

Blueshift - November 30, 2009

[music]

Sara: Welcome to the November 30th, 2009 episode of Blueshift, brought to you from NASA's Goddard Space Flight Center. I'm Sara Mitchell, and this episode we're taking you to the symphony.

Sara: Imagine the scene: you're sitting in the balcony of the Kennedy Center Concert Hall in Washington, DC. Dozens of musicians from the Boston University Symphony Orchestra file onto the stage and tune their instruments. Maestro David Hoose steps up and lifts his baton. The timpani rolls.

[music]

Sara: November 2nd, 2009 marked the world premiere of "Cosmic Reflection," a full symphony written by composer Dr. Nolan Gasser. This unusual piece, accompanied by a video prepared by Goddard's own Rich Melnick, shares the history of the Universe through a symphony in three movements. Narrator Carey Harrison guides listeners from the Big Bang through inflation, the birth and death of stars, and our own place in the Universe. But where did the idea for this blending of astronomy and music begin? We asked Dr. Peter Michelson, the principal investigator of the Fermi Space Telescope's main instrument.

[Peter] The inspiration for this came from a conference I was at in 1987 that was a celebration of the hundredth anniversary of the Michelson-Moreley experiment, which was a seminal experiment in Einstein's development of the theory of relativity. And at that symposium there was an original work, in fact Phillip Glass wrote, and the Cleveland Symphony performed it. And I always thought it was a wonderful marriage of science and the arts. And when this opportunity came along, I said "We've got to do this."

Sara: A few years before the launch of Fermi, Peter approached his good friend Pierre Schwob, the founder of a music service called Classical Archives. He asked Pierre if a musical piece could be composed for the launch.

Pierre: I was approached about three years ago, I think, by Peter Michelson. And he said "You know, Pierre, it would be great to have a musical event at the launch" of what was then called GLAST. And I thought about it for two seconds and I said "That's a wonderful idea!". However, there's no way that we can have a symphony orchestra standing by at the Kennedy Center when you know that the rocket's going to be delayed. We decided that we would commission a short piece for brass quintet that would be performed taped, but with a video from NASA Goddard, at the launch. But a year later when Fermi was going to announce the first year results, that we would do a big, big event.

Sara: So Pierre commissioned the same composer who wrote the GLAST Prelude, Dr. Nolan Gasser, to create another special musical composition. But this time, they thought bigger.

Nolan: The idea was let's tell the whole history of the Universe from the Big Bang to the distant future, when it's all cold and dark. So the idea was to write a work for full orchestra and narrator, so this would be sort of a story that people could follow. Of course, also with a visual component, and Rich Melnick was once again given that charge. So we now have the history of the Universe in 40 minutes.

[music]

Sara: We asked Nolan about the challenges of conveying science through music.

Nolan: The challenge is, aside from the temporal issue, it really becomes a question of how do you musically depict some of these incredible, mind-boggling cosmic events? The Big Bang, inflation, the annihilation of matter and anti-matter particles, the creation of protons and neutrons. Now I am a musician, with a degree in musicology, and I have had absolutely no training in science. So I'm very proud of that fact. So it's become a real passion, on a purely, in the best sense of the word, on an amateur level, that I've devoured over the last couple of years, physics and cosmology to the point that I actually can point in very specific ways in which the music does correlate in a very real way to the science involved.

[music]

Sara: Neither Pierre Schwob nor Nolan Gasser are professional astronomers, yet their interest in the subject has led to this unique marriage of music and science. We asked the narrator, Carey Harrison, if his involvement had led to any interesting new knowledge.

[Carey] I'm just the voice, you understand. Yes, I think I wasn't aware of dark energy. I knew, as a lot of people do, about dark matter. But I hadn't understood that there was a renewed push that was expanding the Universe very much faster. I knew we were all drifting apart from each other, but the acceleration of it was something I was unaware of. And it's alarming to think of, on a human level. We won't be around to see it, and yet the idea that the Universe is dispersing and that we just have a brief moment now where we can see it all, or see a great deal of it, is a very sobering thought, and that I did learn.

[music]

Sara: We hope you enjoyed our night at the symphony! Though we were unable to record the live performance, Nolan Gasser kindly shared a digital version of the piece for use in this episode. To learn more about "Cosmic Reflection," and to hear the "GLAST Prelude," visit our website at universe.nasa.gov/blueshift.

You can also follow us on Twitter for a behind-the-scenes look at what's going on at Goddard! We're @NASAb blueshift on Twitter.

Join us in December as we wrap up 2009 and look toward the new year. I'm Sara Mitchell, bringing the Universe closer to you with Blueshift.