

**You're listening to Imaginary Worlds, a show about how we create them and why we suspend our disbelief. I'm Eric Molinsky.**

**The 1951 film The Day the Earth Stood Still has a lot of iconic moments – like the scene where the flying saucer lands in Washington DC. The robot Gort walks down the ramp and disintegrate the military's weapons with his eye beam.**

**And there's the famous speech by the alien character Klaatu, where he says that we're playing with technology beyond our control and putting the universe in danger.**

*CLIP: Your choice is simple: join us and live in peace. Or pursue your present course and face obliteration.*

**It's classic Cold War sci-fi. But what really makes the movie "of its time" is the use of the Theremin -- that weird vibrating sound in the music.**

**The Theremin was the first electronic instrument. Even today it looks like a prop from a sci-fi movie. The main base is a rectangular box with two metal poles. One pole is sticking straight up, like an antenna – it actually is an antenna. The other pole juts to the side and curves around like a hook.**

**Musicians move their fingers in the space between the poles. It looks like they're plucking invisible strings but they're manipulating the energy inside an electromagnetic field. It's mesmerizing to watch anyone play it. And as I delved deeper into the history of the instrument, I learned there is an unusual connection between playing the Theremin and using your imagination.**

**The Theremin is most often associated with science fiction and horror, but it was originally used in classical settings. Back in the 1930s, the most famous Theremin player in U.S. was a musician named Clara Rockmore. This is what she sounded like playing Tchaikovsky:**

*CLARA ROCKMORE PLAYING TCHAIKOVSKY*

**In the 1940s, the Theremin first started showing up in two Hollywood films -- The Lost Weekend, which was about alcoholism, and the Hitchcock film Spellbound, which was about psychiatry. Hitchcock used the Theremin in a dream sequence that was designed by Salvador Dali.**

*CLIP: And then I saw the proprietor and the man in the mask, he was hiding behind a small chimney with a wheel in his hand. I saw him drop the wheel on the roof.*

**Albert Glinsky wrote about a book about the Theremin, and she says the studios wanted Clara Rockmore – the famous classical Thereminist -- to play on some of these soundtracks, but:**

ALBERT: Clara Rockmore was not interested in doing Hollywood scores because as she always put it, she wasn't interested in the spooky, spooky, you know, that wasn't her idea of what it should be used for. She thought of it as a serious musical instrument. And she felt that using it for effect was making a kind of a mockery out of it and using it for its, uh, lowest possible traits.

**She was right to some extent. The movie that made the Theremin synonymous with sci-fi was The Day the Earth Stood Still. And that was not a B-movie. The soundtrack to that film was written by the legendary composer, Bernard Hermann.**

**But the Theremin got so overused in sci-fi that by 1956 — only 5 years after The Day the Earth Stood Still – the composers Louis and Bebe Barron were asked by the studio play a Theremin on the soundtrack to the classic sci-fi film Forbidden Planet, and they refused. They said The Theremin had already become a cliché.**

**The main manufacturer of Theremins is a company called Moog, which the same company that perfected the synthesizer. But a synthesizer is easy to play. The Theremin takes years of training.**

**That's why in the late '50s, a musician named Paul Tanner invented a knock-off version, an electro-Theremin, which is built like a keyboard. And that got used even more – from pop songs to TV shows like Lost in Space, Dark Shadows and My Favorite Martian.**

ALBERT: My Favorite Martian when, um, Ray Walston, when his antennas would sprout from his head, you would hear Paul Tanner's Electro Theremin.

CLIP: MY FAVORITE MARTIAN

**The original theme songs to Doctor Who and Star Trek used sounds that were similar to electro-Theremins – to the point where people often mistakenly think they were Theremins.**

**Of course, Danny Elfman used a Theremin in the soundtrack to the Tim Burton movie, Mars Attacks.**

CLIP: MARS ATTACKS

**And to cement the Theremin's pop culture status -- The Simpsons has used a real Theremin or a synthesized Theremin in most of their Treehouse of Horror episodes.**

CLIP: SIMPSONS

**To this day, professional Thereminists are still working hard to justify the instrument as something more than a spooky sound effect.**

**For a long time, there were only a handful of musicians who played real Theremins – where you use your hands to manipulate the sound inside an invisible electromagnetic field. But in the last 20 years, the Theremin has made a comeback, and it's found a new home in experimental pop music. Miles Brown is a musician based in Melbourne.**

MILES: Over here in Australia there are no other Theremin players, unless I teach them and people give up, it's too hard, but now we're all connected by the internet and everyone's getting better and everyone's competing. And suddenly we have a normal improvement rate like you would with any other instrument.

**Miles says learning the Theremin was incredibly challenging. He flew to Oxford to work with a master Thereminist named Lydia Kavina. While he was there, he kept thinking about the fact that the Harry Potter movies were filmed at Oxford.**

MILES: You know, when you learn how to play a Theremin properly, it is so similar to what you see in those movies about someone learning to do magic with a wand. Like it's literally, if you move your hand the wrong way, it doesn't work and that's still my fascination with the Theremin it's magic. You can understand how it works, but it is that one of those things in life where if I'm, I mean, one of the things Lydia said to me when I went to play for the first time was like, yeah, you're okay, but you need to stop drinking. You need to stop partying. You basically, I can hear that you're not fit, and I can hear you can't concentrate.

***That's so wild that the Theremin reveals yourself so blatantly, so nakedly in a weird way.***

MILES: Yeah. And when I started teaching people, it became quite obvious as well. Like you can get people to play the Theremin really well, if you teach them how to think about it. And a lot of it is in your head, like people can be playing something on the Theremin and not getting it right. And then you can say to them, okay, this time, don't worry about what you're doing with your hands. Just pretend that you can do it.

**Today, most Thereminists follow the lead of Clara Rockmore in trying to show that the instrument should be taken seriously in a classical setting – which I completely understand. But personally, I love the spooky, spooky – as Clara Rockmore called it -- because it's something that the instrument does so well. And I was intrigued to discover musicians like Miles because he leans into the theatricality of the instrument with his band, The Night Terrors.**

*CLIP: NIGHT TERRORS*

MILES: The point of The Night Terrors is it's not a normal band. We don't have the rules that other bands have. There's no guitar player. The Theremin is the singer. And therefore, we can do whatever we want.

**And the names of their songs -- Séance Fiction, Otherworld, Laser for Eyes or The Dream Eater – sound the titles of short stories in a pulp horror magazine. Also, I love watching videos of their live performances because they've got the whole Goth angle going.**

MILES: Rather than trying to resist that connotation. Like I sort of used that as a Trojan horse in a way, like my real aspirations with the Theremin are the same as everybody else's I want to make beautiful music with it and, and, you know, introduce it to a much bigger audience than it traditionally receives. And interestingly enough, the Theremin community, uh, yeah, sort of interested, but not really. I think they think that – they're not really what they're interested in in terms of the goals for the Theremin. So, you know, I, I'm not trying to say, please take this instrument seriously. I'm like saying this instrument is already awesome. And what else can we do with it?

**There's another modern day Thereminist whose work I love: an Austrian musician named Dorit Chrysler. She uses the Theremin in her electronica New Wave pop songs.**

*CLIP: DORIT MUSIC*

**In her live performances, Dorit also leans into the theatricality of the instrument with very abrupt hand gestures, as if she's magically making these sounds appear with the flick of her wrist or her fingers.**

DORIT: I do find that everyone playing the Theremin has a very natural and unique way of how they played. And, um, I certainly did not study or scheme in front of a mirror of what kind of drama the actual playing, um, could entail. It really is, um, a very intuitive process. It's really, it's like dancing everyone, their own body language. And I'm so occupied, just trying to chase the pitch.

**And she filmed a music video at the Large Hadron Collider – the gigantic atom smashing particle accelerator in Switzerland -- which already looks like the set of a sci-fi movie.**

DORIT: Oh, I love the camp. I love, um, all those, uh, Theremin cliché stylistic sounds. I think there's nothing wrong with it, as long as it's not limited so that. I personally, you know, I enjoy writing soundtracks or painting soundscapes. So, um, it taps into a bigger picture. I embrace all those different styles. It's just that with the Theremin you sometimes have to prove a point before you can take off and fly in whatever playful directions you would like to explore.

***Yeah. It's funny when you said that about creating these sorts of sci-fi landscapes, because I was saying, when I listened to your music, I start imagining I start creating these fantastical landscapes in my mind. Do you feel like the Theremin is sort of an inherently cinematic kind of instrument, you know?***

DORIT: Absolutely. I personally think the Theremin is incredibly cinematic and I want to use it and see it also more present, um, to, to be applied in that genre. Why could that be that it's so suited for cinema for movie centers? Well, it has a wide bandwidth, and it really is capable of tremendous sleep, big drama, big emotional. I mean, there's a reason why it was used as the voice of madness in the '40s and '50s in Hollywood.

**And Dorit has been using the Theremin to score soundtracks -- like on the German TV show M, which is a remake of the classic Fritz Lang movie.**

*CLIP: M – A CITY HUNTS A MURDERER*

DORIT: All the scenes, the mood of all these parts were completely gray and bleak. And I didn't realize, but the Theremin definitely can be so melancholic and dark that it really was, um, a perfect fit. Almost partly unbearably sad.

**In fact, the Theremin is so evocative, when Dorit would go on tour, some people thought she was channeling demonic energy.**

DORIT: I played in a tiny town square in, in a town in Serbia some years ago, and there was an Orthodox priest who felt that his community was threatened by the work of the devil. And he held the cross against the instrument and said, it's a tool of the devil.

**Miles Brown has had similar experiences with his band the Night Terror.**

MILES: I've had people try and stop me coming and try and stop me coming into music venues. I'm sprinkling Holy Water at me. And you know, I look, I look like Nosferatu. I wear a big gown on stage. It's a funny thing. It's like, you know, I'm six foot eight. I look like this, I play the Theremin, all those things add up to some kind of other worldly combination of things, and you lean it to it a bit and audiences seem to really like it.

**Dorit says even the positive reactions can be a little unsettling.**

DORIT: In Paris. It happened to me more than once that they just jump on stage and want to try it themselves, regardless of the fact that you're in the middle of a Theremin performance, because it is so new when you see it for the first time, that that can be sometimes very dramatic, emotional reactions of all kinds.

**One of the reasons why the Theremin feels so evocative and brings out such strong emotions in people may have something to do with the man who invented the instrument a hundred years ago, because his life story was like a science fiction tale in itself. That's after the break.**

**BREAK**

**Not surprisingly, the man who invented the Theremin was named Theremin -- Leon Theremin.**

**Leon Theremin was a Russian scientist. In 1920, just after the birth of the Soviet Union, he was working device to measure the density of gasses. He was playing around with a whistling mechanism when realized he could manipulate the sound with his hands. So, he added two antennas and suddenly it was a musical instrument.**

**Albert Glinsky wrote a biography of Leon Theremin. And he says the idea that a gas meter could be used to play music didn't come out of the blue.**

ALBERT: He had studied the cello at St. Petersburg conservatory while he was also getting a physics and astronomy degree. And so, he was able to kind of use his cello chops, I guess you could say with his hand to sort of play these melodies.

**He also realized if you place the antennas at different ends of a room, the Theremin could be used as a burglar alarm.**

ALBERT: And if somebody broke into a storage place or something like that, they would move past the antennas set off the alarm the way you would have set off the tone of the musical instrument, except the difference is the alarm is many blocks away, that was the same principle. And he had a lot of these things during his life that he invented that were these touchless capacitance devices, where just your natural body electricity interacted with the circuits and the device.

**The fact that the Theremin would be used for creativity or surveillance – foreshadowed a major conflict that would define his life.**

**In 1921, Theremin played his instrument in public for the first time. People were amazed. Word spread fast, and soon he had an audience with Vladimir Lenin. Lenin was more excited about the burglar alarm than the instrument, but he saw a bigger opportunity in Leon Theremin.**

**He sent Theremin on a tour of the Soviet Union to promote this instrument as a demonstration of how Communism is propelling Russia into the modern world, with the power of electricity.**

**And that was just the beginning. Lenin sent Theremin on a European tour to use his instrument to promote the Soviet Union and show the world how modern they were. But the Soviets had other motives. They trained Theremin to be a spy.**

ALBERT: And while he was in Europe, he was busy going through patent offices and doing a certain amount of industrial espionage while at the same time he was giving these performances that sort of distracted people.

**The European tour was such a hit, they sent Theremin to New York with the same mission.**

ALBERT: He sold out huge halls like The Metropolitan Opera House with his instrument, standing room only, and just dazzled people with this instrument. But there was a lot of

espionage and he stayed in America for 11 years, based on six-month extensions of a visitor's visa from the Department of Labor

**And they weren't twisting his arm to be a spy – at least, not at this point in his life. Theremin had every reason to be a proud Soviet. In the 1930s, he saw some very ugly aspects of America during the Depression. And he wasn't in the Soviet Union when Stalin took over. So, he didn't know how dictatorial his government was becoming.**

**Although living in America did change him. Theremin was married when he got here, but he and his wife split up. And he fell in love with a musician named.... Clara Rockmore.**

ALBERT: Clara Rockmore was also a Russian who come over all though, she was a true immigrate, and she was living in America and she was a prodigy violinist who had had some difficulty in injury with her arm and couldn't play the violin anymore and transferred her whole technique over to the Theremin and became the greatest exponent of the Theremin ever. She was really incredible, and he fell in love with her, but she married somebody else. It was a tremendous heartbreak for him.

**Eventually in 1937, Leon Theremin married an American -- a Black dancer and choreographer named Lavinia Williams, who was a groundbreaking artist in her own right. And the way they met was like a meet cute from a sci-fi rom com. He was working on a version of the Theremin which extended across a dance floor.**

ALBERT: Where the dancer moves their whole body in the electromagnetic field and creates a melody of sorts. And that's how he met his second wife. Lavinia Williams because she was a dancer who was trying out his ether wave dance platform.

**It seemed like Theremin was putting down roots in America. So, it was a shock when he suddenly went back to the USSR, just a year after he got married. Lavinia Williams and her friends were so blindsided, they thought Theremin had been kidnapped by the Soviet government. And that was the story most people knew for years.**

ALBERT: Absolutely untrue. 100%. I would stake my life on it. I can tell you that right now, there was no kidnapping, okay? It simply wasn't. I have all the documents he prepared for leaving. We know the ship he left on. He escaped on a Soviet freighter at night, and he brought a lot of his equipment with him. Nobody's who kidnapped is going



to take all her equipment with them. Everything was very, very well planned out ahead of time.

**Why did he leave? The FBI was on to him, because he was still doing espionage. And he owed people a lot of money. It was a very calculated move, but he did have Lavinia Williams in mind.**

ALBERT: He was even promised that she could be brought over later to Russia to join him, but that never happened.

**In fact, his return to Russia was nothing like what he expected. He was not given a hero's welcome. Stalin was purging the country of anyone he saw as a potential threat. And Theremin?**

ALBERT: He had touched Americans, you know, he had sort of been around Americans and capitalism and that sort of thing.

**So, Theremin was sent to a Gulag in Siberia. When World War II broke out, he was moved to a high-class prison, where they kept all the scientists.**

**Theremin was forced to work on all sorts of projects, like an infamous bugging device which was installed inside the seal of the bald eagle at the U.S. embassy in Moscow.**

ALBERT: And it's a brilliant, brilliant device because it has no batteries, no electricity, no external power. It was brought in by Soviet Boy Scouts in 1945 and the 4th of July as a gift supposedly to the American people from the Russian people. And it was put on the wall and they put it through all sorts of sweepers and things and couldn't, couldn't find anything wrong with it.

**It wasn't discovered for seven years.**

**Theremin tried to make a life for himself. He told his overseers that he wanted to get married again. They told him he could only choose from the female scientists in their prison. So that's what he did.**

**In the 1950s, he transitioned to sort of a halfway house where he was forced to work for the KGB. By the late '60s, he was able to get a job at Moscow University, where he could focus on his first love: music. That's when an American reporter discovered Theremin and interviewed him for The New York Times.**

ALBERT: It sort of revealed to the world that Theremin was alive and well because after he went back in '38, he, a lot of people thought most people in the West thought that he was dead or no one had any idea of his whereabouts, whatever happened to him.

**Theremin was very cautious in talking to this American reporter. But his Soviet handlers were furious he did the interview.**

ALBERT: So, they threw him out of the conservatory, and they broke up his instruments and put them out in the dumpster and all of that, it was just terribly sad. And that was a very low point in his life. He didn't even leave the Soviet Union for the first time until 1989. He went to a festival in France, music festival, and that was 51 years after he came back to the Soviet Union, he finally could leave. And he had a KGB people with him at the time, guarding him in 1989. So, he had to be very careful what he said.

**I wonder if that's why he loved music so much. The Theremin instrument already sounds mournful, and it could express how he felt without words.**

**By the way around this time, Theremin did reconnect with his second wife Lavinia Williams, who had idea what happened to him after he left New York. They wrote letters, and he even proposed re-marriage -- but that didn't happen.**

**Theremin died in 1993, the year the Soviet Union collapsed. His life is tragic, but there is something inspiring about it because despite his bad luck and bad choices, he had an undying belief that his ingenuity and creativity could get him out of the different prisons that he found himself in, even if it was just in his mind.**

ALBERT: And when you think of some of the ideas that he had that were never realized, one of the ones that was really strange was he thought of creating a bridge across a river or a body of water that was just purely electromagnetic fields. So, it would be an invisible bridge, so you could drive across it, but you'd basically just be looking down at water, you know? (Laughs) And I don't think too many people would want to do that, but that was one of his ideas. He had so many notions and toward the end of his life, he was trying to explore things that wouldn't extend life.

**Or bring someone back from the dead.**

ALBERT: It was a woman who was, I think, one of his lab partners and she died, and he was felt that she could be revived. I don't think he succeeded, but this was something

he was looking into his imagination itself in a sense was kind of a born of, of science fiction. I guess you could say.

**I want to end with this story, which brings everything back full circle.**

**In the year 2000, a group of Theremin fans in Russia wanted to create The First Theremin Concert for Extraterrestrials. This was not a high concept art project. They really thought the Theremin could create a signal that would, quote, “be easily detectable across interstellar distances.”**

**At first, their proposal was rejected not because it was costly or improbable. It was rejected over the danger posed by advertising our planet to advanced civilizations. Eventually, they got the funding to beam the music into the cosmos – hoping that whoever hears it will come in peace – a lot like The Day the Earth Stood Still.**

**The life of Leon Theremin was defined by his boundless creativity in the face of obstacles. And I love the fact that his instrument still inspires people to believe it can be used to create something out of thin air or make something otherworldly happen with the flick of a wrist and the power of our imagination.**

**That’s it for this week, thank you for listening. Special thanks to Albert Glinsky, Dorit Chrysler and Miles Brown. Talking with you both made me realize how much I miss seeing live music. By the way, I posted videos of their performances – and Clara Rockmore – on the Imaginary Worlds website and social media pages.**

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