



### Episode 802, Story 3: Theremin

Elyse Luray: Our last story looks at a Soviet era musician whose popular invention made just enough noise to keep his private life quiet. It's February 14th, 1928: Valentine's Day at Carnegie Hall. A star-studded audience gathers to hear Soviet inventor Leon Theremin play the curious instrument that bears his name. There are no strings, nor a keyboard. Theremin's hands never even touch the instrument. And the sound...is otherworldly. The theremin takes America by storm. The Radio Corporation of America even starts mass producing them, wanting to put a theremin in every home. But even RCA could never have predicted what impact this instrument – and its inventor – would have on America. Now, a collector from Santa Fe, New Mexico, thinks he may have discovered a rare theremin, handmade by the inventor himself.

Andy Baron: when I saw this, I was just blown away by the possibilities.

Elyse: I'm Elyse Luray, and I'm meeting Andy Baron to see—and hear—what he's got. Wow. This is strange. What is it?

Andy: Well, it's called a theremin. And it's an electronic musical instrument. It was invented by a Russian scientist named Leon Theremin.

Elyse: It kind of looks like a piece of furniture almost to me. How do you play something like this?

Andy: Well the interesting thing about this instrument is that it's played without touching it at all.

Elyse: He explains how the instrument works using electrical signals emitted through the antennas. When you disturb the signals with your hands, it creates sound.

Andy: This antenna controls your pitch. This antenna controls your volume.

Elyse: Can I play it?

Andy: Sure.



Elyse: Sounds like The Three Stooges. This is really hard to play.

Andy: Well, actually, what they say about it is it's the easiest instrument in the world to play, and the hardest one to play it really well.

Elyse: Where'd you get it?

Andy: I bought it from an online auction service about two years ago.

Elyse: Andy explains that most theremins were factory-made in the 30's and 40's by the Radio Corporation of America, RCA. But inside his, he found a curious label. Theremin Studio. 37 West 54th street, New York City. Theremin space controlled musical instrument. What do you make of that label?

Andy: Well, as I understand it the inventor, Theremin himself, built a few instruments and, the label to me says that this could be one of them.

Elyse: So what do you want to find out?

Andy: I'd love to know if this is one of the instruments that Leon Theremin built.

Elyse: Let me spend some time looking it over, I'll see what I can uncover, and I'll get back to you. First of all, I've never seen a theremin before. I do see some knobs on here that look period to me, probably around the 1930's. As for the tubes, I can tell they're period, but I can't give you a certain date. And down here I found a number. It says 235. So, that tells me it's either a serial number or a manufacturer's number. To me, it looks like it's factory made. but the label looks handmade. The paper does look old. It has foxing and browning to it, which is oxidation and wear that happens over the years. Up here on the top is Theremin Studio. That's a typestyle I place to the 1930s or early 40s. And the characters down here look like they were made from a typewriter that I would date to the same period. Do we have a Theremin built by the inventor himself? Leon Theremin was born in Russia in 1896, and he invented the theremin in 1920. This is interesting: Theremin even caught the attention of one of communism's founding fathers. Russian leader, Vladimir Lenin, loved the invention so much that in 1926 he sent Theremin on a highly publicized



international tour to promote Russian technology. The last stop on his tour was America in 1927. When Theremin's ship arrived in New York, he was already a star. Reporters and photographers mobbed the inventor. He gives dozens of sold out performances and captures newspaper headlines all over the country. Although only intending to stay in the U.S. for a few months, Theremin's success led him to settle in New York. In 1929, RCA paid him \$100,000 for the rights to mass produce the theremin. And comparing Andy's cabinet to an RCA, they look identical. In fact, they even have the serial number in the same spot. So does Andy really have a custom built theremin? Or is it just a stock RCA with a perplexing label? Albert Glinsky spent 13 years researching and writing his critically acclaimed biography of Leon Theremin. So, Albert, here's a photograph of the theremin that I'm investigating. And, the person who owns it, in New Mexico, believes that Leon Theremin may have made it. What do you think?

Albert: Theremin really only made I'd say probably less than a dozen hand theremins like that when he was in the U.S. so that would be pretty unique.

Elyse: He says it was the distinctive sound Theremin's instruments made that captivated his American audience.

Albert: People thought he was sort of conjuring up the music out of nowhere. There was some speculation even at that time that maybe electrical music would actually substitute for acoustic instruments in the future. And, just replace whole orchestras, and we would no longer have any need to play pianos or violins or anything.

Elyse: Albert tells me that's why RCA thought the theremin was going to be the next big thing. He says they promoted the theremin as the universal musical instrument—as easy to play as it is to walk—and promoted Theremin along with it. So, basically, he comes here to promote Russian technology but ends up like this celebrity.

Albert: Yeah, but he wasn't really just here to promote technology. That was on the surface of it and I think that's what the Soviets wanted everyone to believe. But it was really a Trojan horse situation where he was really being sent here to do industrial espionage as well.

Elyse: He was a spy?



Albert: Yeah, he really was.

Elyse: And how do we know that?

Albert: Well, in his later years he talked about it. He was very open about it.

Elyse: Albert interviewed the inventor in the early 90's, who told him about his time in the United States, and how the theremin helped his spying. Theremin's contracts with companies like RCA gave him access to private factories and plants where he could take notes and report back to his superiors.

Albert: He said, one way to get information out of people is to tell them what you're doing and then they kind of say, oh, well, you know, we're doing something like that, and they open up. And that was one of his tricks. So he talked about that.

Elyse: Theremin returned to the Soviet Union in 1938. The inventor told Albert how, ironically, his closeness with American business had led to his arrest under Stalin, and 8 years of imprisonment in a camp for scientists. Have you ever seen anything like this before?

Albert: I've never seen a label like that, but that certainly is his address, 37 West 54th street. But I'm really not sure what this would be doing inside an RCA theremin.

Elyse: Albert says he'll check his files to see what he can find. Meanwhile, he suggests I look at an original RCA theremin to compare to Andy's. He puts me in touch with Rob Schwimmer, an original member of the New York Theremin Society. He explains how theremins enjoyed a renaissance in the 1950's.

Rob: They had all the sci-fi movies, where all of a sudden the sound became synonymous with flying saucers and aliens and stuff like that.

Elyse: He also says the theremin found its way into 60's pop, used by artists like Led Zeppelin.



Rob: This one's maybe from 1959 it was made by a guy named Robert Moog.

Elyse: Moog, Rob tells me, invented the first commercial synthesizer—the instrument that hugely influenced music in the 1960s and 70s.

Rob: And all of a sudden here's this instrument that makes zillions of unheard sounds. The Doors used it and then Switched-On Bach came out, which was entirely synthesizer and, Moog Synthesizers wouldn't exist without the theremin. It revolutionized everything. Everything.

Elyse: So then there's really a direct link between Theremin's work and the birth of the electronic music?

Rob: Absolutely. All electronic music...this is kind of the source.

Elyse: Did Theremin know about how important his work became in this country?

Rob: Theremin disappeared and was in Russia for a long, long time. He had no idea of what was going on with his instrument.

Elyse: Can we take a look at the RCA?

Rob: Sure.

Elyse: Rob says there are very few early pre-war RCA theremins still around. But he's managed to locate one. Ah, now this looks like what I saw online. Can we take a look inside?

Rob: Sure.

Elyse: But that's where the similarities end. This is a photograph of Andy's theremin inside. The coils in Andy's are green, but in the RCA they're brown. It looks like the components parts of Andy's theremin didn't come from the RCA factory. Now, right here is an RCA label. In the exact same spot on Andy's is this Theremin label. If Andy's piece clearly wasn't made by RCA, could it have been made by Leon Theremin?



Rob: I've never seen the inside of a theremin that Theremin built. I don't know.

Elyse: I'm meeting Arthur Harrison, an electronics expert who builds and restores theremins.

Arthur: Hi, nice to meet you. Welcome

Elyse: Wow, it's gorgeous. We're at Caramoor, in Katonah, New York. Today the estate is a thriving music and arts center. Back in the 1930s, it was the summer home to Lucie Rosen, who promoted herself as a theremin virtuoso. Unaware of his spying activities, Rosen was Theremin's patron, and the proud owner of a theremin custom-made by the inventor himself.

Arthur: This is one of the custom built theremins that Lucy played.

Elyse: Cool. All right, so this is a picture of Andy's. And, I mean, automatically when I look at them they look completely different to me. The doors are different. The controls aren't on the top. Could we look inside?

Arthur: Sure.

Elyse: Okay, let's open it up. At first glance, the inside looks different from Andy's. But, I do see one interesting similarity: the green coil, which controls volume. Arthur says that in Theremin-built instruments the magnet wires inside the coil were frequently insulated with green silk, unlike the factory built machines.

Arthur: For instance on the production RCA theremin, the wire was brown.

Elyse: And he makes another discovery: the on-off light is not a stock RCA item either.

Arthur: There's a striking similarity in the pilot light assembly in Andy's theremin when compared to Lucy's theremin.

Elyse: So do you think it's possible that Theremin could have built Andy's instrument?



Arthur: It's possible most of the components are the correct vintage. But one of the things that I noticed is that when Theremin created a custom instrument, he used a custom cabinet. And Andy's theremin has a stock RCA cabinet. That's a little perplexing to me.

Elyse: It's perplexing to me, too, but then a phone call offers a ray of hope. Tomorrow? Okay great, see you then. Albert Glinsky's been hunting through his files, and has made a discovery that he wants to show me.

Albert: This is a letter, that clearly says on the top, Theremin Studio. And look how close it is to the label. You see, it's the same font. Same size.

Elyse: They're identical. I mean, to me it looks like someone just took a piece of letterhead, typed the information on it, cut it up and applied it to Andy's instrument.

Albert: Yeah. I think that is definitely possible.

Elyse: I ask Albert if that means Andy's instrument was built at Theremin's studio.

Albert: Well, I wasn't sure. But then I found something else which I'd like to show you here. You can clearly see that this is Theremin standing in the 54th street studio. And, this is an RCA theremin. You do recognize...

Elyse: I totally do. I do. I do, I do. I'm excited. You can tell here from the legs and the siding.

Albert: Yes, absolutely. But...

Elyse: I think Andy will want to see this. Okay. First of all, Andy, let me just say that this was a lot of fun. I mean, I had no idea what a theremin was. I obviously had no idea how to play it. And, it was just a blast. I explain the turn our story had taken...how Leon Theremin had used his connections to corporations such as RCA to spy for the Soviet Union.

Andy: Oh.



Elyse: But did Andy have an RCA machines, or a much more rare custom-made theremin? We discovered that your electronic components date to about the 1930's. Which is the same time that Theremin was making customized theremins for people like Lucy Rosen. It was Albert Glinsky who had made a key discovery for us. The photograph showed Theremin in his studio. He's standing over an instrument with an RCA cabinet.

Albert: You can see that he's added these little dials on the top there. And so it's definitely a one-off, hotrodged RCA. It's not a standard RCA.

Elyse: Albert explains that Theremin was always inventing and tinkering in his studio.

Albert: To tinker with things, he was never satisfied with the things that he did. He always wanted to improve on them

Elyse: So it's possible that Andy's Theremin is an old RCA cabinet with new electronics added by Theremin.

Albert: Well, I can't say for sure, but I think it's very possible, yes.

Elyse: I show Andy the letterhead that Albert Glinsky had uncovered. And you can see that it's identical to your label.

Andy: There it is. It's the same letterhead.

Elyse: So did Leon Theremin actually build this instrument? It's hard to prove. But given all the evidence, it's very likely that it came out of the Theremin Studio.

Andy: I've been working on old electronics long enough to have a sense that it had the right age. What I didn't have was, you know, essentially, this document and this photograph. And that... ties it to a place and time. I'm very happy. I don't think I'll feel the same way again when I play it next time.





Elyse: In 1991, 53 years after he left New York, Theremin made his first trip back to the U.S. at Stanford University. Theremin was honored, along with Robert Moog, as one of history's most significant pioneers in the world of electronic music.