

## Is it true what I feel ?

While optical illusions are carefully designed and constructed to trick the mind and create false perceptions, there are illusions that fall into a bigger narrative, from the distortion of an image, to the distortion of feelings and sensations.

Physical illusions are caused by non-cognitive procedures that derive from neurological connections, and have a major impact on how we perceive with our bodies.

Most of the times the spectator experiencing a visual distortion of perception, is aware of the illusion, and already prepared and willing to get deceived. On the contrary, physical illusions are not passive experiences, rather active ones where the individual is not just a spectator.

### **The falsity of touch is an illusion of a universal scale.**

According to our senses, by all intense and purposes we are touching. But in an atomic level we are not. Technically we're not touching at all, as a tiny atomic-sized gap exists in between – too small for us to even see. The matter that we experience and deal with every day is made out of atoms. An atom is a nucleus surrounded by an outer shell of orbiting electrons, so when two atoms get close to each other, without the purpose of bonding or of a chemical reaction, the electrons having the same charge, repel each other and therefore atoms never really touch.

Even though the atoms get too close, the electromagnetic repulsion between electrons doesn't let them touch. The nerves of our skin can feel the repulsive force, and that's what we actually call "touch", the texture or the feeling of the object. Even in cases of breaking, poking, cutting an object, what's actually happening, is not the touch of its matter, rather than the pushing of it out of the way using the electromagnetic repulsion forces. We are not making contact with the matter in technical terms, just feeling this repulsive force of electrons.

On a bigger scale of matter, a physical illusion can involve false sensations of larger parts of the body, and cause illusioned pains and feelings on missing limbs.

**Phantom limb** is the sensation that an amputated or missing limb is still attached, that can be both non-painful and painful. Non-painful sensations can be divided into the perception of movement and the perception of external sensations (exteroception), including touch, temperature, pressure, vibration, and itch. Pain sensations range from burning and shooting pains to feelings of tingling, "pins and needles."<sup>63</sup>

The missing limb often feels shorter and may feel as if it is in a distorted and painful position. The frequency and intensity of attacks usually declines with time.

Phantom limb syndrome was first described in 1552 by French surgeon Ambroise Paré, who operated on wounded soldiers and wrote about patients who complained of pain in amputated limbs. In the 1990s researchers found that neuroplasticity—the ability of neurons in the brain to modify their connections and behaviour—could explain pain phenomena that had been observed in association with phantom limb syndrome.<sup>64</sup>

Repressed memories in phantom limbs could potentially explain the reason for existing sensations after amputation.<sup>65</sup> The motor output is amplified due to the missing limb, therefore, the patient may experience the overflow of information as pain. These memories remain due to previous neural connections in the brain. The persistence of the memory, can potentially create the pain, as the memory itself has been stored in the nervous system and impossible to be deleted.

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<sup>63</sup> Rugnetta, M., 2018. *Phantom limb syndrome*, [online] Encyclopædia Britannica, Available at : <<https://www.britannica.com/science/phantom-limb-syndrome>>

<sup>64</sup> Ibid.

<sup>65</sup> Ramachandran, V., 1998. Consciousness and body image: lessons from phantom limbs, Capgras syndrome and pain asymbolia. *Philosophical Transactions of the Royal Society of London. Series B: Biological Sciences*, 353(1377), pp.1851-1859.