



# Haunted

Are ghosts just magnetic fields messing with our minds, asks Hazel Muir

**A**S MEDIEVAL CASTLE bedrooms go, this one looks the part. Disturbing Flemish tapestries share the walls with stern portraits. On close inspection, the ornate fireplace's iron firedogs turn out to have devils' heads. This place is supposedly haunted by the ghost of Tom Skelton, a 16th-century jester said to have committed murder. The malevolent face of "Tom Fool" stares from a dimly lit oil painting just outside the bedroom.

My assignment is to stay overnight in the Tapestry Room at Muncaster Castle in Cumbria, UK. Having earlier reassured my editor that I laugh at ghost stories, my bravado is crumbling. I still don't believe in ghosts, but I'm scared the atmosphere will wind me up into a panic. Two previous guests have bolted in the night, one a Premiership footballer, the other a diehard sceptic who came to scoff. Then I learn that I will not be able to leave the

room without tripping the castle's burglar alarms. What have I let myself in for?

I am here because of a controversial theory that some reports of ghosts could be caused by unusual magnetic fields triggering strange reactions in the brain. There's a long tradition of hunting for such fields at supposedly haunted locations – and even of trying to produce them in the lab. So far, results have been mixed, so I have followed neuroscientists and psychologists to Muncaster Castle to see if, in this case at least, science can lay a ghostly mystery to rest.

Chief investigator Jason Braithwaite is a cognitive psychologist at the University of Birmingham, UK. Braithwaite is a sceptic with a long-standing interest in the psychology of paranormal experiences and beliefs. "These weird experiences appear to be part of the normal operation of the brain," says

Braithwaite. "No model of brain function can be viewed as complete until it explains them."

It was in the 1970s that Michael Persinger, a neuroscientist from Laurentian University in Sudbury, Ontario, Canada, proposed that some hallucinations could be triggered by magnetic fields. It is well established that magnetic pulses of 1 or 2 teslas can stimulate neurons in the brain; it is sometimes used to treat depression. Persinger, however, was interested in much weaker fields, of about 1 to 10 microtesla, which can arise from electrical equipment such as a hairdryer, or simply exist in natural background fields.

Persinger has focused on the brain's temporal lobes, known to be involved in visual and auditory perception as well as memory. He found that people with less stable temporal lobes, prone to frequent bursts of electrical activity, were more likely to report mystical



Check out the bed in Muncaster Castle's Tapestry room, if you dare

sensations when he applied complex magnetic fields to their brains.

He devised a helmet with built-in conducting coils that could produce weak fields in complex, rapidly fluctuating patterns around the temporal lobes. He claimed that as many as 4 in every 5 volunteers who wore his helmet experienced a strange "ethereal presence", which they might interpret as a dead loved one, or even as God (*New Scientist*, 19 November 1994, p 29).

Persinger's "God helmet" results remain controversial. How such weak magnetic fields could have this effect on the brain is not clear, although Persinger maintains that the fields' complexity seems to be the key. And not all his studies were double-blind; in other words, although the volunteer was not supposed to know whether the machine was on or off, the experimenter knew and might have

unwittingly conveyed that information. When a Swedish team ran the test in a double-blind manner in 2004, their subjects reported just as many strange sensations regardless of whether the machine was on or off (*Neuroscience Letters*, vol 379, p 1). Persinger has criticised their study design and that debate rumbles on.

Meanwhile, several groups have investigated magnetic anomalies at supposedly haunted locations. For the past two decades, Braithwaite has focused on Muncaster Castle, home of the Pennington family for 800 years, and now open to tourists. Manager Peter Frost-Pennington told Braithwaite that many strange reports came from overnight guests in the Tapestry Room.

Some reported hearing children crying or screaming. Others claimed they sensed a presence, heard phantom footsteps or felt something touch them. Braithwaite spoke to many of them and says the striking thing is that while most paranormal reports are fleeting, corner-of-the-eye experiences, the strange events in the Tapestry Room typically lasted from 20 minutes to an hour.

Braithwaite and his colleagues have checked out the room with what they believe is the most sensitive system ever used for this purpose. It consists of two magnetometers that can detect magnetic fields as weak as 0.5 nanoteslas, in three directions, 250 times per second.

After investigating many different areas, the team found the most complex fields coming from the Tapestry Room. They homed in on an iron mesh supporting the mattress, which strongly distorts local background magnetic fields. Crucially, if someone lies in the bed and turns from side to side, they jostle the mesh, causing the field near the pillows to fluctuate wildly, in a way that is similar in magnitude and complexity to the fields in Persinger's experiments. "It's highly complex, varying considerably across space and time," says Braithwaite, who described the results last month at a conference held at Muncaster Castle by UK-Skeptics.

So might these fields have contributed to some of the spooky experiences in the

Tapestry Room? Braithwaite aims to test this by reproducing them in a customised room, and to that end he's teaming up with Chris French, who studies anomalistic psychology at Goldsmiths, University of London.

French has experience in frightening people in the name of science. In 2005, his team created a dimly lit, featureless white room where people could be exposed to simple sine-wave magnetic fields and low-frequency sound waves, which have also been linked with ghostly experiences (*New Scientist*, 26 July 2003, p 30).

One at a time, 80 or so volunteers were sent into the room, where they spent 50 minutes, subjected to either the magnetic fields, infrasound, both or neither. For ethical reasons they had to be told beforehand that they might experience some odd sensations, but were given no further details.

More than 90 per cent of participants reported unusual sensations, including feeling detached from their bodies and hearing ticking sounds. About 20 per cent reported sensing a presence, while nearly 10 per cent reported terror.

Disappointingly, however, the volunteers were just as likely to report odd sensations regardless of whether the magnetic fields and infrasound were switched on. In other words,

## "When you lie in the bed and turn over, the magnetic fields fluctuate wildly"

they just got spooked by being shut in the eerie room. "If you say to suggestible people, you might experience something weird in here, some of them will," says French.

He has not given up, however; he and Braithwaite plan to test whether the more complex magnetic fields produced by the Tapestry Room bed frame will do the trick. They hope to secure funding to rig a new room with concealed coils that can generate such complex fields.

They will also attempt to quantify the relative importance of different psychological factors that spook people by adding other ingredients like drafts, sinister paintings and creepy furniture.

I can certainly vouch for the importance of atmosphere. When it came to my own stay in the Tapestry Room, I'm afraid to say it got the better of me: in the end, I couldn't bear being in there alone so I invited over my partner, who was staying nearby.

Bolstered by his company, my fears dwindled. We heard no wailing children nor sensed anything supernatural. Jester Tom Skelton seemed to be out of town for the night, and that was just fine by me. ■

Hazel Muir is a freelance writer based in the UK