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## CHAPTER ELEVEN

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# Electronic Music from the Cold War to the Computer Age

**M**usic that is to some degree “electronic” is now everywhere around us. Many musical and technological innovations that we have come to take for granted, such as the sonic spatialization of home theater systems, music-making software on home computers and smartphones, and even the notion of sound as a separate category from pitch or rhythm, emerged in the decades after World War II. Indeed, we are so inundated with electronically produced music today that it can be surprising to consider the excitement and anxiety that first greeted the new technologies.

In the 1955 issue of *Die Reihe*, which was focused exclusively on electronic music, the German musicologist H. H. Stuckenschmidt proclaimed the dawn of a new musical epoch through which, “the natural is abolished. Vocal and instrumental forms are eliminated, tonality, functional harmony, simple polyphony and symmetrical rhythm are suspended.” In aligning music with contemporary science and technology, he argued, composers had broken free from the constraints of nature and history: “We are astonished, and not without pride, to have before us an art totally controlled by the spirit of man, in a way not previously imaginable.”

Stuckenschmidt might have had in mind works like *Electronic Study No. 2* (1954) by Karlheinz Stockhausen (1928–2007), which featured previously unheard timbres and an electronically generated scale of 81 pitches that had no octaves or other familiar intervals. The five sections of the piece are differentiated not by modulation or new themes but by the density of the textures and the dynamic contours, or “envelopes,” of the individual sounds. To represent his music in the first electronic score to be published, Stockhausen developed an equally innovative system of notation (Fig. 11.1): the numbers on the center line indicate the precise durations of the sounds, measured on the magnetic recording tape, with 76.2 centimeters equaling 1 second. The lower system shows the dynamic range measured in decibels, while the upper system indicates the frequency range of the individual sonorities.

In 1958 Stockhausen described the necessity of breaking with music from the first half of the twentieth century not only in terms of harmonic and melodic structure, but even in regard to the sounds themselves: “We realized that the historical development of instruments was closely linked with a music which was no longer ours.” Born near Cologne, Germany, Stockhausen was a 17-year-old orphan when World War II ended. Intending to become a teacher like his father, he studied music education, piano, and composition. In 1951 he attended a summer course at Darmstadt, followed by a year in Paris studying with Olivier Messiaen (see Chapter 10), where he first encountered new techniques for using electronic technology in composition. Returning to Cologne in 1953, he took a job at the recently established Studio for Electronic Music, sponsored by Radio Cologne, and quickly emerged as one of the leading composers and theorists of the European avant-garde.

The new technologies soon were heard in rock and jazz, as well as in film soundtracks, embedding electronic music in the popular imagination more

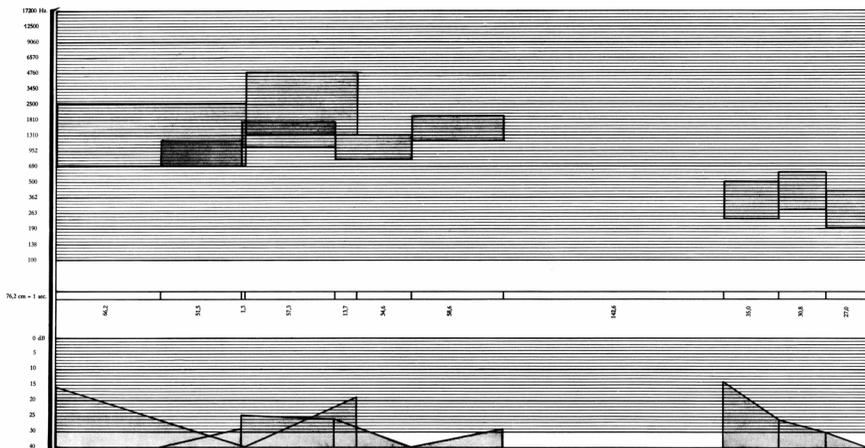


Figure 11.1: Karlheinz Stockhausen, *Electronic Study No. 2*, p. 1

deeply than any other contemporary form of composition. DJs and producers today cite Stockhausen and other figures discussed later as important influences, but Stockhausen was shaping popular music as early as 1967, when he appeared in the collage of figures on the cover of the Beatles' landmark album *Sgt. Pepper's Lonely Hearts Club Band* (see p. 221). Both the strangeness of his music and its cultural cachet are evident in an ironic passage from Thomas Pynchon's 1966 novel *The Crying of Lot 49* that takes place in a fictional bar in Los Angeles frequented by workers from a nearby electronics corporation:

A sudden chorus of whoops and yibbles burst from a kind of juke box at the far end of the room. "That's by Stockhausen," the hip graybeard informed her, "the early crowd tends to dig your Radio Cologne sound. Later on we really swing. We're the only bar in the area, you know, that has a strictly electronic music policy. Come on around Saturdays, starting midnight we have your Sinewave Session, that's a live get-together, fellas come in just to jam from all over the state."

The profound newness of these forms of music-making, with their own tools, techniques, and even national characters, is evident in the range of terms that emerged to describe them. The term *Elektronische Musik* originally referred to developments centered in Germany that allowed sounds to be produced and modified by electronic devices. As we discuss later, composers in France developed a different approach, called *musique concrète* (concrete, tangible, or material music), based on manipulating preexisting sounds recorded on tape. Meanwhile, composers in the United States used the term *tape music* to refer to both recorded and electronically produced sounds. In the late 1950s musicians and sound engineers began developing programs and devices for digitally producing and manipulating sound under the general heading *computer music*. In this book we will use *electronic music* as an umbrella term, although some musicians prefer to describe any music that depends on electronics and loudspeakers for composition and performance as *electroacoustic music*.