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COMPOSITION  
TO NEW REALMS

THE CALIDORE'S  
EARLY TAKE  
ON BEETHOVEN



# SCI-FI CODELITY

## NEW AI TECHNOLOGY VAULTS MUSIC INTO A NEW FRONTIER

BY DAVID TEMPLETON

When self-described “Isaac Asimov-obsessed” guitarist and composer Michael Baugh was asked to write a piece of music to showcase Neural DSP’s Artificial Intelligence (AI)-assisted effects processor, the Quad Cortex, he knew immediately that he’d want cellist Tina Guo to collaborate and perform on the planned recording. The Quad Cortex is an effects processor that features AI-based technology, including capture capability with a huge range of uses, making it possible for traditional stringed instruments like violins and cellos to produce an infinite variety of musical sounds. [Isaac Asimov, for those unfamiliar, was a major American science-fiction writer, considered one of the “Big Three,” which also included Robert A. Heinlein and Arthur C. Clarke.] Baugh did not realize at the time that Guo—best known for her attention-grabbing work on the soundtrack of *Wonder Woman*, on which she plays the rafter-shaking theme song on an electric cello—was also a sci-fi aficionado, sharing an equally fervent love of robot and robot-adjacent movies and books.

“My company is actually named Good Robot Productions,” says Baugh, reached on Zoom, as Guo, in her own corner of the screen, excitedly searches for and displays a photograph of herself and her boyfriend dressed up as robots, distinguishing herself as a robot fan like Baugh. The cover art for Baugh’s 2018 album, *The Man with No Name*, shows him playing the guitar on top of an enormous fallen robot head. “We’re all into robots!” Guo says happily. “So I guess using AI technology to make music is kind of right in line for us!”

The high-energy tune and video that resulted from the collaboration, titled “Break the Stars”—featuring Guo on cello, Baugh on electric guitar, Rusanda Panfili on violin, Barry Wilson on drums, and Anna Sentina on bass—has drawn tens of thousands of views on YouTube, vividly demonstrating that the Quad Cortex, typically popular among guitarists, can also be useful for players of classical instruments.

“The project came about when Neural approached me to ask if I’d compose something to show what Quad Cortex could do,” says Baugh. “But I didn’t want to do another YouTube guitar video, because there are a thousand of those. I wanted to see how agile this technology can be. I wanted to bring in different musicians—classical musicians, cellists and violinists—and I thought, there’s no one better than Tina for this, because she’s really great at pushing the boundaries and exploring new ideas and trying new things. That’s how it came about.”

Baugh says he first met Guo in 2016, when he reached out after catching her sensation-sparking *Wonder Woman* video. Six years later, he admits he was surprised to hear back from her within 24 hours of that first correspondence.

“Michael’s in the UK, and I’m in Los Angeles,” Guo explains, adding that she was familiar with his work and excited to be contacted. “After that first email exchange, Michael and his lovely wife came to visit, and we worked on a track together and became friends and have been ever since.”

The track they worked on, Baugh recalls, required Guo to play acoustic cello. But even then, he was contemplating the future.



"I do remember thinking, 'One day, I want to write something and get her to play electric cello on it,'" he says, "and that was because, on that *Wonder Woman* video, she had such an amazing sound on the electric cello, and I wondered what else could be done with it. So when the Neural project happened, for me it was the opportunity to finally write something so I could see what Tina comes up with, with the Quad Cortex."

The Quad Cortex "allows a digital re-creation of an actual amplifier," Guo says, adding, "Literally any and every single amplifier and pedal that were ever created can be re-created."

"It's like owning a music store," Baugh elaborates. "Imagine if you had all the amps and pedals on the market, right there for you to pick from. You can plug it into a hundred-thousand-dollar amplifier, and it will sample that amp and save it in the unit, so you now basically have that amp forever. Any pedals you put in front of the amp or any microphones you use to record it or any cabinet that has those characteristics also gets saved in the device. This is what we call 'captures,' and you can download them on the Cortex app for free from all over the world. The other half of the unit has its own sounds that are completely malleable, something like a synthesizer. Basically, whatever sound you have in your head, if you are willing to be playful and experiment, you can create that sound and many others you discover on the journey to finding that sound."

That promise of "play" and "experimentation" is part of the reason Guo was eager to participate in the "Break the Stars" project. And the Quad Cortex technology, with its ability to capture all kinds of sounds and textures, would dramatically expand the size of their musical playground.

"It's pretty amazing," she says. "The 'capture' just means a sonic copy. We all created our own patches, our own tones, as part of the project, and people can download those for free if they have the unit. I called mine 'Robot Pizza,' because I like robots and I like pizza. I went for a heavy metal tone, similar to a guitar. For me, as a classical musician growing up, I always wanted to play heavy metal guitar, so I started off with one of the presets on the QC, and adjusted it a little to match what I thought I wanted it to sound like."

There are plenty of violinists and cellists today who play through sound effects, Guo points out, just like a guitarist or bass player would. "Instead of playing through an amp, with analog pedals and effects pedals, this is a digital version, like a mini computer, that can create and re-create any kind of sound, and every little thing is customizable."

An electric instrument often has what Guo calls "a very bare-bones signal," while with a classical instrument, the tone comes from the instrument and the player's fingers. With the technology used to perform "Break the Stars"—an infectiously driving

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—TINA GUO

progressive fusion rock piece—musicians can create specific digital representations of how they want their instruments to sound, and preset it so it will always sound just that way when they want it to.

And best of all, says Baugh, it's extremely portable.

"The dream for electronic musicians is that, while we have favorite amps and favorite cabinets and favorite pedals that we use, they are all really big, and they weigh a ton, and they don't fit on a plane or are really expensive to travel with if they do," he says. "And sometimes you want more than one sound, and you don't want to have to haul around a different piece of equipment for each of those sounds. So this is great because



COLIN URQUHART

you can fit it in a laptop bag that's easy to take with you wherever you go."

Guo likens the Quad Cortex technology to having dozens of different cellos all combined into one. "It's kind of like, if you had a cello with a bunch of buttons, and if you push one button it sounds like a Stradivarius and if you push a different button it sounds like a completely different instrument," she says. "So with this kind of technology, it's a lot like having an unlimited supply of cellos."

In composing "Break the Stars," Baugh says he kept in mind that once the piece was written, each of the musicians would be making choices about how to use the Quad Cortex to play their parts, called patches, and sharing the decision-making process of how the piece would ultimately sound.

"I approached it with an open mind," he says. "You always have some expectation of what a composition will sound like. But the limitless possibilities the Quad Cortex



provides are quite exciting, and so I was eager to see what Tina would come up with, and what Rusanda would come up with, and what Anna would come up with. And everybody came up with something totally different from what I expected.

"I got a message from Tina," he continues, "where she'd done this intro section with a really big sound on the cello, with a patch that was made on the Quad Cortex, and it totally made me smile because it was not what I was expecting at all. It was such an incredible sound, like nothing I've heard from a cello before. So I thought, well, what's the guitar going to do, so I created a patch that complemented it and played the same part underneath, to make the sound even wider."

Because of the opportunities made possible by the technology, Baugh says he knew the composition had to be somewhat malleable, with his intentions for it not entirely set in stone. "I'm a great believer in wanting to create

as many options as you can for yourself, so you can decide what the best options are to move forward," he says. "That's what the Quad Cortex does, because it facilitates your creativity. It goes, 'Hello there! Here is an array of possibilities you can work with. What do you want to do?' That's as opposed to having one amp do everything badly. I can't say the Quad Cortex impacted any of my decision making while composing the piece, but it did, when I came to my performance, offer me a lot of flexibility in how I wanted my part to sound in relation to everyone else's."

Asked to describe how the artificial-intelligence aspect of the Quad Cortex technology functions, Baugh begins by expanding on his earlier description, in particular the usefulness of its capture capabilities.

"The AI aspect comes into it in the way the unit captures stuff," he says. "If you plug it into an amp and you want to capture that sound, the artificial intelligence is working to



capture all the nuances of how that amplifier responds. You don't just get the sound, you also get the feel of the amp, and that's what other effects units don't do."

Perhaps imagining what Isaac Asimov might say if present for this conversation, Baugh acknowledges that much of what he's been discussing would have sounded like science fiction not that long ago. "Of course," he says, "science fiction is only fiction until someone comes along and makes it real." ■