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MILESTONES

Live Electronic Music and Ambient Music

Musical work	Year	Significance
— <i>Cartridge Music</i> by John Cage.	1960	— Work for amplified small sounds and an early departure from taped music in favor of live performance.
— <i>Variations V</i> by John Cage.	1965	— Elaborate live electronic music work for multimedia and dance.
— <i>Vespers</i> by Alvin Lucier.	1965	— Live interactive electronic work shaped by the acoustic properties of the performance space.
— <i>In the Realm of Nothing Whatever</i> by AMM.	1966	— Live improvised electronic music ensemble (England).
— <i>Sounds for a Film by Robert Watts</i> by David Behrman.	1968	— Early ambient work using environmental sounds.
— <i>Spacecraft</i> by MEV.	1970	— Live improvised electronic music ensemble (Italy).
— <i>Sonic Seasonings</i> by Wendy Carlos.	1972	— Ambient work using synthesized and environmental sounds.
— <i>Music for Airports</i> by Brian Eno.	1978	— Defining work of synthesized ambient music.
— <i>X</i> by Klaus Schulze.	1978	— Fully realized works of space music employing analog synthesizer orchestration.

CHAPTER 16

Rock, Space Age Pop, and Turntablism

They would often bring in bits of tape and say, 'Listen to this!' as they tried to outdo one another in a de facto weird sound contest.
—Geoff Emerick, Abbey Road studio engineer during The Beatles' *Revolver* recording sessions

Rock and Electronic Music

The Beatles

Listen: Rock and Electronic Music

The Thelmin Revival

Innovation: Yoko Ono—Bringing the Avant-Garde to Rock and Roll Ears

Space Age Electronic Pop Music

Listen: Space Age Pop Music
Innovation: Gary Numan—Running with Technology

Turntablism

Listen: Turntablism

Summary



Plate 16.1 The Beatles (c.1968) explored the use of magnetic tape effects on recordings such as *Revolver* and the *White Album* and greatly influenced the use of electronic music techniques in popular music.
(Getty Images, Michael Ochs Archives)

Electronic music and rock music were separated at birth but destined to meet again after reaching adolescence. Rising from the same transistorized technology that made tape recorders possible were the keyboards, effects boxes, and other gadgets that embellished the sound of rock and roll. By the late 1960s, as the professional recording of rock music adapted to multitrack tape recorders and the availability of synthesizers and other electronic instruments, rock and jazz fusion artists became the standard bearers for the dissemination of electronic music to the masses. This chapter examines important artists who contributed to the popularization of electronic music in commercial music and examines the subgenre of turntablism.

ROCK AND ELECTRONIC MUSIC

There is the notion of the *hook* in rock and roll music: a memorable snippet of a song that grabs the attention and demands to be heard over and over. The hook is the *l'objet sonore* of rock—a molecule of sound with unique timbral and psychoacoustic properties that make it easy for the listener to commit to memory. Furthermore, the hook is the product of the uniquely crafted sound of a rock group—an instrumental blend of guitars, amplifiers, effects pedals, and other elements that combine to give a group its sonic identity. Rock music is very much about crafting and shaping sounds, so it was only natural that many of the early adopters of electronic music techniques would be in the recording studios producing hit records. Any rock group worth remembering has a distinctive sound and the best musicians, producers, and engineers are in the business of perfecting that sound.

The Beatles

Discussing the entire history of rock and roll is beyond the scope of this book. Fortunately, one need look no further than The Beatles for examples of classic electronic music techniques and analog synthesis in rock music. Much has been written about the importance of the recording studio to The Beatles who, at the peak of their popularity in 1966, stopped touring and spent the remaining four years of their partnership solely as recording artists. With the aid of the extraordinarily gifted producer George Martin and a cadre of talented and inquisitive recording engineers, many of the sounds of electronic music began to slip into the music of The Beatles.

The Beatles became fascinated with tape loops during the recording sessions for the album *Revolver* (1966). One of the first loops the group used was set up by engineer Geoff Emerick for the hypnotic rhythm of the song *Tomorrow Never Knows* (1966). Paul McCartney was so taken with the effect that he went home and recorded a batch of additional tape loops using his guitar, the ringing sound of wine glasses, and other noises. He came back to the studio and handed Emerick a little plastic bag full of tape snippets that the engineer dutifully threaded onto a tape deck for the band to audition.¹ This led to a session devoted to the live mixing of tape loops during which all five tape decks of the Abbey Road studio were employed. Many of the loops were long and required technicians to stand nearby spooling them in the air with uplifted pencils. In the control room, Emerick conducted the live mix, controlling the sound balance while others adjusted the panning and levels. Emerick likened the result to a human-enabled

synthesizer. Some of the sounds were mixed into *Tomorrow Never Knows*, including the seagull-like noise that was made with a distorted guitar.² Another effect used on the song was the continuously varying speed of some of the background tracks, the result of The Beatles having access to a varispeed tape recorder.

The use of tape reversal in a Beatles' song first occurs in the single release *Rain*, also produced in 1966 just a week after *Tomorrow Never Knows*. There are two conflicting stories about how this happened. One is that John Lennon took his vocal track home and accidentally threaded it upside down on his reel-to-reel tape recorder, causing the sound to be played back in reverse. The other is that George Martin intentionally mounted the tape backwards on a tape deck in the studio to demonstrate the effect to Lennon, who had stepped out of the studio for a minute. When Lennon returned and played the tape, he was "amazed." One way or the other, *Rain* "was backwards forever after that."³ Experiments with tape loops continued to be used on various Beatle albums, from the whirling calliope effects of *Being for the Benefit of Mr. Kite* (1967) to the atmospheric nature sounds that form an aural bridge between *Here Comes the Sun* and *Sun King* on the album *Abbey Road* (1969).

The Beatles are not normally associated with synthesizer music but were actually one of the first groups to effectively integrate the sounds of the Moog into their music. This came about through the efforts of Paul Beaver and Bernie Krause, a musical duo who also acted as sales representatives for Robert Moog and his synthesizer. Krause had already sold Moogs to George Martin and Mick Jagger and in the fall of 1968 and was contacted by George Harrison for a demonstration. Harrison hired Krause to play the synthesizer on a Jackie Lomax record being produced in Hollywood. After the session, Harrison reportedly asked Krause to hang out for a bit and give him a demonstration. Krause gladly obliged and played a few patches he had been working on with Paul Beaver for a record they were producing called *Gandhama*. Harrison recorded the demonstration and headed back to England. He eventually purchased a Moog through Krause in early 1969 and asked him to come to London to set it up and teach him how to play it. As the story goes, Krause arrived at Harrison's home where the synthesizer was set up in the Beatle guitarist's living room. Before they got started with the lesson, Harrison wanted to play Krause a tape of some music that he had apparently already created with the Moog. "Apple will release it in the next few months."⁴ To the amazement of Krause, the sounds on the tape were none other than the demonstration sounds that he himself had played for Harrison during the Jackie Lomax demonstration months earlier. Krause confronted Harrison on the spot, but to no avail. In spite of Krause's complaints, the album *Electronic Sound* was released in May, 1969. Unwilling to spend the money to sue a Beatle, Krause demanded that his name be removed from the album jacket. Rather than replace the original album cover, Apple smudged over his name with silver metallic ink. *Electronic Sound* was by no means successful and sounded like nothing more than what it truly was: a demonstration of Moog sound effects and patches.

While The Beatles were recording their final album, *Abbey Road*, in the summer of 1969, Harrison had his synthesizer transported to the EMI studios for all of the group members to access. The Moog was used subtly on the album and appears on nearly every track. McCartney was playing with loops again and assembled a collection of Moog sounds to form the aura of crickets that crossfades from *Sun King* to *You Never Give Me Your Money*. Musician Mike Vickers was hired to tame the Moog and provide patches for The Beatles. The instrument was installed in a booth of its own and wired into all



Plate 16.2 (ABOVE) Stan Free's *Hot Butter* album. (Musicor MS 3254, 1973)



Plate 16.3 (RIGHT) Synthesizers and electronic musicians figured prominently in music press advertisements of the early 1970s. (Tom Holmes)

of the available control rooms, and all of group members utilized it in one way or another. The Moog solo played on Maxwell's *Silver Hammer* was performed by McCartney using a ribbon controller.⁵ Perhaps the most extreme Moog effect employed on the album was the three-minute span of modulated white noise added by Lennon to the conclusion of *I Want You (She's So Heavy)*.

One famous Beatle track was influenced by John Lennon and Yoko Ono's interest in avant-garde music, particularly the tape music of John Cage and Karlheinz Stockhausen (who happens to be among the faces staring out from the cover of the 1967 album *Sgt. Pepper's Lonely Hearts Club Band*). *Revolution 9* was a montage of tape loops, constructed in a manner similar to the way that *Tomorrow Never Knows* was produced two years earlier. Dating from the June 1968 recording sessions for The Beatles' *White Album*, the 8'13"-long work was produced by Lennon with help from Harrison and Ono, both of whom contributed occasional recitations and, in the case of Ono, high-pitched singing.⁶ All of the resources and technicians were once again recruited to keep the tape loops flying and to manage the mixing in the control room. Although the final stereo version consists of several overdubs, each original track comprised a live-studio mix of whatever sounds were being looped at the time.

The Beatles did for rock what Varèse, Cage, and Stockhausen had done for classical music—they opened up the world of music to any and all possible sounds.

Rock artists became heavily invested in synthesizer equipment during the 1970s and there was much competition among manufacturers in a burgeoning market for modular and performance synthesizers. The development of polyphonic synthesizers, touch-

sensitive keyboards, preset patches for sounds, sequencing, controller options, MIDI control, and digital sampling were significant innovations that appeared during the 15 years spanning 1970 to 1985. By the end of the 1980s, most instruments had switched over to digital technology because of the falling cost of computer-based components, the result being a stabilization of basic performance and control features and increasing emphasis on new sound algorithms, digital signal processing, and the use of software to manage instruments, audio recording, editing, and performance.

ROCK AND ELECTRONIC MUSIC

- 1 *Tomorrow Never Knows* (1966) by The Beatles
Tape loops and Lennon's voice fed through the rotating Leslie speaker of a Hammond organ
- 2 *Ceremony* (1970) by Spooky Tooth and Pierre Henry
Featured tape composition by the French master as part of a rock opera
- 3 *Emerson, Lake, & Palmer* (1971) by Emerson, Lake, & Palmer
Featured the Moog played by Keith Emerson and one of the first rock hits in which a Moog was the featured solo instrument (*Lucky Man*)
- 4 *Fragile* (1971) by Yes
Featured the Moog and other electronic keyboards played by Rick Wakeman
- 5 *Goodbye Yellow Brick Road* (1973) by Elton John
Featured the Arp 2600 played by Dave Henschel
- 6 *Low* (1977) by David Bowie
Produced by Brian Eno
- 7 *Touch and Gone* (1977) by Gary Wright
Used Polymoog, Clavinet, Oberheim, and Fender-Rhodes electronic keyboards
- 8 *The Pleasure Principle* (1979) by Gary Numan
Early synth-rock success using electronic keyboards without guitar
- 9 *(Who's Afraid Of?) The Art of Noise* (1984) by The Art of Noise
Art rock devised by Anne Dudley and Trevor Horn using the sampling capabilities of the Fairlight CMI
- 10 *Slave to the Rhythm* (1985) by Grace Jones
Featured the Synclavier played and programmed by Trevor Horn

THE THEREMIN REVIVAL

Several years before his famed synthesizer would materialize as a commercial product, Robert Moog began a small business building transistorized Theremins. An electronics hobbyist since his youth, Moog had learned how to build Theremins while still in high school. In 1962 he was a married graduate student at Cornell University looking to earn a little extra money, so he rekindled his old hobby and began to build Theremins to order, mostly for educational use. Moog recalled: