

Alien Hand Syndrome

It is possible for your limbs to take actions all on their own, without you telling them to do so. Allow me to explain.

INTRO

A case study from 1998 told the story of an 81-year-old woman who was sometimes attacked by her own left hand. It would leave scratch marks on her face, hit her in the shoulder, and she reported that it had even tried to strangle her, forcing her to restrain the left hand using her right hand. She referred to her own left hand as “he,” as in, “he” had tried to choke her. What was going on with this woman’s hand, and more importantly, her brain? (Ay, Buonanno, Price, Le, & Koroshetz, 1998)

Alien Hand Syndrome is an unusual disorder, to say the least. When someone has this disorder, their limbs take actions such as moving and interacting with the environment without the person to which the limb is attached intending to have done so. We will refer to the person who owns the limb as the host during this video.

In other words, the limb’s behaviors are happening without a conscious decision to behave in that way from the host. This is where the term alien hand comes from: because the limb feels like an uncontrollable alien entity. Not all alien hand cases are hands, however, it is possible in the leg as well. Perhaps a better name for this disorder then is alien limb syndrome, but limb isn’t quite as catchy as a hand.

There are three main symptoms of alien hand syndrome. Not all cases have all three symptoms, but they often exist in combinations (Biran & Chatterjee, 2004; Panikkath, Panikkath, Mojumder, & Nugent, 2014).

The first is called “anarchic hand” in which the limb performs complicated actions without the host willing it to do so. These anarchic hand actions can include buttoning or unbuttoning clothing, and grasping and throwing objects. What is startling about these actions is how they come across as intentional, due to how complex they are.

The second symptom is called the “strange hand sign” -- when someone has this symptom, they feel as though their alien limb does not belong to them. Sometimes this is as simple as stating that they don’t feel strongly attached to the limb. They may refer to the limb by a name that distances themselves from it. They often won’t for example, refer to it as “my arm” or “my hand.” The hand has become a stranger.

The third main symptom is called “intermanual conflict.” This occurs when a person’s two hands are in direct opposition of each other on some task. As one extreme example, in 1993, a 54-year-old man was getting undressed in his bedroom when he experienced intermanual conflict. Specifically, while he was trying to take his pants off with his one obedient hand, his alien hand swooped in and began pulling the pants back up. The muscles in his alien hand worked so hard at this task that the man could not overpower

it. Instead, he was forced to sit down on his bed and wait until his alien hand released its grip on his trousers. (Leiguarda, Starkstein, Nogues, Berthier, & Arbelaiz, 1993)

Surprisingly, there are reports that alien hands will listen to spoken commands, especially when given by someone other than the host. As one illustrative example, a case study published in 2005 reported the case of a 61-year-old-man who had an alien hand that often refused to let go of things. When he tried to release his grip, he would pull on the left hand with all the might of his right hand but be unable to let go. But when the doctor ordered the hand to let go, it would do so. Curiously, his alien hand had a habit of continuously unfurling the toilet paper in the bathroom, against the will of the host. However, if the nursing staff requested that the alien hand stop doing so, it obeyed. (Kritikos, Breen, & Mattingley, 2005)

Time for the big question: why does alien hand syndrome happen? The short answer is that it seems to occur when parts of the brain lose the ability to communicate with one another, thanks to damage to white brain matter (Graff-Radford et al., 2013). There is more than one way for the brain to be damaged such that this communication problem occurs. Two big contributors are damage to the corpus callosum, which is the biggest bridge between the hemispheres of the brain, and damage to the motor cortex, which is the part of the brain that directs the movement signals that are sent to your muscles.

Normally, the two hemispheres talk to one another via the corpus callosum so that they can coordinate movement and other brain functions. But when the corpus callosum is damaged, such as by accident or when treating epilepsy, these signals cannot be shared as easily. Similarly, the motor cortex of the brain can become disconnected from the areas with which it normally communicates. What can end up happening, then, is that parts of the body can execute complex actions without other parts of the brain being aware of those actions, which results in movement that feels involuntary. Brain scan studies of alien hand syndrome patients back this theory up, by showing that the brain activity of consciously planned movements is different from the brain activity corresponding to the involuntary movement of the alien hand (Assal, Schwartz, & Vuilleumier, 2007). This suggests that brain regions are not effectively communicating during alien hand movements.

Incidents of Alien Hand Syndrome symptoms can persist for very short amounts of time, such as only a few minutes, or last for much longer periods that are extremely disruptive to the host. If a day ever comes when your limb starts acting strange, remember that it is not an alien controlling you, it's just one of the ways that your brain can break.

References

- Assal, F., Schwartz, S., & Vuilleumier, P. (2007). Moving with or without will: Functional neural correlates of alien hand syndrome. *Annals of Neurology*, 62(3), 301-306.
- Ay, H., Buonanno, F. S., Price, B. H., Le, D. A., & Koroshetz, W. J. (1998). Sensory alien hand syndrome: case report and review of the literature. *Journal of Neurology, Neurosurgery & Psychiatry*, 65(3), 366-369.
- Bellows, A. (2009). *Alien hand syndrome and other too-weird-not-to-be-true stories*. New York, NY: Workman Publishing.

- Biran, I., & Chatterjee, A. (2004). Alien hand syndrome. *Archives of Neurology*, 61(2), 292-294.
- Bundick, T., & Spinella, M. (2000). Subjective experience, involuntary movement, and posterior alien hand syndrome. *Journal of Neurology, Neurosurgery & Psychiatry*, 68(1), 83-85.
- Della Sala, S., Marchetti, C., & Spinnler, H. (1991). Right-sided anarchic (alien) hand: a longitudinal study. *Neuropsychologia*, 29(11), 1113-1127.
- Espinosa, P. S., Smith, C. D., & Berger, J. R. (2006). Alien hand syndrome. *Neurology*, 67(12), E21.
- Goldberg, G., Mayer, N. H., & Togli, J. U. (1981). Medial frontal cortex infarction and the alien hand sign. *Archives of Neurology*, 38(11), 683-686.
- Graff-Radford, J., Rubin, M. N., Jones, D. T., Aksamit, A. J., Ahlskog, J. E., Knopman, D. S., ... & Josephs, K. A. (2013). The alien limb phenomenon. *Journal of Neurology*, 260(7), 1880-1888.
- Kritikos, A., Breen, N., & Mattingley, J. B. (2005). Anarchic hand syndrome: Bimanual coordination and sensitivity to irrelevant information in unimanual reaches. *Cognitive Brain Research*, 24(3), 634-647.
- Leiguarda, R., Starkstein, S., Nogues, M., Berthier, M., & Arbelaz, R. (1993). Paroxysmal alien hand syndrome. *Journal of Neurology, Neurosurgery & Psychiatry*, 56(7), 788-792.
- Panikkath, R., Panikkath, D., Mojumder, D., & Nugent, K. (2014). The alien hand syndrome. *Baylor University Medical Center Proceedings*, 27(3), 219-220.
- Ramachandran, V. S., Blakeslee, S. (1998). *Phantoms in the brain: Probing the mysteries of the human mind*. New York, NY: William Morrow.
- Scepkowski, L. A., & Cronin-Golomb, A. (2003). The alien hand: Cases, categorizations, and anatomical correlates. *Behavioral and Cognitive Neuroscience Reviews*, 2(4), 261-277.
- Schaefer, M., Denke, C., Apostolova, I., Heinze, H. J., & Galazky, I. (2016). A case of right Alien hand syndrome coexisting with right-sided tactile extinction. *Frontiers in Human Neuroscience*, 10(105), 1-6

Creative Commons:

Animated Hand Reaching For Knife ~ Green Screen
by Crude Animation; Published on Jan 26, 2015
<https://www.youtube.com/watch?v=bhmuOmkZkAU>
Creative Commons Attribution license (reuse allowed)