

Computer Science 101 Project

Robert Moog

2/20/2008

David Whisnant

Robert Moog

Table of Contents

Page	Subject
3 -----	Wikipedia: Basic facts of his life
3 -----	Modular Moog synthesizer
4 -----	Obituary from <i>Economist</i>
4 -----	Moog and Buchla synthesizers
5 -----	Interviews with Moog
5 -----	Big Briar Company in Asheville
6 -----	Leon Theremin

Robert Moog

I decided to learn about Robert Moog, who I knew to be the inventor of one of the first synthesizers and who died a few years ago in Asheville

1. Began with an advanced Google Search on (with all of the words “biography” and the exact phrase “Robert Moog.”) The highest ranked article was in the Wikipedia¹.

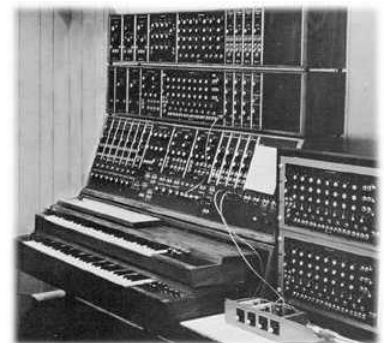
Basic facts of his life:

- His name is pronounced to rhyme with “vogue.”
- Born 1934; died 2005
- Moog created the first modern, real time playable and reconfigurable music synthesizer in 1963
- His synthesizer included a piano-style keyboard
- In 1971, he produced an all-in-one synthesizer, the Minimoog, which became the most popular monophonic synthesizer of the 1970s.
- Many groups and artists used his synthesizers in the late 60s and 70s: Wendy Carlos (*Switched-On Bach*), the Beatles (*Abbey Road*), Emerson, Lake & Palmer and Stevie Wonder among others.
- His analog machines were replaced by digital synthesizers in the 1980s, but now are again prized for their classic sound.
- He received a Grammy Lifetime Achievement Award in 1970.
- After leaving his namesake firm, Bob Moog started making electronic musical instruments again with a new company, Big Briar.



Evaluation: Author is unknown, but Wikipedia generally is a credible source. References included. Recently updated (Sept 16, 2005).

2. Another highly ranked web site was “Robert Moog and Moog Synthesizers” in a web site on obsolete instruments², where there were a number of pictures of Moog’s instruments, including this modular one from around 1967.



¹ “Robert Moog.” Wikipedia 15 Sept. 2005 < <http://en.wikipedia.org/wiki/Moog> >

² Crab, Simon. Robert Moog and Moog Synthesizers. 15 Sept. 2005. <http://www.obsolete.com/120_years/machines/moog>

3. Searched for Robert Moog in one of the Library's online research databases, Academic Host Premier. His obituary in the *Economist*³ filled in some details about his influence on music

Obituary details

- Music went electric in one sense with electric guitars in the 1950s, but only half-way. Sound still generated by vibrations of strings as it always had been.
- In the 1920s the theremin allowed players to generate sounds by waving their hands in front of two radio transmitters
- In 1955 RCA made the Mark II Synthesizer, which used electric currents both to generate and manipulate sound waves. Programmed like a computer and took up an entire room at Columbia University
- Moog's synthesizer did the same things as the Mark II, but was small enough to be used in a music studio
- Musicians wishing to master the instrument still had to learn a new vocabulary of waveforms, oscillators and filters, but it changed music
- His synthesizer kicked off the subgenre of electronic music and was an important influence on popular music

Evaluation: The *Economist* is a mainstream magazine retrieved from one of the Library's research databases. Should be reliable.

3. In the Library online research databases, chose "Find Articles in Scholarly Journals", then looked at "Music," and finally "Project MUSE."

Looked up Robert Moog. Found a good article in *Technology and Culture*⁴

- There were two competing commercial synthesizers in the 1960s – the Moog and the Buchla
- Buchla was an avant-garde artist who rejected standard keyboards. His instruments were controlled by touch-sensitive plates. He did not mass-produce his machines, but felt he was building individual instruments. He stressed uncertainty, experimentation, and idiosyncrasy.
- Moog was building machines that could be used to make music. His machines were reliable, easy to use, and repeatable. More attractive to someone who was a commercial rather than an avant-garde musician.
- Moog was a good inventor but not a good businessman. By the 1970s he was at the brink of bankruptcy and was forced to sell his business.

Evaluation: *Technology and Culture* is a scholarly journal, which can be assumed to be reliable. Many references.

³ "Robert Moog," *Economist* Sept. 2005. Academic Search Premier. EBSCOhost. Wofford College Sandor Teszler Library, Spartanburg, SC. 15 Sept. 2005 < <http://web4.epnet.com>>

⁴ Pinch, T. J. "'Should One Applaud?' Breaches and Boundaries in the Reception of New Technology in Music." *Technology and Culture* 44.3 (2003): 536-559. Project MUSE. Wofford College Sandor Teszler Library, Spartanburg, SC. 15 Sept. 2005 < <http://0-muse.jhu.edu.library.wofford.edu/search/pia.cgi>>

4. Moog just died, so I expected to be able to find some primary sources – maybe even interviews – on the web. In Google I did an advanced search on (with all of the words “interview” and the exact phrase “Robert Moog.”).

One of the highest ranking search results was an interview with Moog in 1997⁵.

- One interesting fact in this interview is that he invented the synthesizer in 1964 working with a composer, Harold Deutsch.
- Also in this interview, Moog says that he “was certainly not imitating other instruments!” Making unique sounds' is close to our original musical intentions. I would say that we wanted to give musicians new ways of working with sounds.”

Another interview was conducted by J. Munnshe for Amazing Sounds⁶. In this interview there is another reference to Theremin.

- Question: Has Leon Theremin (Lev Termen) been a big influence for your musical technology career? Can you tell us about your relation with him & his collaborators?
 - Answer: "I knew very little about Theremin when I first started. Remember, the Cold War between the United States and the Soviet Union was going full blast back then, and it was extremely difficult for anybody in this country to get information on people like Theremin. Little by little I learned about Theremin. At one point during the fifties, I got a schematic diagram of the "original" RCA theremin, and studied it carefully. That was the beginning of my real understanding of what a genius Theremin was".

This strikes my fancy – who was he and what is a “theremin”? I will look this up later

Evaluation: These interviews are primary sources and valuable for that reason.

5. What did Moog do with his company, Big Briar, in Asheville? In a Google simple search, I looked up “Moog Big Briar.”

One of the highest ranked sites was the Moog Music official web site (www.bigbriar.com). One of the links on this page is to Moog’s biography⁷

- Moog founded Big Briar in 1978 after he left the Moog company’
- His purpose was to develop electronic instruments with novel player interfaces.
- He worked on a small scale until 1992 building custom instruments
- He started to make theremins in the early 1990s and did this for several years
- In 2002 he designed a new Minimoog Voyager analog synthesizer for a new generation of Moog players

Evaluation: This site is a little more suspect because it is an official Moog organization, which we would expect to be biased. Probably OK for factual information such as this.

⁵Gross, Jason. Robert Moog: Interview in March, 1997 . 15 Sept. 2005. <<http://www.furious.com/perfect/moog.html>>

⁶Munnshe, J. Interview with Robert Moog. 15 Sept. 2005. <<http://www.amazings.com/articles/article0036.html>>

⁷“Bob Moog Biography.” Moog Music. 15 Sept. 2005. <http://www.moogmusic.com/moog.php?cat_id=82>

6. In the research on Moog, Theremin and “the theremin” appear several times. I decided to do some side research on theremin. I did a simple Google search on “theremin” and found a highly ranked web site on obsolete instruments, including the theremin⁸.

- The theremin uses two radio transmitters that emit different frequencies which combine to give one lower frequency
- The human body can alter this frequency. A Russian cellist and engineer, Leve Termen or “Theremin,” realized in 1917 that this could be used to make music
- In 1920 Theremin made a theremin that was controlled by moving your hands around its antennas. Freed the performer from a keyboard and fixed intonation.
- A picture of Theremin playing his instrument is shown here.
- Theremin immigrated to the US in 1927 and produced a commercial model here
- In 1938 Theremin was kidnapped in the New York apartment he shared with his American wife. He was transported back to Russia, and put to work on top secret projects by the Soviet authorities
- One of his inventions was the first "bug," a sophisticated electronic eavesdropping device. Theremin supervised the bugging of both the American embassy, and Stalin's private apartment
- He was awarded the Stalin Prize (first Class), Russia’s highest honor.
- Before he died in 1993, Theremin returned to the US one time for a lecture series.



Evaluation: www.obsolete.com/120_years has an extensive bibliography, is well-written, and appears balanced. It was last updated in 2004. Although not published in a scholarly journal, it has the characteristics of a scholarly work.

=====

NOTE: I stopped the research at this point, but it could have continued. Several potential topics come to mind:

- A technical description of how synthesizers make sounds
- Who was Harold Deutsch?
- Electronic music
 - Moog’s influence
 - Use of synthesizers at various periods
 - Interviews with modern electronica artists

⁸ Crab, Simon. Lev Sergeivitch Termen & The Theremin (1917). 15 Sept. 2005. <http://www.obsolete.com/120_years/machines/theremin/>