TRANSCRIPT OF A VIDEO ORAL HISTORY INTERVIEW WITH

HERBERT DEUTSCH

Accession 2015.34

Interview conducted July 25, 2014
At The Henry Ford
Dearborn, Michigan, USA

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THE HENRY FORD

STORY: ON INNOVATION

INTERVIEW WITH HERBERT DEUTSCH

MEDIA ID: DEUTSCH INTERVIEW.MP3

(OFF-MIC CONVERSATION)

QUESTION:

So-- so if you could just state your name for the record and-- who you are (INAUDIBLE)?

HERBERT DEUTSCH:

Hi, I'm Herbert Deutsch.

QUESTION:

And so-- how did your life in music begin if you could tell us that?

HERBERT DEUTSCH:

Well, yeah. I've had an interesting life as a musician. And I had-- it-- a beginning of a life in music, some of which I can actually remember quite well. And the-- the first thing that I remember that I've told people many times is we had a piano in the house. And I came from a very poor family. They ran a chicken farm-- on Long Island in-- where chicken farms and things were

only if you didn't have any money, you tried to sell (LAUGH) chickens and eggs.

I h-- there was a piano in the house. It was a wreck. I can remember that. But I liked the just touch and play on it. I was three years old. I was out in the garage of the house. And it-- there was an empty garage, un-- unattached garage, not like modern houses.

And I was standing there w-- in the garage with a stick in my hand. And I remember distinctly that if I hit the stick on the ground, I heard a tone. And if I took that stick, and I moved it like that, up and down, I could hear (SINGING) "Dum, Dum, Dum, Dum, Dum." And I could start playing tunes on that stick. And then, all of a sudden, my brain came in, and it said, "That's not making any sound. It's just going, 'Thud, Thud, Thud.'" And it actually scared the devil out of me. I remember running into my mother, in panic, thinking, "How did I do that? What am I hearing?

I can't hear anything." So that's the beginning of music in my life. A year later, my mother and father said, "You've gotta study and (LAUGH) at least studying piano."

QUESTION:

So how did you transition into working in electronic music?

HERBERT DEUTSCH:

Well, that was much later. And-- as-- as I-- it-- it really happened when I was a college student. I-- I was introduced to electronic music when I was first a college student, and it was brand new. The music I heard was from the Columbia Princeton laboratory, and it was music from Vladimir Ussachevsky.

And I listened to this stuff. My teacher gave me the recording and-- you know, to take home. He didn't give it to me but (LAUGH) he was my teacher, and he gave it to me to take home. I took that recording home, and I remember distinctly putting it on a record player, turning

all the lights out, and sitting in the darkness listening to this new sound of electronics (BACKGROUND VOICE) I-- you could tell that it was electronics. But in some strange way, it-- that was the beginning of it. And then, I fell in love with it (NOISE) right away.

QUESTION:

So can you tell us-- a little bit about your education background, where you went to college?

HERBERT DEUTSCH:

Sure. I went to-- Hofstra College, which is now Hofstra University. And-- I graduated from there (NOISE) (SIGH) in-- 1956-- (LAUGH) a while ago. That's where I went to college. I was a music major. I very quickly decided that I would love to be a teacher because many of the teachers that I knew didn't teach the way I thought they should be teaching.

It-- it doesn't mean that they were bad. But I thought that I could do a different job, a more personal job of teaching. So I really, at that

point, made the decision to get an education degree. And I changed my degree from a B.A. to a Bachelor of Science in Music (LAUGH) Education.

And then, continued at-- the Manhattan School of Music, which is c-- was one of the major conservatories in New York City. And I got another Bachelors for there and a Masters and then, actually went to N.Y.U. to work on my doctorate, which I move completed because I finished all the course work, but I had already written a book on (LAUGH) electronic music. And I just didn't wanna write a Ph.D.

QUESTION:

Can you talk a little bit about-- teaching electronic music in school? Have you ever taught electronic music-- I know y-- that you teach-- you know, I guess, not analog music, but piano-- I-- for-- for-- say-- compare it to-- against-- electronic music.

HERBERT DEUTSCH:

Well-- when you think about teaching electronic

music in school, I think it's the concept of what can be done electronically, that is you can reach s-- I'm talking now as a teacher, not-- specifically, if I were-- when I'm teaching students, what I like about it is that you can reach students right away with new sound and with new relationships in sound.

And then, as you move further-- in the old days of electronic music, we were doing it on tape recorders. But now, it is all on computers. So-- you can move further by having students write a basic idea, and then repeat that idea. And you can talk to them about how form develops and how music extends. And that it all can be done absolutely beautifully using electronics.

QUESTION:

So what types of things inspire you to make music?

HERBERT DEUTSCH:

The things that inspire me to make music are-- that's an interesting thought. What inspires you

to make music? The first thing is I love music. It is simply in my soul. And to make my own music is to obviously express myself, but it's also-- when-- when you-- sit at the piano and you play Beethoven, you-- you are playing music on the instrument.

But when you sit at the piano and just start to improvise, what happens is that-- is that you're suddenly playing yourself. And so the-- that-- those are the things that inspire you to-- to make music. What inspired me to make music-- occasionally, it's because someone has asked me if I would write something, you know, specific and-- it-- would I write a piece for-- two clarinets or something like that.

But on the other hand, when I was in college, I had two-- very good friends who were two clarinetists. And for them, I wrote a piece on two clarinets. I-- I wrote them because they were my friends. And I simply felt, "This is my

way of saying I like you."

QUESTION:

Okay-- so can you describe how you first met Bob Moog?

QUESTION:

I first met Bob Moog in (NOISE) the-- 1963. But I would have to go back a little bit earlier than that, a little bit earlier in that year-- to the fact that-- actually was later in '62, when-- a student of mine-- I was teaching trumpet and piano at the time.

And one of the parents of one of my students showed me an article that was written by someone named Bob Moog on how to build a theremin. (LAUGH) Now, I thought-- I knew what a theremin was, so I thought, "Well, that would be interesting, to build a theremin."

And so (LAUGH) I read this magazine, and then realized that I can't do this without the help. And I-- at the end of the magazine, it said,

"Well, I sell a theremin kit, and it's only $49.50" So I contacted that person, who was actually Bob Moog's wife. And-- on the telephone, I asked for "Bob Moog," which, (LAUGH) of course, is the mistake that everyone makes. And she immediately corrected me. She didn't even care what I was buying. She (LAUGH) had to make sure I was saying the name right.

And (NOISE) it wasn't until December of 1963 that I actually met Bob. Now, the way I met him was I had already started college. And I had already started my first full-time teaching year. In fact, it was-- already into (NOISE) the second-- my second full-time teaching year.

And I d-- I wanted to know what was going on in music education through the state of New York. So I went to a New York state All-state program, where those students from the entire state are in bands and orchestras and (NOISE) (BACKGROUND VOICE) been selected.

And they have people selling products-- in a little room there. And-- when I was there, I walked into this little room. And I saw a man standing with a lot of theremins and a lot of tubas in one room. (LAUGH) There was only one man there.

And so I didn't know who he was. That's when I first met him. He said, "I'm Bob Moog." I said, "Oh, you're the person who designed this theremin that I own." And so, he said, "Oh, yes." And we started then, right away, talking about the idea of what electronic music was.

QUESTION:

Okay, so the--

(OFF-MIC CONVERSATION)

QUESTION:

Okay, so I'm just gonna ask you again. What types of things inspire you to make music?

HERBERT DEUTSCH:

Well, that's an interesting question. And it's

not an in-- the idea of what makes you inspired to make music is an interesting thought because in the basic sense, I make music because music gives me absolute pleasure, and I love music of all kinds. I just love the idea of music.

I'm inspired to make music for a lot of different reasons. Sometimes, it's because someone asks me to write something. I've composed and made up music really since I was about five years old because I liked to do my own thing when there was a possibility of it.

The-- the thing that inspires you to make music is because-- well, when-- when you play-- say-- I'm a pianist. And-- I was a pianist a little bit (LAUGH) always played it. And I played Beethoven, and I-- I like Beethoven. I had an experience with my best teacher.

I was only about 11 years old, and I was playing one of the easier Beethoven sonatas or sonatinas.

And my teacher stopped me, and she said, "What are you doing?" And I wasn't sure what she was talking about. But then I realized that what I was doing was I was changing Beethoven because I thought it would've been very cool if it went this way.

And she said, "You can't do that." But that's the thing of what inspires you to make music is the inner feeling to do it. And then, of course, you make music because it's a beautiful way to make friendships, to secure friendships. When I was in college-- I wrote a piece for two clarinets which still gets performed.

And-- and-- I wrote it for two very good friends of mine from college who were clarinet players. And-- it-- I've written music for many different reasons. But the inspiration primarily is personal satisfaction because whatever reason I write music, it-- it-- although it's a battle sometimes, it-- always rewards me. (NOISE)

QUESTION:

I like that story. (LAUGH) You didn't tell that the first time. I liked that.

HERBERT DEUTSCH:

Not quite the same story. (LAUGHTER)

QUESTION:

It's good. So could you-- describe, once again-- how you first met Bob Moog.

(OFF-MIC CONVERSATION)

QUESTION:

And so-- how did you collaborate with Bob Moog? I know you had a very strong hand in the, sort of-- building of the first prototype. So-- so how did you collaborate with Bob Moog?

HERBERT DEUTSCH:

Well, in that meeting, in 1963-- it was in December of 1963. And it-- the meeting ended with Bob and I talking about electronic music. Now, at that time, electronic music was (NOISE) very sophisticated and really done only by experimental composers and-- people who were really, sort of, out there.

And Bob was not familiar with electronic music. But he obviously was very familiar with electronics. (LAUGH) And-- and-- and he loved the theremin and-- and loved the design of it. He loved what it was and loved how it sounded. And we talked and talked about-- the idea of a synthesizer at that meeting in December.

With-- and within about three hours, we just talked. Nobody came in, and if they did, he wasn't trying to sell anything. He was just talking to me. And-- and we did nothing but talk. And I-- I told him the I was working on a concert that I was doing in January of '64-- down in New York, in Greenwich Village. And-- a lot of my electronic music would be on it. The-- the thought that we had was the word synthesizer had already been used. And it had been used by the R.C.A.-- it wasn't really-- their-- what they built was the R.C.A. Mark 2 Synthesizer.

It was not a small musical instrument. It was an entire room full of different pieces of equipment that were (NOISE) connected together through a kind of a keyboard entry, not-- not a piano keyboard, but a computer keyboard-- a typewriter keyboard emp-- entry. But we did talk about building a s-- synthesizer, "Could this be done?"

That was the first meeting we had in 1963. So that was the beginning. And-- and then, he did go to the concert-- in January of '64. And-- after that concert, we went out together and talked more-- more specifically about, "Let's get together and really build a synthesizer, a new musical instrument."

QUESTION:

So obviously Bob Moog had a very strong background in electrical engineering, and you had a lot of experience as-- as a musician and a composer. Can you talk a little bit-- if there are any stories around how each of you might have (NOISE) contributed your-- your various skills

towards that project?

HERBERT DEUTSCH:

Bob Moog had a tremendous background in electrical engineering. And he-- he loved to design. He loved to design things. He liked music. And he had played piano when he was very young. So he-- he was interested in the idea of applying his love of electronics to music.

I loved music. And I loved machines. (LAUGH) I have always loved the idea of how things are put together. And, you know, in-- in-- in my mind, all of that love came about primarily because I simply love cars. And I used to work on cars all the time, and I developed the love for taking things apart and putting them together and constructing things. (NOISE)

And that's tied in with the idea that I always wanted to be a composer because-- (LAUGH) you know, that's what you do. And so the relationship that Bob and I had right from the

beginning, right from the talking before we even got together to work, was that he knew how to make it work. What is it that you need to make work? So in a sense, that's about it.

QUESTION:

Great. Are there any instances where you really had to convince Bob of something? I'm-- I'm-- I know that there's a great story about adding the keyboard onto the Moog. And I-- I'd like to just hear you tell the-- a story like that yourself.

HERBERT DEUTSCH:

There were a few times when I did suggest ideas to Bob, musical ideas, things that would help the mu-- the instrument do things that were more musical. When-- when we started to work on the prototype instrument, before it was even considered a prototype. It was just-- a bare bunch of-- you know, what are those electronic devices? What are they used-- what are they called-- when you have-- resistance and capacitors and all that kind of stuff on them?

(LAUGH)

Something boards. But-- bread boards. (LAUGH) That was the word I was looking for. Bob did have a keyboard right from the beginning. And-- but the idea of the keyboard was simply, you know, "Why don't you use this?" And he bought it-- used. It was an organ keyboard. It had no electronics. It was just a keyboard. Nothing else.

And what he had designed at that time was a basic oscillator that produces a waveform. And with that waveform, I could play on the keyboard. But we didn't think of the instrument we were developing right away. The biggest decision that I think that I made had to do with-- the idea of musical-- in-- not interpretation, but-- dynamics, attack, decay, the articulation of music.

That Bob didn't know anything about. I mean, he knew it but never thought of it. And-- and I

said, "Well, you know, Bob, when you play the piano and you press a key down, what happens is the hammer jumps ahead and it hits a string. And the harder you press the key, the harder it hits the string."

"And then, it-- if you keep the key down, the string continues to vibrate and slowly dies away. When you lift your finger off, it stops. When-- I'm a trumpet player. And I did the same thing, you know. When I pick up the horn, and I go, "Ta or to," I give an attack to the sound because I'm letting the air in a certain way.

That's the articulation of musical instruments, and you're gonna have to work on something that'll do that. And that was in maybe the fourth day of our working together in the cellar of Bob's little shop. And at that time, he said, "Okay, I know how to do it," and said to me, "D-- do me a favor. Go cross the street to the hardware store and buy a push button for-- like a

doorbell button." (LAUGH) You know, "Just like a doorbell button. That's all." And I say, "Okay." And I had no idea what he was thinking of. And I went over, and I-- I spent 35 cents. I still remember that, for the doorbell button. And I got back, and he was writing things down on a yellow piece of paper. (NOISE)

And within a half an hour or an hour at the most, he had set up the idea that if I press a key down on this little keyboard, and it would allow the sound, you know, from an oscillator to go-- to play. Like, if I pressed a C, it would play a C. You could-- he said, "When you do that, press the doorbell button at the same time."

And he had wired the doorbell button up, so that it gave an attack to the note. And he put a potentiometer on that, so that you could control the attack-- and make it a fast attack or a slow attack. And he did the same thing with the decay. And so that was the beginning of probably

the most important singular part of the original analog synthesizer.

QUESTION:

So did you have any funding for this project? Can you talk about funding sources? (LAUGHTER)

HERBERT DEUTSCH:

This is very interesting. Did I have any funding for this project? I don't think that Bob had any funding for the project. And since I was teaching at a university-- well, at that time, it was still called a college. (LAUGH) It hadn't gotten to university status.

But the story goes along with it. It was a pretty small college. But the chairman of the music department was the same guy who had introduced me to the Columbia Studio electronic stuff. And he loved the fact that I was taking up on that.

And so, he said, "I'm gonna write. And let's write to the u-- to the university and see if

they'll come up with a-- a fund, a fee. And so, he passed it to the university, and the university came back and approved it. And they gave me $200. And so that was the funding (NOISE) behind the design and building of the first Moog concept.

(OFF-MIC CONVERSATION)

(BREAK IN TAPE)

QUESTION:

Do you have any, sort of, memories of what Bob Moog's workshop looked like? And can you describe it?

HERBERT DEUTSCH:

Bob Moog did have a-- a workshop. It was-- when I first met him, he was still doing things in his house. But by the summer, he had already rented a small storefront in Trumansburg, New York. Now, Trumansburg is-- outside of Ithaca-- maybe 25 miles or so.

He had rented a little shop, and he was making a living not only by selling a few theremin kits

but that-- 'cause he never have really made a living by doing that. But he was selling a few theremin kits. But he also got together with-- a company in New York who needed very cheap amplifiers to sell to guitar players. (LAUGH)

And Bob was d-- designing and manufacturing these little guitar players. So he had a shop. And at the time, I believe he had four women working for him-- who were doing the assembly of the parts and one man-- who did mostly the woodwork.

He-- he cut the-- and he was outside in the back of this little store. It was-- it was originally just a little store, It had a long table. And when we started working, Bob said, "We're gonna work in my studio, which is in the cellar." (LAUGH) So went downstairs, and downstairs, in the cellar of this little shop, there was a table and two tape recorders and the little keyboard and his basic amplifier-- his basic oscillators. And he said, "Okay, where do we go from here?"

(OFF-MIC CONVERSATION)

(BREAK IN TAPE)

HERBERT DEUTSCH:

So he was making these amplifiers-- to sell to-- a-- a shop in New York City-- so that they had inexpensive amplifiers for the rising new numbers of guitar players that were around in the 1960s.

(OFF-MIC CONVERSATION)

(BREAK IN TAPE)

QUESTION:

--your reaction when you first played the Moog synthesizer for the first time.

HERBERT DEUTSCH:

The person's reaction to playing a synthesizer-- and whether-- I would-- I-- I actually shouldn't be able to talk about the Moog because it was brand new. But the reaction to playing a synthesizer, especially if you have been a piano player all your life-- no, I'm not-- as I said, I'm not really a great pianist, but I always played the piano, so my fingers think for me.

And what happens is that suddenly, you play a note. And it is a completely different sound. And that different sound makes your mind move right away into, "Where can I go with that?" And that's the most exciting piece of what playing a synthesizer was right from the beginning and-- as-- I think is still true to this day that when you-- when you sit at the keyboard and you start playing with these new sounds, you don't intellectually think about it. You musically think about it, and it's back to that idea of, "Why do you create music?"

QUESTION:

So it's my understanding that-- Jazz Images-- A Works-- A Worksong and Blues and-- oh, my gosh. What am I forgetting? Jazz Images. (LAUGH) So can you talk a little bit about-- composing Jazz Images on the 1964 Moog prototype?

HERBERT DEUTSCH:

Well, when-- when-- Bob had completed the operation of the prototype, it was a couple of months or so after we had worked out the basic

ideas. It was closer to September of 1964. And by that time, the prototype-- you could actually play on it.

And Bob had sent me-- he had sent me a recording (LAUGH) in the mail-- a seven-inch tape recording in the mail. That's 1964, you know. (LAUGH) And I remember playing that recording, listening to Bob talk about what he had done with our-- basic ideas. And he wasn't sure whether this was going to be-- an instrument that was gonna do anything in the world. He just hoped it would and talked about it. And he said, "Well, I think it, you know-- I-- I'd like to hear how it goes in the hands of somebody who knows, basically, what to do.

And-- and he closed up that little saying with, "Why don't you try writing a little ditty for this?" Those were his terms. (LAUGH) And my ides of a little ditty immediately became something based on what was going on in jazz in

the 1960s because by that time, jazz had already developed out of (BACKGROUND VOICE) the new jazz format, which was called Bee Bop, and that goes back to the '40s.

But it had developed and in about 20 years, there were people exploring free jazz and jazz with a lot more improvisation and a lot more color. And th-- I loved it. And as soon as-- that was-- to me, that would be the first thing to work on. So-- what I did was I put together two styles of jazz, the work song and that idea of the worksong is basic to-- it was very basic to Black music at that time, Black American music.

The idea of the work song-- it's-- and-- and a lot of jazz musicians who are doing that feeling. And blue's which, of course, has been in Jazz right from the beginning. So that's what I wanted to do. It-- I wanted to write a piece that was traditional in a sense but new jazz in another sense and new music in another sense,

very often not tonal, very often sound-oriented, and definitely using the sounds of this new prototype instrument.

QUESTION:

How was the Moog first introduced to the public? Can you talk about the type of-- event that it appeared at? And-- I understand that it made appearances at-- at conferences as a demonstration model.

HERBERT DEUTSCH:

Yeah. The-- Moog's introduction to the public is something that I don't know a great deal about because the first real introduction (BACKGROUND VOICE) of what we had done in the way of a basic kind focus complete prototype, which was very much what is here at the Henry Ford museum now w-- and was brought to the Audio Engineering Society's New York show.

And at that time, audio people, sound people, musicians to some degree, but mostly audio people (LAUGH) came in and saw this new instrument. And

it was the place where, within a year-- several other designers were showing their own instruments, which were very much, in many ways, like the Moog.

QUESTION:

In-- was there a first public event using the 1964 prototype? Was it the Town Hall (THROAT CLEAR)--

HERBERT DEUTSCH:

There-- now-- there was-- there really was not a public event that used the prototype instrument. The idea of the prototype was very much (BACKGROUND VOICE) what Bob Moog, who was an engineer and b-- and-- and-- thinking as an engineer and a technologist, used the prototype to help him explore and develop more complex modular instruments.

And so within a year, in 1965, that summer, we invited compo-- composers from everywhere in the country who would like to come and learn about this new synthesizer. And that was in the summer

of 1965. Only a dozen people showed up, but it-- it enabled us to really explore making music.

And the concert that I did in-- September of 1965 was at Town Hall in New York City, a major concert hall in New York City. And it-- the instrument that I used (BACKGROUND VOICE) was a-- a-- a basic modular instrument that was sort of put together pretty much for that concert. But it was not the actual prototype.

QUESTION:

Okay.

(OFF-MIC CONVERSATION)

(BREAK IN TAPE)

QUESTION:

Okay, so-- I was wondering if you could talk a little bit about the difference in scale, say, between (NOISE) our 1964 prototype and something that is very much a wall of sound, like Keith Emerson's (NOISE) synthesizer.

HERBERT DEUTSCH:

Well, the growth of the modular synthesizer,

especially the (NOISE) modular analog synthesizer--

(OFF-MIC CONVERSATION)

HERBERT DEUTSCH:

The growth of the synthesizer, especially the analog synthesizer and the modular idea, which is, by the way, just to make it clear-- the modular idea means that you go from one module, which is a sound producer, to another module, which could be a filter, and another module, which could be an amplifier, and you wire them all together.

That's how the analog instruments were-- worked right away, right from the very beginning. The-- the growth of those instruments was really based on the number of different variations you can get with interconnecting modules. The instrument that Bob designed based on our prototype became pretty fixed for about five years or so. And he continued to make those. It was not a very huge product, but he continued to make them and sell

'em and composers bought them. And choreographers occasionally bought them. And the-- th-- what he had designed was a nice working solo instrument.

So that if you understood it, you could play it as a solo instrument, even though it meant, while you were playing, you'd grab a wire, and plug it somewhere else or you grab a wire and plug it somewhere else or you would make changes with your hands while you were playing, it still became a nice solution instrument.

And-- you mentioned the Keith Emerson instrument because that instrument, believe it or not, was first built not for Keith Emerson, but it was actually (LAUGH) built for me in July of 1969. And th-- it was not what we see-- it-- when we see the Keith Emerson pictures.

But there are-- there are a couple of pictures of me playing it, and it was at a Museum of Modern

Art concert in New York City. And I had a quartet. And I was the-- like, the lead player in the quartet. And that instrument was successful and-- very soon after that, probably only-- within a year definitely, Keith Emerson contacted Moog and wanted to get a Moog synthesizer.

And the story there is an interesting one in that Keith Emerson contacted the person who was, at that time, running sale for Moog-- sales for Moog and said, "I would love to get a new synthesizer." And Keith had just recorded *Lucky Man*, which was extremely successful and popular with his group. I don't remember the name of the group, but it was before Emerson, Lake, and Palmer. But it was just before it because he recorded it again with Emerson, (LAUGH) Lake, and Palmer. But-- but he wanted this synthesizer, and he said to Moog, "That's a great instrument. Will you give me one because I have a piece that's now 15th, I believe, in-- in the--

certainly in the British popularity?"

And the-- at that time, the guy who was running sales at Moog said, "Oh, no. We can't give any instruments away. (LAUGH) It wouldn't be worth our time to give an instrument, Keith Emerson." And he-- they-- he bought that prototype. And then, he worked with Bob directly, saying, "Let's add this. How can you add this? What would happen if we could do this?" And they kept working back and forth with-- you know, with engineers who understood the circuitry and what could be done with it and ended up-- after years, with a gigantic Keith Emerson synthesizer.

QUESTION:

Can you talk really briefly (COUGH) about how-- the difference in scale-- or-- or just the cost, sort of, output that was needed, actually-- to-- to purchase-- a Moog synthesizer? I understand they weren't very cheap.

HERBERT DEUTSCH:

No, they were-- the synthesizers, at the

beginning, were not very cheap. It was an expensive project to build a modular instrument at that time. And I will tell you, though, that I had nothing to do with the sale of instruments. My relationship with Moog was really at the beginning more than anything else and continued for-- a number of years.

But-- and then I went back to Moog later on. But-- but continued for a number of years. I don't rec-- know the exact cost of the different models of modular instruments. He did have a couple of models. But they-- all they were was the same idea expanded and made bigger, so that you could do more things with it. And then, one of the big exten-- expansions was a sequencer, which would allow it play a whole series of notes when-- when you started-- one note, and it would play a whole series.

QUESTION:

So you mentioned in your-- your last response that you did go back to the-- the Moog factory

later. Can you talk a little bit about any other, sort of, work that did for Bob after your, sort of, initial collaboration?

HERBERT DEUTSCH:

The-- the time that I went back to work with the company was (THROAT CLEAR) really in the 1970's--

(OFF-MIC CONVERSATION)

HERBERT DEUTSCH:

The time that I went back to work with Bob was really in the 1970's. The idea of using the synthesizer earlier than that as an electronic instrument for schools was something that I really tried 'cause hard to get Bob to follow through with.

But selling was not Bob's strength. And he didn't really see that that would be a value, and we only built a few of them-- four, actually. And-- only one of them went into the hands of a teacher. And actually, I don't know if that instrument is still in the hands of the teacher.

I had th-- one myself which I then-- sold much later on. But-- the-- (SIGH) I need an-- there has to be an edit here.

(OFF-MIC CONVERSATION)

(BREAK IN TAPE)

QUESTION:

So were-- were you ever-- did you work as director of-- of sales for the company--

HERBERT DEUTSCH:

Yeah-- okay. That-- that's all right. I just when get back into that--

(OFF-MIC CONVERSATION)

HERBERT DEUTSCH:

When-- in the 1970's, synthesizers began to be seen in the music industry. I was actually called to be a N.A.M.M. clinician. N.A.M.M. is the National Association of Music Merchants. That is the big trade show every year in-- in the music industry.

And I was hired to be a N.A.M.M. clinician for a new company called Roland-- run by a wonderful

Japanese designer, Itaro Kakehashi. And I went to the N.A.M.M. show at that time as a representative of Roland Synthesizers. And I was asked right away by someone from Moog, "Would I be interested in really working for Moog and coming back to work with them?"

And I was very interested and they hired me on a couple of days a week basis for a couple of years in about 1974-75. And then, the company that bought Moog, (BACKGROUND VOICE) at that time, was a large corporation called the Norland Corporation. And at that time, Norland decided that they could control the music world by buying every major music company there was. And they bought Gibson Guitars, Moog Synthesizers, Story and Clark Pianos, Lowrey Organs, old band instruments. They bought into the whole music industry without knowing the industry. It was just a big gamble of money.

And they hired me. (LAUGH) They wanted me to

come in and really work full-time for Moog. And I d-- I was, at that time, the Chairman of the Music Department at Hofstra (LAUGH) University, where I had gone to school. And I got a phone call in the morning from Chicago. And it was someone from Norland. And he said, "Can you meet me for dinner tonight?" And I said, "Well, I'm in Long Island, and I'm the Chair of the Music Department. And I have classes." He said, "We'll make it worth your while. And I literally changed my schedule, took a plane, flew into Chicago, and met them for dinner at the airport.

And they offered me a job working full-time at Moog as the marketing manager and coming in full-time. I stayed with Moog full-time. I was given a three-- well, three or four-- three year leave from my university job without losing my rank or position. And so I went to work completely with Moog and-- in-- in the administration world.

QUESTION:

Let's see. Are there any commercially available

Moog models that are most like our prototype here at the museum? I don't know if the mini-Moog model D is--

HERBERT DEUTSCH:

Yeah--

QUESTION:

--the closest or if there's something better.

HERBERT DEUTSCH:

There are-- there are many m-- modular synthesizers that are similar in design and in concept to the original prototype Moog. And all of the modular instruments that Moog made and continue to make-- right up until they were no longer the original company.

The original company lasted until, I believe, 1983. And it was the R.A. Moog Corporation. And then, the-- they changed-- completely changed ownership, and th-- it is now-- a different company but based on the same thing with Bob Moog's philosophy and background and everything else.

The-- the mini Moog instrument was the most important instrument that the R.A. Moog company produced. The mini Moog, while it is not modular, the connections from one part to another are all done with wiring inside, and you just control it with switches and knobs.

And while-- at first, it looked confusing to people and they didn't sell for the first year, once people realized what it was, it suddenly became the most important instrument. And many, many thousands of them were sold through the rock 'n' roll world.

QUESTION:

Let's see. Okay, this is the last question before we start our-- walk around unless there are any other fill-ins that you think we need, Terry? No? Okay. All right. So when you were working-- (THROAT CLEAR) with Bob at first-- on the-- the prototype-- did you think it was a complete shot in the dark? Did you think it

would work? Or did you think it would be wildly successful?

HERBERT DEUTSCH:

When Bob and I were doing the c-- first prototype-- when we were doing the first concept, before it even was developed as the prototype which is now here, I thought that it was going to be a very successful musical instrument for composers who wanted to explore new sound.

The idea of putting a keyboard on the finished product I also championed with Bob. And the reason for that was that I knew that more people would use it. And again, at that time, I was still probably thinking more like a jazz musician.

I was never too much a rock 'n' roll musician. I was never really into that world, especially at that time. And I was listening to jazz and, you know, classical-- new classical music-- and especially new (LAUGH) music. And I thought this

was-- really we had done it, that we had made an instrument that was going to work in that world. And Bob did too. And neither Bob nor I really thought of it as a popular instrument that was gonna sell all over the place at the time.

QUESTION:

Now, we are here today. (LAUGHTER)

HERBERT DEUTSCH:

Now, we are here today--

(OFF-MIC CONVERSATION)

(BREAK IN TAPE)

QUESTION:

And-- if you could just describe-- what was it like to see the Moog prototype after not seeing it for so many years?

HERBERT DEUTSCH:

When I walked in the door of this theater today, I saw the prototype for the first time in, what, 35 years. And (LAUGH) it was-- it was a thrill, (BACKGROUND VOICE) and it was very much--

(OFF-MIC CONVERSATION)

QUESTION:

So when you walked in today...

HERBERT DEUTSCH:

When I walked into the theater today and saw the Moog prototype sitting on the stage and I walked in the back and looked at it, the first reaction I had was akin to seeing something somehow from your life. Now, I won't say it was like seeing a child, but it was the same kind of reaction that-- that-- it was a child.

It was a child in my memory, you know-- in my musical memory. And it was-- it was v-- really-- very beautiful. I-- I-- I was happy when I was able to (NOISE) make the donation of that instrument 35 years ago. But I was absolutely super happy to see it today.

QUESTION:

Great. Okay.

(OFF-MIC CONVERSATION)

(BREAK IN TAPE)

(B-ROLL)

(BREAK IN TAPE)

HERBERT DEUTSCH:

Well, here we are. (LAUGH) After 35 years of not seeing this, it's an extreme pleasure to be looking at the actual first complete working prototype of the Moog synthesizer. The basic-- the basic controls on the very, very first instrument was this box and one keyboard.

But within only a few months, Bob realized that both keyboards were necessary because one of the keyboards was immediately designed to operate the envelope controls. So you would have a tacticate (PH), which we had talked about when we were first designing the instrument.

And-- a-- a push-button keyboard from-- (LAUGH) a push-button from a-- hardware store was not gonna do the trick. So what Bob did was he designed this upper keyboard with a-- a switch at each individual key. And any key that you press down (NOISE) would tell what note was played, but, at

the same time, it would turn on a control going to the amplifier.

And the exciting thing about this-- (LAUGH) again, what-- when-- when this instrument was completed, it was in-- still in 1964. And what was added over here was within only a couple of months of what was here. And what was added over here were things that Bob was already working on, one of them being the most important piece of an analog instrument.

And that is (NOISE) the voltage controlled filter, the whole concept of filtering sound. That is the sound-- that is the-- the particular color that everyone recognized as the sound of the music synthesizer. The-- and the way the f-- instrument worked and was immediately put in was voltage control. That was new. That was Bob's specific, significant-- in-- not an invention, but application. Bob didn't invent voltage control because he told me all about it. And he

said, "Oh, voltage control is there in automobile factories. Parts of cars are assembled along an assembly line, and sections of the work is being done automatically. And that's controlled by voltages."

And he explained that to me. I tried to understand it. But with the musical instrument, it was absolutely the most amazing and-- and important thing because now, when you played the instrument, there was a control voltage generated from the keyboard.

And it went into the module-- what he calls the general module. And the cur-- the control voltage from the keyboard told the module what note to play. When he built this instrument, he had already realized that to do what it wanted to do, it would have to be monophonic, only playing one note at a time because he wanted all of this stuff to work on every note. And so that was the-- that was the thing. The amplifiers are

basically voltage controlled, and the modules are basically-- they-- what-- what he calls generator modules are the oscillators. And they produced basically three different wave forms: a sawtooth wave, a triangular wave, and a pulse wave.

A sawtooth wave is a waveform that does this. It's shaped like this if you were looking at it in an oscilloscope. The triangular wave gives it a kind of smooth flute-like quality. The square wave gives it a more of a reed-like quality, like a clarinet.

And so these were the sounds that we immediately developed in the summer of 1964. And he got them put onto this within-- you know, another month of working by himself. The-- added the filter and the filter is a very specific invention of Bob Moog's, this particular filter.

And the interesting thing about it is, of course,

Bob didn't invent the idea of voltage control. He knew about it, but he never applied it to a musical instrument. But when he decided to decide-- develop the f-- filter, he made the filter something that could be controlled by the amount of voltage that comes into it.

And the color of that filter was unique, and he was able to patent it. And it was the only really patented item when the instrument became a famous instrument. And-- when-- back in the 1970s, when I went to work for the company as a marketing person, we came up with the idea that this is the Moog sound.

Nothing else will have that sound, truthfully, because no one else had patented that particular kind of a filter. Now, it-- on this instrument, now that I'm looking at it-- here-- kind of hidden away in here is the envelope generator that we talked about. And what it-- what it can do is-- it can change the attack time, the decay

time, and what is called the release time when you lift your finger off the keyboard. That was the envelope generator. The upper keyboard here had all of that attached, so that the envelope generator is attached to the upper keyboard.

The lower keyboard never-- he simply used the lower keyboard to control the pitches by itself without an envelope. So, in a sense, this prototype instrument is still not absolutely complete. The-- the way the-- the pitches work-- are-- is a system basically called well-tempered tuning.

And well-tempered tuning goes back to the days of the Baroque period. Well-tempered tuning means that every octave has 12 equal tones. And if the tones are all equal, then you can play music in any key, and it'll always sound good. Bach realized that, and he wrote a big series of beautiful pieces called *The Well-Tempered Clavier*, *The Well-Tempered Keyboard*.

And the i-- and what Bob did is he said, "Well, yes. We can make it well-tempered. Since we're using control voltage, the lowest note will be one volt. And an octave higher will generate two volts. And that voltage would go to the oscillator. Now, in order to make them twelve tones, if you opened up the early instruments, you would see there is a 1/12th of a volt resistor in between each one of those notes. And so in a very simple way, he created well-tempered tuning-- the-- the whole idea of voltage control and twelve-tone-- twelve-note tuning.

(LAUGH) It's-- (NOISE) it's so beautiful to put my hands on this instrument again at-- (LAUGH) I-- I had it-- I had it in my home for a while-- after Bob began to-- you know, sell some of the actually modular instruments. And he did give this to me.

And-- I had it in my home for a little while.

I'm not sure of how many years, not many. But maybe five years or so. And then, the university where I was teaching, Hofstra-- we decided that we would put in a real electronic music studio. And, of course, it was going to be a Moog studio, and it would have all the know-- the new Moog modular parts.

And so, I decided that I would put this instrument in that studio, but only if the president of the university knew its value as a prototype, important historical instrument. And he did. And so, it was put in my studio, (LAUGH) and we had already had-- a larger modular Moog.

And my students would occasionally use this, but most of the time, they wouldn't. And when I talked to them about it, I said, "Well, it'll do all of the basic things." They said, "No. It's too important." And that's what college students said that time. They said, "It's too important." And it was when I went to work for Moog in the

'70s-- in the end of the '70s, when I decided that this instrument should be in some real museum.

(OFF-MIC CONVERSATION)

HERBERT DEUTSCH:

In the 19--

(OFF-MIC CONVERSATION)

HERBERT DEUTSCH:

In the 1970s, this instrument was sitting at Hofstra University, and it was other really being used that much. And then, I was hired to work for the company-- for R.A. Moog Company. And my job was marketing director. And I wanted to have this instrument placed in some real museum.

And I will tell you that first of all, I thought it would be interesting to see if it could be sold at-- one of these places that sells, you know-- the sled from-- (LAUGH) the movies-- the-- or, you know, some kinds of rare things from history. And I decided it wasn't gonna be. It-- they-- there was some interest in doing it.

Then, I called the Smithsonian, and they were not particularly interested. I thought that was a real shock. They were not particularly interested.

I was talking to the musicologist at my university, a music history professor, who happens also to be very interested in musical instruments. And he told me there was a guy at the Henry Ford Museum named Bob Eliason, and, "Why don't you give him a call because this guy is very interested in American musical instruments?"

And so , I contacted him, and he said he would be absolutely fascinated. This would be something really exciting for the Henry Ford Museum. And I did come out, and I believe it was-- I-- I always-- and it's-- I was-- in 1981, I don't recall specifically the date. And I don't have any paperwork that I could find on that.

But it was in 1981. He said, "Come out, and we will also let you play a concert." And it was on this very stage. So this instrument is back where it (LAUGH) was on the stage in 1981. And-- the-- the exciting thing about it is-- is-- it is in the Museum of American Manufactured products. To me, this is, you know-- this is the perfect thing.

(OFF-MIC CONVERSATION)

* * *END OF TRANSCRIPT* * *