was serious and that if I wanted to live I was going to have to get back in that body. The next thing I know, I'm in the hospital a few days later."

After recounting this story to other paramedics, Frank cautioned, "Always do your best as though someone is watching because sometimes someone is watching. Never say things about dead people that you wouldn't say to them if they could actually hear you."

The second story is one from a medium. I have previously presented and published research examining the accurate and specific information about the deceased reported by psychic mediums under controlled laboratory conditions. I have many stories involving murders and suicides from the Windbridge Certified Research Mediums on my team, but I thought I should share one that was a little more light-hearted here. Windbridge medium Laura Lynne Jackson shared the following story with me, including verification from the sitter in her own words.

Laura recounted: "One sitter's dad came through repeatedly and told his daughter to stop using the 2-in-1 shampoo on her daughter (his granddaughter). He kept bringing it up over and over." The sitter found this communication from her father to be a "distraction" during the reading, but it "ended up being the key to ending my daughter's chronic skin condition. Doctors had always told me it was viral" with no treatment options. "We stopped the 2-in-1 just because my dad had been incredibly insistent and wouldn't get off the topic.

My daughter's condition of one and a half years cleared up in a week and has never come back."

These two stories are representative of the various phenomena demonstrating survival, which are backed by extensive investigative and laboratory research examining this characteristic of consciousness.

Again, the ideas that mind can transcend space and time and can survive the death of the body are not actually surprising considering that the relationship between the mind and the body is flimsy at best during physical life. It's a wonder it stays in there at all.

These seemed to me like logical conclusions to draw from the mainstream body ownership and cellular turnover research and the laboratory evidence for psi and survival. However, Google Scholar searches refuted this hypothesis. A search of "body ownership" produced over 2.4 million results and a search of "survival of consciousness" produced more than 1.3 million. However, "Your search – 'body ownership' 'survival of consciousness' – did not match any articles."

In conclusion, the body is fluctuating and only partially you. Additionally, our sense of body ownership is highly flexible; the mind is only tenuously bound to the body. Finally, mind can transcend space and time and survive the death of the body.

I wonder how the world would be different if we really accepted these realities:

You are not your body.

Mind is limitless.

Death is not the end.

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