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Does leia know luke is a projection

Something went wrong. Wait a moment and try again. This article contains spoilers for Star Wars: The Last Jedi. When Luke Skywalker says “This is not going to go the way you think,” he isn’t exaggerating. The biggest twist of The Last Jedi occurs at the end of the film, when the Jedi master comes out of retirement to, as he might put it, “walk out with a laser sword and confront the entire First Order.” That confrontation on Crait takes a turn when Luke’s former pupil, Kylo Ren, strikes him with his lightsaber—and it fails to make contact. It turns out that Luke never left his perch on the planet Ahch-To, and that he was projecting a vision of himself through the Force the whole time. In retrospect, director Rian Johnson offers plenty of clues that Luke isn’t really present on Crait, even before the big reveal. During the face-off with Kylo Ren, Luke looks much younger, is using a lightsaber that we had seen destroyed earlier in the film, and mysteriously doesn’t leave any footprints in the salt-covered terrain. Still, plenty of viewers, myself included, were surprised by the revelation, since we’ve never seen anything like Luke’s Force projection in the Star Wars movies before. I wasn’t sure what to make of this illusion or how it fits with the established rules of the Star Wars universe, so I asked Patrick Johnson, an assistant teaching professor at Georgetown University and the author of The Physics of Star Wars: The Science Behind a Galaxy Far, Far Away, to help me make sense of it. An edited and condensed transcript of our conversation is below. Let’s start with an easy, not-so-scientific question. What did you think of The Last Jedi? I’ve only seen it once, but I’d like to see it again, because I think seeing it again will help me appreciate some things I missed. I’m not ready to give it a definitive thumbs-up or thumbs-down yet. I enjoyed it better than the prequels, but not as much as I liked The Force Awakens the first time I saw it. Though, visually, it was stunning—that jump that Holdo makes to light speed right through Snoke’s ship was possibly one of my favorite scenes from all of Star Wars, ever. OK, now how would that answer change if I asked what you thought of the movie as a physicist, not just as an ordinary fan? Well, I’m not a person who says, “This movie didn’t follow the laws of science and therefore it is terrible. I just like to think about the science of it for fun. So you don’t take the same nitpicking approach to sci-fi as, say, Neil deGrasse Tyson? Neil deGrasse Tyson is one of my professional heroes and I’d like to be like him in so many ways. But that’s not my style with movies. I am happy to suspend my disbelief—as long as you stay consistent with the rules you create for the universe. You literally wrote the book on physics in the Star Wars universe, so let’s talk about Force projection and how it works with or against those rules. What was your first reaction during that scene on Crait, when it’s revealed that Luke isn’t really there? It made so much sense. When Luke was dodging Kylo Ren’s lightsaber before that—I understand he’s a Jedi knight, but he’s also an aging Jedi knight who doesn’t seem to be that limber. It looked like something out of the Matrix. Then, when it was revealed as just a projection, I had the realization of, OK, this makes so much more sense. How does this Force projection fit into what we already know about the Force? I’m speculating, but it’s kind of like Luke is doing a massive Jedi mind trick, forcing you to visually see a projection of himself through a trick of brain chemistry. He’s changing the way that the rebels and the First Order soldiers perceive reality. One of the things I talk about in my book is that the brain is very complicated, but we know, roughly speaking, how neurons work. They use chemical signals to communicate with each other, and we can measure those signals of one neuron communicating to another as we show a person a stimulus. For instance, I can show you a picture of an apple and watch how your brain reacts to it, and then I can show you a real apple and see how your brain reacts to it. Then, if I could very precisely control every single neuron in your brain and cause the same cascade of neurons to fire in exactly the same way—I would see an apple. You would see an apple. If Luke had super control over the brain chemistry of Kylo Ren and everyone else, he could create the correct cascade of neurons to cause them to visualize him. I’m not saying that’s what the creators of the film had in mind, but that’s one possible explanation. Now, Jedi mind tricks are described as only working on weak-minded individuals. You could justify the generic First Order soldiers falling for the trick, but you have to bend the rules to justify why someone like Kylo Ren can see Luke, because I think it’s reasonable to say that Kylo Ren is not a weak-minded individual. But maybe he’s susceptible to the trick because he’s experiencing an internal struggle and under a lot of stress. We know that Luke’s projection of himself is not physically solid, because he doesn’t leave footprints in the salt, and because Kylo Ren’s lightsaber can’t touch him. But the golden dice, which are part of Luke’s illusion, seem to have substance and weight—when Luke hands them to Leia, they don’t, like, slip through her fingers. I’d love to watch her face the next time I see the movie to see if she reacts when that happens or when Luke kisses her on the forehead. If you’re able to use the Force to cause somebody to see you, it would be reasonable to assume that you could use the Force to create a tactile sensation of someone handing you a pair of dice or someone kissing your forehead, though that would require a lot of effort and concentration. Luke is accomplishing this trick while meditating on an entirely different planet that is very far away. What should we make of the fact that he pulls this off from such a distance? Earlier in the movie, we see Rey and Kylo Ren talk to each other from afar even though they’re on completely different planets, or a planet and a ship, and they even touch hands. So Luke being able to talk to Kylo Ren while he does his Force projection, even though he’s really on [Ahch-To], has been established as possible. I’m not an expert in the Extended Universe, but I’m told by friends of mine who have read the books that projections like this have been done before. Still, even if we’re only using what we see in the movies, you could justify Force projection as a combination of a kind of visual Jedi mind trick plus the long-distance communication. We also know that Jedi can feel disturbances in the Force from far away, that if something happens across the galaxy, like the destruction of Alderaan, a Jedi can sense the ripple effect. Perhaps Luke is creating something like a disturbance in the Force that can travel far away and give the sensation of being kissed on the forehead or visions of himself. In one case, something happens, and a Jedi senses it. I’m suggesting kind of the reverse process, a Jedi creating something for others to sense. From a physicist’s standpoint, at least, if things can go one way, they can often go the other way, too. Your book devotes a lot of time to explaining how the physics of Star Wars relate to real-world physics, so I have to ask—is there anything comparable to Force projection in real life? Obviously, we have no evidence that this is possible, that you could just think really hard and an image of your body shows up somewhere else. But I’m also a believer in “absence of evidence is not evidence of absence.” Just because we’ve never measured it to be the case doesn’t mean that we’ll never find out that it’s possible to do something like this. That said, I would need a lot of evidence to convince me that this was possible. Neuroscience is a relatively young field. There are people who describe out-of-body experiences and people who claim to be able to astral project, and there have been times when these have been studied in a controlled scientific manner, which is difficult to do, but the conclusion has been that these individuals have not proven any ability to project their soul or spirit somewhere else. One example that’s interesting is from 1973, this guy Ingo Swann. He claimed to be able to astrally project himself and was willing to participate in scientific studies about this, which I give him credit for because a lot of psychics will refuse to participate in scientific studies because they say it’s “biased.” One of the things that Swann claimed to be able to do was astrally project himself to Jupiter. At that point, we had not sent any probes or gotten close to the surface of Jupiter, and he made a number of assertions about the planet, like that there were crystals in the atmosphere. James Randi was a magician-turned-scientific skeptic who put forth a million dollar prize for anyone who could prove they were psychic. He went through all of Ingo Swann’s claims and of the claims he made, found that some were correct but that the information about Jupiter was available in reference books. [Swann] made one claim that was correct and not obtainable from reference books, but overall, being very generous, [Randi] found that only around like 37 percent of Ingo Swann’s assertions were correct, which does not meet the criteria to prove anything. It sounds like Ingo Swann was no Luke Skywalker. Is there anything evidence-based that’s comparable to what Luke does? I think the best way to explain what happened with Luke and company is a combination of hallucination and mass hysteria. Mass hysteria is definitely something we’ve seen going back through history. There’s the dancing sickness, where people in the 1500s started dancing in the streets for no obvious reason, and some would dance to the point where they had heart attacks. The Salem witch trials are thought to be mass hysteria. At boarding schools, kids are known to start having seizures attributable to mass hysteria. While none of these are examples of mass hallucinations of the same thing at the same time like what happened with Luke, there’s a theory that similar mental processes can explain how different people give similar descriptions of Bigfoot or New Jersey devils or other cryptozoological creatures. Even alien abductions. I’m not saying definitively that Bigfoot does not exist, but it could be that these people all have an image in their mind of what this creature would look like, and due to some combination of fervor over the topic or sometimes mental illness or stress, they project their expectations and that’s what they “see.” This could explain why on the salt planet, Luke’s beard was browner than we’d seen and he looked younger. If Kylo Ren were having a hallucination, he would be remembering what Luke looked like the last time he saw him. Then again, in the projection, Luke is using a different lightsaber from the one he had used the last time he saw Kylo Ren, so that puts a wrinkle in that idea. Read more in Slate about Star Wars.

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