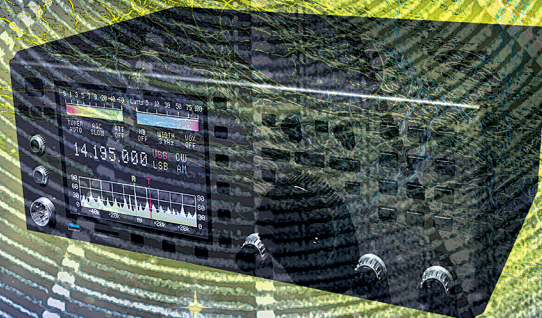


The Ghosts in the Machine



Debunking the ways radio has been depicted as a conduit for the paranormal, tracing back to Nikola Tesla himself, and how it is used by paranormal researchers today.

Allison McLellan

As we approach October, horror movies and paranormal-themed TV shows will start appearing more frequently in the spirit of Halloween, and you shouldn't be surprised if radio makes a cameo. In pop culture, ham radio is often portrayed as a way to contact "the other side" — whether it be ghosts, aliens, or even another dimension. Take the plot of the 2000 sci-fi thriller *Frequency*, and its subsequent 2014 TV adaptation, which relies on the main character, John, using ham radio to contact his father back in time. Or Netflix's sci-fi/horror show *Stranger Things*, in which a group of kids uses a Heathkit radio to communicate with a parallel dimension they call "the Upside Down."

But this mystification with a faceless voice from the radio is nothing new; even Nikola Tesla once thought he was able to achieve intelligent communication with other planets through radio.

The Age of Spiritualism

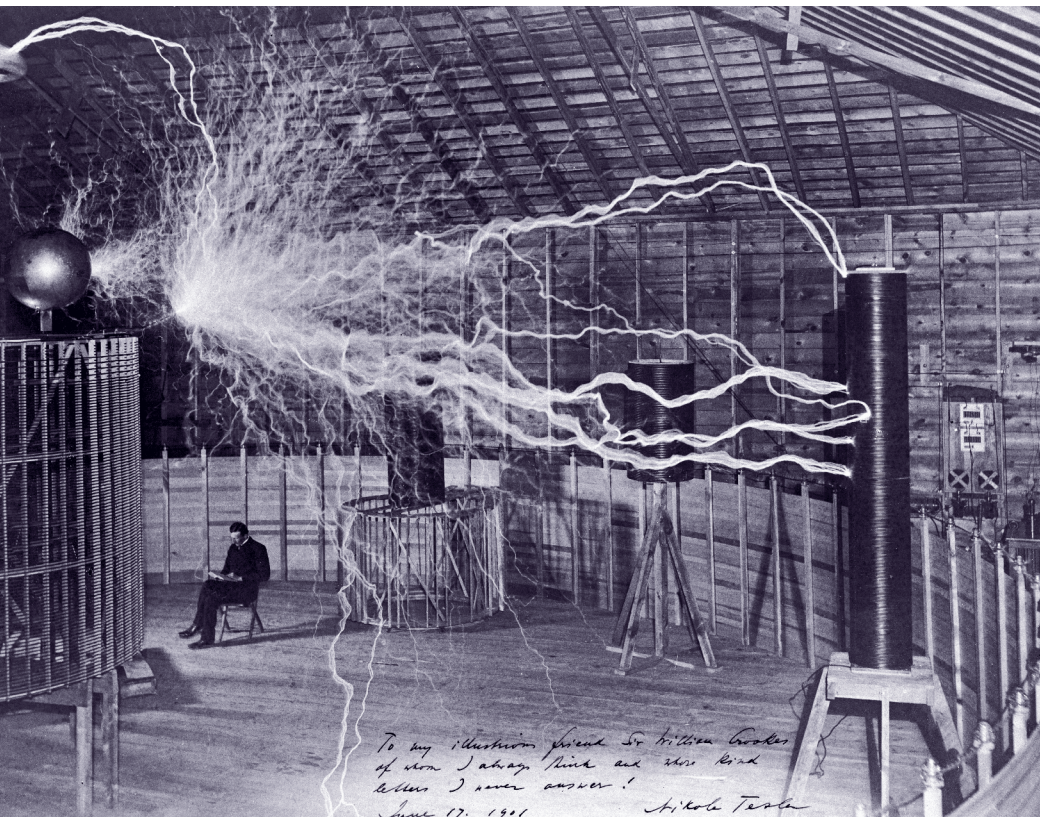
The United States was amid its Second Industrial Revolution in the late 19th century, spurred in great part by the founding and spread of wireless telegraphy. But this technological revolution intersected a cultural shift with the rise of contemporary Spiritualism. First taking hold around 1850, Spiritualism is based upon a belief in the existence of spirits of the dead and the ability to communicate with them.

Along with Spiritualism came the fad of celebrity mediums — those claiming to be able to mediate communication with the spiritual world. Some mediums' exhibitions were eventually exposed as hoaxes, but a public left grieving after the American Civil War and World War I was willing to latch onto this potential proof of the afterlife as a connection to lost loved ones. In such a groundbreaking era of discovery, communicating with the spirit world didn't seem any less plausible than real-time communication with someone across the country, once just as inconceivable before the telegraph. In fact, some believed achieving contact with another realm would be the greatest possible extension of communication technology.

Talking with Planets

In the beginning of the 20th century, while the wave of Spiritualism was still largely influential, inventor Nikola Tesla was becoming a household name. The scientist is most revered for his work in designing the modern alternating current (ac) electric supply system, as well as his patented Tesla coil.

In a 1901 article for *Collier's Weekly*, entitled "Talking with the Planets,"¹ Tesla described how he succeeded in creating a machine at his Colorado Springs lab that functioned through "drawing electricity from the earth and driving it back into the same at an enormous rate, thus creating ripples or disturbances which, spreading through the earth as through a wire, could be detected at great distances by carefully attuned receiving circuits."



Sparks emitted from Tesla's high-voltage generator at his Colorado Springs lab around 1899. The voltage was exaggerated through double exposure by photographer Dickenson V. Alley. [Dickenson V. Alley, Wellcome Collection gallery, photo]

Lead photo: Nikola Tesla in front of Tesla coil transformer. ["Tesla's Important Advances," *Electrical Review*, May 20, 1896, p. 263., Tonnelé and Co., photo]

“In such a groundbreaking era of discovery, communicating with the spirit world didn't seem any less plausible than real-time communication with someone across the country.”

As he continued his experiments, Tesla began to construe an intentional pattern in the sounds being emitted from his devices. He said, “My first observations positively terrified me, as there was present in them something mysterious, not to say supernatural, and I was alone in my laboratory at night.... The feeling is constantly growing on me that I had been the first to hear the greeting of one planet to another.”

After so many years, we can't be exactly sure what Tesla was hearing that night in his lab. In the biography *Wizard: The Life and Times of Nikola Tesla*, author Marc Seifer asserts that Tesla may have been picking up signals from his competitor, Guglielmo Marconi, who, at the time Tesla was experimenting in Colorado Springs, was also transmitting messages across Europe and the English Channel. Marconi had been continuously using the three-dot Morse code signal for the letter “S,” which aligns with a description Tesla gave of a three-beat signal he intercepted in Colorado. Regardless, as a pioneer of his time, it appears Tesla was genuinely determined to achieve such a feat as intergalactic communication.

Ironically, 20 years later, Marconi also told reporters he had detected radio emissions seemingly coming from space. In 1922, the magazine *Popular Radio* picked up on the possibility, with “Are We getting Radio Signals from Another Planet?” Author E.E. Free, PhD, said, “Everyone knows of [Marconi's] success nine months ago in picking up impulses of very long wavelength, believed not to

be of terrestrial origin — impulses which are suggestive, to say the least, of signals sent out from some source and directed by intelligent beings.”

However, Free went on to provide a much less sensational source for the signals — sunspots. He wrote, “... there is a direct and important connection between the number and size of sun-spots and the occurrence on earth of what are called ‘magnetic storms’.... Wireless operators know to their sorrow the effect of these magnetic storms on ease of communication, on the prevalence of ‘static.’”

Amateur operators were only just learning about how radio waves interacted with varying elements like the sun, which, as Free wrote at the time, was “far afield into a part of meteorological science which is still imperfectly understood.” Of course, hams today are much more aware of the effects of solar activity on their operation.

In fact, this association between alien communication and radio is still portrayed in modern media, like the 1997 film *Contact*. In the movie, the young version of Jodi Foster's character was mentored by her father in Amateur Radio. After her father's death, she tries to use radio to contact him, similar to Spiritualists who turned to mediums in hopes of connecting to passed loved ones. In the protagonist's adult life, she turns this interest toward monitoring radio emissions from space, searching for the extraterrestrial signals on which the film's plot hinges.

Ghost Hunting

Following their 1922 feature on potential alien signals, *Popular Radio* continued to address just how far radio communication could go in a three-part series, beginning with two articles by Hereward Carrington, PhD, discussing whether radio could be used to contact the spirit world. Carrington neither confirmed nor denied the existence of the spiritual world, but theorized that if the mind can send out “definite vibrations, not unlike radio impulses,” then they could be picked up by an instrument designed to detect these impulses, “just as we have already devised a receiving apparatus for... wireless telegraphy.”

The third part of the *Popular Radio* series is called “Ghosts that Talk — by Radio,” written by famed escape artist — and Spiritualism skeptic — Harry Houdini. He compared mediums to magicians in the way



Famed escape artist Harry Houdini in handcuffs circa 1918. Later in life, he worked to debunk belief in Spiritualists who used radio to trick people into thinking they had communicated with the spirit world. [Bettman/Corbis, *The New York Times* photo archive, Wikimedia Commons, photo]

The Frequency of Fear

Scientists have investigated one unseen force familiar to hams as an explanation for ghost sightings — frequency. *Infrasound* is the term for sound waves below 20 Hz, under the threshold that is audible to the human ear. It is common in nature, formed by earthquakes, lightning, and used by elephants to communicate.

In the 1990s, Vic Tandy, researcher and lecturer at Coventry University in England, published his findings on infrasound in the *Journal of the Society of Psychical Research*. He described working in a supposedly haunted lab at the university when he began to feel uneasy and saw a grey shape out of the corner of his eye. The following day, he had a similar experience, but also noticed that the fencing foil he had been working on was somehow vibrating. After investigating, Tandy discovered a silent fan in the lab creating low-frequency sound waves measured at 18.98 Hz. After turning the fan off, the unsettling feeling disappeared.

Some studies have shown that infrasound can cause headaches, nausea, sleep disorders, and feelings of dread. Tandy theorized that the infrasound created by the fan was responsible for his anxious feelings that night, and that the grey apparition was caused by the low-frequency waves vibrating the eye and creating peripheral hallucinations. NASA says the frequency at which the eyeball vibrates is 18 Hz, right around the same frequency that the fan had been giving off. The foil had been vibrating due to a standing wave formed in the room by the same emissions.

However, infrasound itself may not be to blame for these adverse symptoms. Studies² have shown that prolonged exposure to any unwanted sound becomes a source of stress. The inability to locate the source of this discomfort due to infrasound's inaudible frequency could be why blame falls to invisible specters.

they conducted illusions, describing common tricks such as the “Invisible Girl” in which a hidden woman listened to questions from believers and responded in a raspy whisper through a speaking tube concealed within a cabinet. The addition of components like induction coils, circuits, and telephone transmitters then allowed this maneuver to become more efficient. Houdini described, “This was, indeed, the first form of radio telephone. It employed the same principles of induction without wires as the modern complicated radio apparatus, and it worked almost as well over a distance of a hundred feet or more.”

Efforts toward creating a device to communicate with the spiritual realm — or similarly, to entertain the public — have continued. Researchers investigating claims of paranormal activity often use tools like “spirit boxes” — a tool that rapidly scans

AM and FM frequencies while emitting white noise. The idea is that a spirit can use the energy of the white noise to manipulate snatches of conversation across the bands to form words and communicate. Similar tools may be recognized on paranormal investigation shows like SyFy's *Ghost Hunters*, a series about a team of investigators who work as plumbers by day and researchers by night for The Atlantic Paranormal Society (TAPS), or the Travel Channel's admittedly campy *Ghost Adventures*, which follows a similar premise.

For a quirky afternoon project, an online search will bring up pages of tutorials to DIY your own spirit box. While fun to try, the evidence recorded is often taken with a grain of salt, as any interpretations of communication can be explained away as interference from ongoing broadcasts, or the mind's desire to make sense of white noise by finding words in its chaos.



The B-PSB7 Spirit Box, a common model sold from various online ghost hunting equipment vendors. [GhostStop Ghost Hunting Gear, photo]

The Lasting Magic of Amateur Radio

Just as the kids in *Stranger Things* use their Heathkit to search through that white noise for answers in an upside-down world, hams have used Amateur Radio for ages to find out who — or, as Tesla and Marconi pondered, *what* — is out there. As radio technology and our understanding of it continue to develop, we may not jump to the same outstanding conclusions that first fascinated early inventive minds. However, this curious excitement about the “magic” of Amateur Radio is what has driven over a century of avid hams to discover and evolve the art to this day.

Notes

¹N. Tesla, “Talking with the Planets,” *Collier's Weekly*, Feb. 9, 1901, pp. 4–5.

²M. D. Seidman, R. T. Standring, “Noise and Quality of Life,” *International Journal of Environmental Research and Public Health*, Oct. 2010.

Allison McLellan is an Assistant Editor for *QST*. She can be reached at amclellan@arrl.org.