



BOB MOOG ON SYNTHESIZERS The Minimoog Era

AS I WRITE THIS column, it is a month before the 1981 National Association of Music Merchants' convention in Chicago. On my desk is a copy of an invitation to a press luncheon commemorating the "historical impact of the Minimoog Synthesizer on contemporary music," to be held on the first day of the convention. The luncheon is sponsored by Moog Music, and is to be given in my honor. Since I have had nothing to do with Moog Music for over three years, and since the Minimoog is no longer in production, it seems to me that a column of random reminiscences on the life and times of the Minimoog would be within the bounds of editorial good taste, and would not be construed as excessively commercial. So please excuse me for interrupting my series of columns on computer control in order to bring you some musings on the Minimoog.

Some thirteen thousand Model D Minimoogs have been made and sold during the last ten years or so. Models A, B, and C were prototype versions that were never put into production. We at R.A. Moog, Inc. (the forerunner of Moog Music, Inc.) began by assuming that our market for a compact performance synthesizer consisted primarily of studio musicians who wanted a cut-down version of a Moog modular system to take on their gigs. The synthesizer functions we selected were the same as those embodied in our modular equipment. In fact the Model A was actually assembled from standard Moog modules, early in 1970.

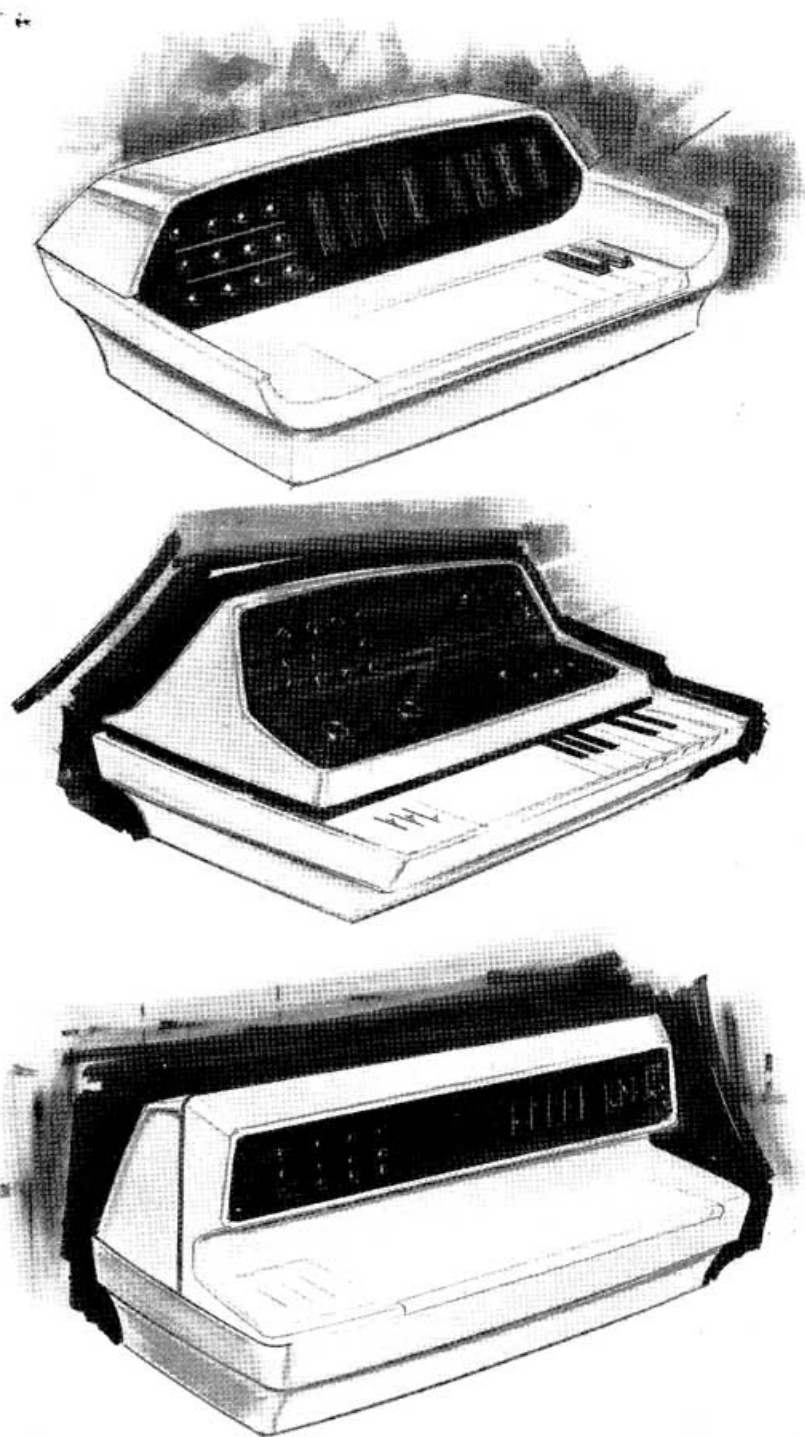
We had no idea of what a small portable synthesizer should look like, so we asked our industrial engineers for some suggestions. They came up with drawings for some very sleek packages indeed — white sculptured plastic cabinets that suggested computer terminals, gleaming multicolored panels, and strikingly shaped controls. We then polled our musician friends to see which designs they liked. Were we in for a surprise! Nearly everybody shot down the sculptured plastic in favor of natural wood and simple lines. We simplified one of our designer's concepts to the point where we could actually make the cabinets in our own modest wood shop, then proceeded to put the Model D in production.

The Model D was a group engineering effort, shared by Jim Scott, Bill Hemsath, Chad Hunt, and me. We adapted some of the circuitry (such as the filter section) from the modular instruments, but designed other circuitry (such as the oscillators and contour generators) from scratch. In fact, Moog's first temperature-compensated oscillators were designed for the Minimoog.

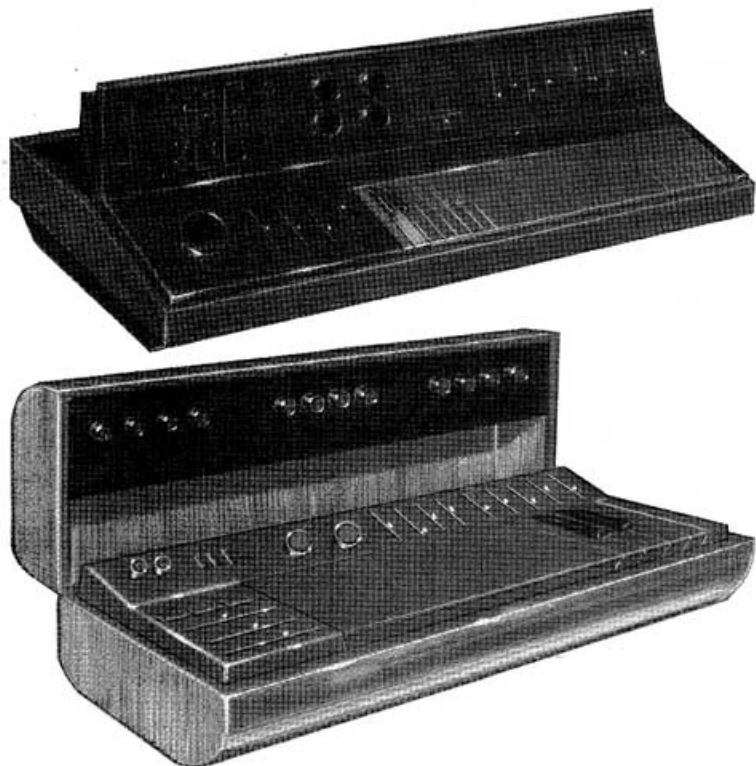
I remember thinking that we would be lucky to sell a hundred Model D's, and that we would surely be able to redesign the instrument within a year.

Production of the Model D began in the

Three proposed designs for the Minimoog. Developed by industrial engineers, these concepts had little appeal for the musicians Moog consulted.



Musicians preferred these more naturalistic designs. The upper drawing was the basis for the Minimoog, while the lower drawing evolved into the Moog Sonic VI.



fall of 1970. It was first performed publicly at the Eastman School in Rochester, New York, by Dick Hyman. Later that year we showed it to the general public at the Audio Engineering Society meeting in New York. ARP introduced their Model 2600 at that same show.

As 1971 began, a saturated synthesizer market, a recession, and a general lack of business smarts (on our part) caught up with us. R.A. Moog, Inc. was merged with Musonics to form Moog Musonics, and then Moog Music, Inc. As part of the merger, our sales efforts were directed away from the professional audio market and toward musical instrument retailers. We exhibited the Minimoog at the National Association of Music Merchants convention in June, 1971. I remember that we did not experience a warm reception. Retailers would pass our booth and ask questions such as "What's that?", "Whaddaya do with it?", and, "You expect me to sell that in my store?" Al Pierce (currently the head of Polyfusion) and I found a few interested retailers, but most passed us by in favor of more comprehensible hardware.

No Minimoog story would be complete without a mention of David Van Koevering, a supersalesman with a predilection for musical novelties. Starting in central Florida (!), Van Koevering introduced the Minimoog to musical instrument retailers on their own turf, wielding his unrestrained enthusiasm to close sales. Today the Minimoog is so widely accepted that it's hard to imagine a time just ten years ago when it took a person of great

persuasiveness to sell a Minimoog. However, if it were not for Van Koevering, the rest of us might have concluded that Minimoogs were unsalable. (After serving as Moog Music's Director of Marketing for little more than a year, Van Koevering put his promotional talent behind a keyboard instrument called the Orchestron which, largely for technical reasons, never achieved a sustained popularity.)

Credit for the acceptance of the Minimoog as a *bona fide* musical instrument goes not to us engineers, nor to the salesmen, but to the supertalents who first played the Minimoog in public and showed us all what the instrument was capable of. In particular, Jan Hammer developed a technique on the pitch-bend and modulation wheels which remains the standard of comparison to this day. The playing styles developed by Hammer, Emerson, Corea, Wakeman, and many others transformed people's ideas of the Minimoog from something akin to a box full of knobs to an expressive musician's axe.

Why Has The Minimoog Been Popular?

Like the Hammond B3, the Gibson Les Paul, the Fender Precision bass, and the Rhodes electric piano, the Minimoog has become a venerable instrument. Why is this so? How can an instrument assembled entirely from standard electronic parts have the sort of unique character that is generally associated with hand-crafted instruments? The correct answer is, "Nobody knows for sure." Most synthesists agree that the Minimoog's

sound sets it apart from all other brands, but no scientist or engineer can pin down the difference in sound to something that can be measured. I believe that the Minimoog sound comes from a balance of several factors: the warm, low-order distortion introduced by the VCF and the VCAs, the rapid attack times of which the contour generators are capable, the small amounts of noise in the oscillators which keep them from locking together at very small frequency differences, and the frequency response of the instrument as a whole. I also believe that musicians like the Minimoog because its controls have a comfortable feel: The keyboard is not mushy, the switches are easy to hit, the knobs are large and smooth-acting, and the left-hand wheels fit the natural hand motions. But I am not *sure* that these are the important elements of the Minimoog's popularity. In order to be scientifically certain of why the Minimoog sounds and feels good, one would have to engage in an extensive, expensive research project. For us who designed the Minimoog over a decade ago, our own intuition and discretion were our most important tools. In this respect we performed like artists rather than engineers.

What's In The Post-Minimoog Future

The Minimoog is now out of production — obsolete, antique, perhaps a collector's item. The original crew that designed the Minimoog is scattered: Hemsath has a cushy job as an engineer with the Cornell University Psychology Department, Scott is an electronic musical instrument design consultant, and I am pushing a pen in the mountains of western North Carolina. With only one exception, none of the present staff of Moog Music, Inc. were on hand when the Minimoog was put into production. Furthermore, virtually all of the synthesizer manufacturers of ten years ago have undergone a change in ownership or have gone out of business, and the most prominent present-day synthesizer manufacturers did not even exist ten years ago.

Technology-wise, synthesizer manufacturing is also a different ball game today than it was in 1971. The Minimoog was made with hundreds of discrete transistors and other simple electronic parts, but only a few integrated circuits. Today, most engineers design synthesizers with complex integrated circuits that are designed and made especially for synthesizers. Tomorrow's synthesizers promise to use large-scale digital computer circuitry.

Some things will not change, even though business conditions fluctuate and technology advances. These things have to do with what makes an instrument sound and feel good to a musician. With modern technology and manufacturing methods it is entirely possible to have inexpensive, mass-produced electronic musical instruments that sound and feel good. But they will not be designed by computer programmers, marketing experts, or businessmen. They will be designed and voiced by musical instrument engineers — those of my colleagues who make a career of working with musicians. ■