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gallery: hypermusic prologue

What opera and physics may have in common, more than anything else, is their tendency to make most people cringe or fall asleep. Can an avant-garde opera that compares self-exploration to the physics of multiple dimensions invigorate audiences? The creators of *Hypermusic Prologue, A Projective Opera in Seven Planes* seem to think so.

Text by Calla Cofield

Photography by Aymeric Warmé-Janville



Baritone James Bobby and soprano Charlotte Ellett explore their relationship in extra dimensions.

Hector Parra learned about physics from his father and studied it until he was 18, when, as he says, "The piano took all of my energy." Now a composer, Parra has an unmistakable passion for opera's grand expression of human emotion. Yet he also rebels against traditional styles of composition. His latest work, called *Hypermusic Prologue, A Projective Opera in Seven Planes*, is so different from classical opera in subject matter and musical style that Parra says, "I don't know if it's an opera. It's an experience."

Hypermusic Prologue is about the physics of extra dimensions. It was inspired by the book *Warped Passages* by Lisa Randall, a professor of theoretical physics at Harvard University. Parra was so moved by the book that he asked Randall to write the libretto—something she had never done before. But she hopped on board and wrote a love story sprinkled with ideas from her physics research. Based on that story, Parra composed music that expresses frustration, desire, passion, and the experience of traveling into the fifth dimension.

The two characters, a soprano and a baritone, live on the same stage and interact day to day. But the soprano is searching for change and depth, and longs to explore higher dimensions. The baritone is satisfied with a static world, where he remains while his companion finally breaks through. To save the relationship, he must also make the leap and follow her.

At times, Parra's score is a collection of disjointed noises. It is rarely melodic, and segments often stop before any kind of recognizable song structure develops. The percussionist uses odd instruments such as broken glass in a crystal container, wood scratching on a chalkboard, and a makeshift instrument that sounds like a furiously scribbling pen. Yet this style works well to illustrate the characters' inner turmoil and rocky relationship.

The baritone's half of the stage, a static world of concrete objects and pale colors, is ruled by classical physics. On the other half, the soprano journeys through vibrant colors, warping shapes, and twisting scenery. Both sometimes express themselves in physics terms:

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[Kepler space telescope finds five planets](#)

January 11, 2010

NASA's Kepler Mission announced January 4, its first new results, the discovery of five new planets orbiting distant stars outside our solar system. The Kepler Mission is specifically designed to survey our region of the Milky Way galaxy to discover hundreds of Earth-size and smaller planets in or near the habitable zone and determine how many of the billions of stars in our galaxy have such planets. The mission failed to find a habitable exoplanet, but the search will continue through at least November 2012.

[The light show from the LHC](#)

January 7, 2010

From the core of the world's largest machine, the universe's smallest particles send signals of their subatomic dance to scientists searching for answers. To get a glimpse at the evanescent light show taking place deep inside the Large Hadron Collider, you don't need to be in the CERN control room. The Niels Bohr Institute in Copenhagen has on display a light sculpture that represents the subatomic particle dance going on inside the ATLAS detector.

[Fermi telescope closes in on mystery of cosmic ray acceleration](#)

January 7, 2010

The Fermi Gamma-ray Space Telescope's Large Area Telescope collaboration offers new insight into how the universe accelerates cosmic rays to such high energies, a long-standing mystery. The high-energy cosmic rays appear to be coming from supernova remnants, the dying remains of exploded stars; the new result reveals the spatial distribution of this emission in one particular supernova remnant.

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Particle collisions are ephemeral, occurring in the tiniest fractions of seconds. But they could be useful for decades if physicists learn how to store the data from them in a way that future generations

Soprano: **The forces change**
 [She moves across the stage. Different colors converge.]
as distances change
As I travel through this extra dimension
 ::Musical interlude where forces converge. Crescendo as they all merge into a single sound::
As I travel away
forces come together
Unite



Rather than concealing the orchestra in a pit, set designer Matthew Ritchie put it on stage behind a screen that becomes translucent when the lighting is right.

The set was designed by artist Matthew Ritchie, who is based in New York City and knew Randall from previous ventures into artistic representation of science. While the set incorporates physics ideas—distortion of the fabric of space-time, for instance, is reflected in spiraling images and tie-dye swirls of color—he says the visuals were not meant to be direct translations of those ideas. “I want to tread carefully because it’s not science,” Ritchie says. “It’s a kind of emblem.”

To create the illusion of traveling through a different dimension, Ritchie projected video onto a gray stage. This allowed rapid background changes and intricate, morphing color schemes. While the orchestras for most opera performances are concealed in a pit in front of the stage, the musicians in *Hypermusic* sit onstage behind a screen that becomes translucent when the lighting is right, so they appear in the same space as the singers.

With three creative minds completing most of the work for the opera from different locations— Parra in France, Randall in Massachusetts, and Ritchie in New York—*Hypermusic Prologue* could have been a train wreck of ideas; instead it manages to be harmonious, engaging, and adventurous.

The production debuted in Europe in the summer of 2009 and continues to tour. Excerpts from the opera are scheduled for performance January 11th and 12th at the Guggenheim Museum’s Spiral Hall in New York City. Parra says he hopes to bring the full production to the United States in 2011.



of physicists can access and reuse.

Photos: Reidar Hahn, Fermilab.

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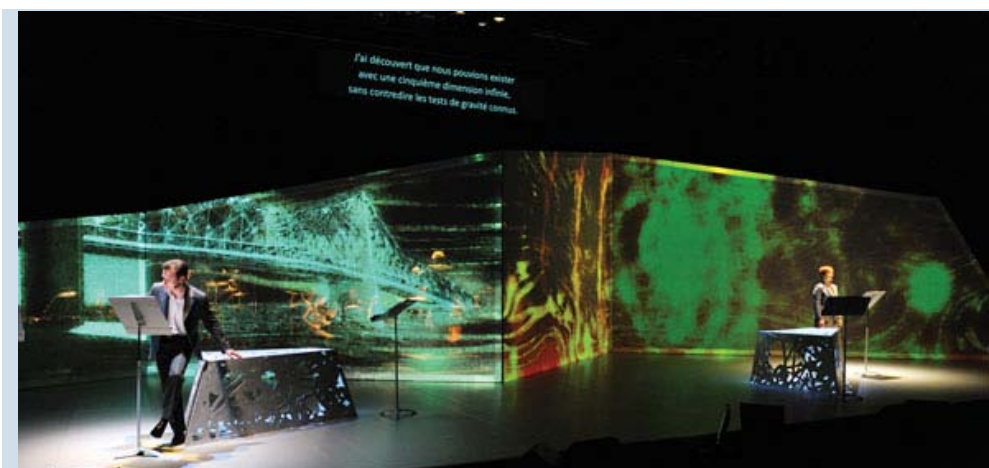


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Each of the two singers occupies half of the stage. The baritone lives in the static, concrete world of classical physics. The soprano's colorful, vibrant world reflects her longing for change and depth.

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