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Ghost Lusters: If You Want to See a Specter Badly Enough, Will You?

Researchers set up "haunted" room to prove an electromagnetic theory of ghost sightings

By Adam Marcus

Most scientists dismiss the vast majority of ghost sightings as hoaxes. But researchers in Canada, England and elsewhere are exploring what happens in the brain to create the illusion that something is "haunted." So far, they have found evidence that some apparitions may be brain benders caused by spiking EMFs (electromagnetic fields), and possibly even extremely low-–frequency sound waves (known as infrasound) so subtle that the ear does not register them as noise.

EMFs emitted by power lines and towers, clock radios and other electrical sources may help debunk myths that people or things are haunted, says Michael Persinger, a neuroscientist at Laurentian University in Sudbury, Ontario, Canada, who has conducted research on the topic. One such study, published in 2001 in *Perceptual And Motor Skills* chronicles the experiences of a teenager who in 1996 claimed to be receiving nocturnal visits—one sexual—from the Holy Spirit. The 17-year-old girl, who had sustained mild brain damage at birth, said she also felt the presence of an invisible baby perched on her left shoulder.

When Persinger and his colleagues investigated (at the behest of the girl's mother), they found an electric clock next to the bed that was about 10 inches (25.4 centimeters) from where she placed her head when she slept. Tests showed that the clock generated electromagnetic pulses with waveforms similar to those found to trigger epileptic seizures in rats and humans. When the clock was removed, the visions stopped. Persinger determined that the clock, in combination with the girl's brain injury, were highly likely to have been contributing factors to the perceived nocturnal visits.

Although Persinger believes this case and others to offer compelling evidence that EMFs contribute to a person's perception that something is haunted, experiments intended to prove this theory leave room for doubt.

Christopher French, a psychologist at Goldsmiths, University of London College in London who studies the paranormal, is one researcher who has conducted experiments to test the EMF theory but has been unable to prove its validity. He and colleagues four years ago built a "haunted" room in a London apartment rigged with electromagnetic sources and infrasound generators. They invited 79 volunteers, recruited via the Internet, to spend some time inside the cool, dimly lit space.

Researchers disclosed to the subjects that they might experience some weirdness— feel a presence, tingling or other strange sensation—while in the room and were given psychological evaluations to assess their susceptibility to the suggestion of the paranormal. This included the Australian Sheep–Goat Scale, which tries to separate likely believers (sheep) from skeptics (goats). Examples of items on the scale include questions about belief in life after death and whether a subject has ever experienced an episode of precognition.

The researchers used a computer to drive twin coils, hidden behind the walls of the room, that generated EMF pulses up to 50 microteslas (a unit for measuring the strength of a magnetic field) of electromagnetic pulses, many times greater than the one1- to -four4 microteslas generated by Persinger's clock. They also used a computer to pump in extremely low-–frequency infrasound waves that were well below what humans could

possibly hear. Such sounds have been linked, albeit tenuously, to some alleged hauntings. In a 1998 *Journal of the Society for Psychical Research* article entitled, "The Ghost in the Machine," Coventry University (U.K.in England) researchers Vic Tandy and Tony Lawrence describe an experiment during which they detected an infrasound wave with a frequency of 18.9 hertz in a factory where workers had reported strange experiences they believed to be paranormal (French and his team used waveforms of 18.9 and 22.3 hertz.).

French's volunteers were exposed to electromagnetic pulses, infrasound, both or neither. "Most people reported at least some slightly odd sensation, such as a presence or feeling dizzy, and some reported terror, which we hadn''t expected," French says. "Terror is obviously quite an extreme reaction, and we only anticipated getting reports of mildly anomalous sensations in the context of this particular experiment." Still, French and his colleagues could not conclude that EMFs played a role in conjuring these feelings.

Like any dutiful researcher, French—who became interested in paranormal psychology after reading the 1981 book *Parapsychology: Science or Magic?*, by the renowned doubter and British psychologist James E. Alcock—has gone into the field, visiting purportedly haunted houses, which are in ample supply in England. He says believers "psych each other up. Sitting in pitch darkness you hear noises, which are common in these old houses, but believers see and hear things that just aren't there, according to our recording devices."

French's findings were published in the in the journal *Cortex* this month, and he and his colleagues have been trying to garner funding for a follow-up study. It will not be easy—poking holes in ghost stories might appear on its face to be of little scientific value. Still, French insists such research can reveal important truths about the human mind, including questions of memory and delusions. "Within psychology, people talk about reality monitoring, trying to understand how we make distinctions between mental events and events that take place out there in the real world," he says. "It's something we take for granted: Did you really lock the door before you went to bed, or did you just think about it?" On the extreme is schizophrenia, in which the brain makes no distinction between the real and the imagined.

"There's a continuum, and this kind of framework is useful when you're talking about hallucinatory experiences," French says. "People are mistaking their attribution, feeling a product of their own mental processes as something that's taking place in the real world. Anything that can lead to making your mental events more similar to events that take place—a vivid imagination, for example—will make it more difficult to distinguish between the two."

Of course, believers say French cannot see or hear ghosts because he is a "horrible skeptic," which he readily admits. "I wish it was a bit more spooky," he says of his time waiting for apparitions to appear in dank, musty castles. "I'm sitting in the dark, in the cold. I wish something more would happen."

Persinger commends French's team on its "splendid experiment," even if it didn't validate his ideas. Still, he contends, EMFs do affect the body in many ways—from the brain to individual cells, to enzymes, and even DNA. The key to testing their effects on brain activity, he says, is to make sure that the fields are neither too strong nor too weak, and that they come in the right pattern. So he is not willing to give up on finding a way to prove scientifically that EMFs are behind at least some ghost sightings. "I'm a scientist," Persinger says. "I don't believe in anything."

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