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Q&A

A talk with Lisa Randall

Particle physics, the aria

By Samuel P. Jacobs
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HARVARD'S JEFFERSON LABORATORY, home to the physics department since 1884, has seen its share of firsts; 10 Nobel Laureates have made their discoveries there. Today, leading theoretical physicist Lisa Randall is working on another improbable first for the department: She's writing an opera.



(Josh Reynolds for The Boston Globe)
"The scientist is also a composer," says Harvard physicist Lisa Randall.

Randall has emerged as a public face for the complex fields of cosmology and particle physics; her 2005 book, "Warped Passages," introduced nonscientific readers to the possibility of additional dimensions beyond the three we see, and how their existence could account for many of the physical world's most perplexing phenomena.

Writing a book for a general audience connected Randall with a new set of people in fields outside of physics. One of them, the Spanish composer Hector Parra, intrigued Randall by asking if she would try writing a libretto for an opera about her work. The resulting piece, a

collaboration with the artist Matthew Ritchie, is scheduled to debut in Paris at the Georges Pompidou Centre this summer, then travel throughout Europe in the fall.

The opera is an intimate work - an hourlong show written for two performers - that carries uncomfortable ideas about our world and how we experience it. The piece has the puzzling title of "Hypermusic Prologue: A projective opera in seven planes," the seven planes referring to space and to the opera's seven acts. The work's broader goal is to suggest new approaches to both science and art. The old-fashioned form of opera, Randall and her colleagues hope, can become a vehicle for modern science, using sound and voice to re-create the many dimensions that physicists now explore.

"It's kind of mathematical, it is geometrical, and it is looking towards the future," Randall, 46, says of the title.

Ideas spoke to Randall in her office at Harvard.

IDEAS: What makes this a good time to combine art and science?

RANDALL: There are a lot of interesting and abstract concepts that science is

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trying to wrap its head around these days. How do you communicate those? I tried very hard to do it in the book. . . . In part, what was challenging is that you have to give a linear presentation. . . . In an opera, or a piece of art, you are not teaching something, but at least you can get across some of these important concepts in a more interesting fashion. You can have a complexity in having different thought strands, different ideas come in simultaneously.

IDEAS: How does it work, incorporating physics into a piece of music?

RANDALL: You want the art and the music and the words to converge. There is also physics in it. Hector was insistent on putting some of that in, but we don't expect people to be entirely aware of it. . . . Hector uses specific interesting musical devices, contrasting tempos and color as well as going in and out of an electronic treatment. We are working with Matthew to develop a new space representing the extra dimension. [Continued...](#)

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