

December 8, 2014

---

## Women Can't Do That: Delia Derbyshire and Electronic Music

Kendra Leonard (Loveland, OH)

British composer Delia Derbyshire (1937–2001) was probably one of the most influential composers of the twentieth century, but most people—including professional musicians—have never heard of her. Derbyshire's best-known work was [the theme music for the original \*Doctor Who\*](#), as well as the sound effects for the TARDIS, the title character's space- and time-traveling police box. Yet like many women of her time, Derbyshire was initially kept away from the tools for creating music because, as she was told, "women can't do that."

Interested in both music and mathematics from a young age, she initially hoped to work in recording. After earning a masters degree in both subjects from Girton College, Cambridge, she sought work at [Decca](#), but the record company told her that no one in the industry would hire a woman, regardless of her talents or training. She finally found piece work at music publisher [Boosey & Hawkes](#), and it was while there that she convinced [the British Broadcasting Company \(BBC\)](#) to hire her on in their new [Radiophonic Workshop](#) in 1960, where she remained one of the few women in the recording industry.

The Radiophonic Workshop was the BBC's edgy project designed to create music and sound for radio dramas, which were at their height in Britain in the 1950s and 1960s. In addition to creating and recording sounds like car doors opening and closing, the strike of a match, the ring of high heels on concrete, Derbyshire was able to experiment with the advanced equipment in the Workshop. There she was finally able to combine her training in music and math to write music composed exclusively by electronic means and mathematical patterns: tape loops, patterns of sound and music, complex layers, textures, and new sounds.

Her first works for the BBC were music for *Oliver Twist* (1963), effects for Roberto Gerhard's *Anger of Achilles* radio play (1964), and work for *Amor Dei*, a 1964 documentary about British belief in god. She composed the music for *Great Zoos of the World* using only the sounds of animals, and music for the *Out of the Unknown* sci-fi series, which created "futuristic" and "alien" sounds by distorting, layering, and otherwise manipulating sounds. She collaborated with poets and spoken-word performers to create soundscapes that accompanied recordings of their texts. In over 11 years at the BBC, Derbyshire produced music and sound for more than 200 programs, and her archives there contain nearly 300 tapes of music and sound ideas.

During her time at the Workshop, amid all her work writing sounds for radio dramas and the *Doctor Who* theme, Derbyshire launched the Kaleidophon studio and Unit Delta Plus, both of which offered artists the equipment and opportunity to explore acoustic and electronic sound. Through these institutions, Derbyshire produced scores for the [Royal Shakespeare Company](#), Yoko Ono, and her own albums. Derbyshire's works as a composer earned her the title Sculptress of Sound from critic David Butler. Her vast library of work displays her sense of imagination and playful approach to sound, including tapes of her saying her own name and running it backwards at various speeds; sounds made on found objects, like metal lampshades, ashtrays, and tools; and electronic devices from the arcane (oscillators) to the

mundane (blender motors). She worked with pre-recorded sound as well, using World War II air-raid sirens to represent fear and uncertainty, and monastic chant as something calm and intangibly peaceful. One of her works, [the soundtrack for an episode of the documentary series \*The World About Us\* called "The Last Caravans,"](#) sounds full of Arabic calls to prayer and evokes North African music, but in fact it's comprised solely of electronically captured and modified sounds, including short clips of Derbyshire speaking. According to one source, in composing this last piece, which Derbyshire referred to as "Blue Veiled Men and Golden Sands," Derbyshire based the tempo of the music on the pace of the camels' feet moving across the desert in the film, and created the music by recording herself singing a single note, which she then raised and lowered in pitch, resulting in a melodic line.<sup>1</sup>

*"Love without Sound" shows composer Delia Derbyshire at work, as well as some of the BBC Radiophonic Workshop equipment she used.*

The BBC made a number of funding cuts in the 1970s, and Derbyshire, feeling pessimistic about what she saw as the lack of progress in and support for electronic music, left the BBC in 1973. Sensing a lack of interest in electronic music in general, she stayed away from music completely for a time, working in sales at art galleries and bookshops and as a radio operator for British Gas. Just as abruptly, however, she returned to electronic music in the years immediately preceding her death in 2001, creating a number of new pieces. Despite the short span of her musical career, Derbyshire's influence was widespread. She introduced artists including Ianni Christou, [Peter Maxwell Davies](#), [Roberto Gerhard](#), [Pink Floyd](#), Brian Jones, [Anthony Newley](#), [Harry Nilsson](#), George Martin, [Paul McCartney](#), and Ringo Starr to the possibilities of electronic music. She taught them about the use of signal oscillators to change the frequency of sounds and loops; how white noise generators could be used to create swishing noises; and how to generate sine waves at frequencies from 20Hz to 20kHz, another sound that became a sci-fi trope. She also demonstrated the use of mundane objects as instruments: one of her favorites was an old metal lampshade that rang in a particular way. Derbyshire used the twelve strongest frequencies from the lampshade as the basis of new sounds. She also used bells, oxygen bottles, clocks, and broken pianos to develop new sounds that could be further manipulated electronically. Pink Floyd employed layers of manipulated sound using both traditional instruments and everyday objects in their albums *The Dark Side of the Moon* (1973) and *Wish You Were Here* (1975), while McCartney used "flanging," an electronically-generated swirl of sound often called a "jet plane" sound in his work on the Beatles' 1966 album *Sgt. Pepper's Lonely Hearts Club Band*. She composed the soundtrack for Yoko Ono's film *Bottoms* (1966), and, as part of Unit Delta Plus, organized and composed for concerts and events featuring electronic music, hoping to bring it to the attention of the public. Her pieces have been covered by a number of bands, such as Sonic Boom, Aphex Twin and The Chemical Brothers.

*Author's Note: As commenter Karissa notes below, the musical theme for Doctor Who was composed by Ron Grainer and electronically realized by Derbyshire.*

### **For Discussion**

1. Why do you think people thought that Derbyshire couldn't or shouldn't have a career in music and mathematics?

2. After listening to more of Derbyshire's music at [delia-derbyshire.org](http://delia-derbyshire.org), how would her knowledge of math have helped Derbyshire to create the sounds she did, or use the methods she did to create pieces? Can you hear places in the excerpts above where repetition/looping, the textures, or other aspects were mathematically derived?

3. What pieces that you have already heard possibly have been influenced by Derbyshire's work? What sound effects?

### **Further Reading**

The BBC maintains an archive of Delia Derbyshire's work at [delia-derbyshire.org](http://delia-derbyshire.org), where you can explore digitized clips, full pieces, and raw material.

Niebur, Louis. *Special Sound: The Creation and Legacy of the BBC Radiophonic Workshop* (Oxford: Oxford University Press, 2010). A scholarly look at Derbyshire and the Radiophonic Workshop, including coverage of her music for radio and television.

<sup>1</sup> Dick Mills, interviewed on the BBC radio program *Woman's Hour*, aired July 25, 2008.