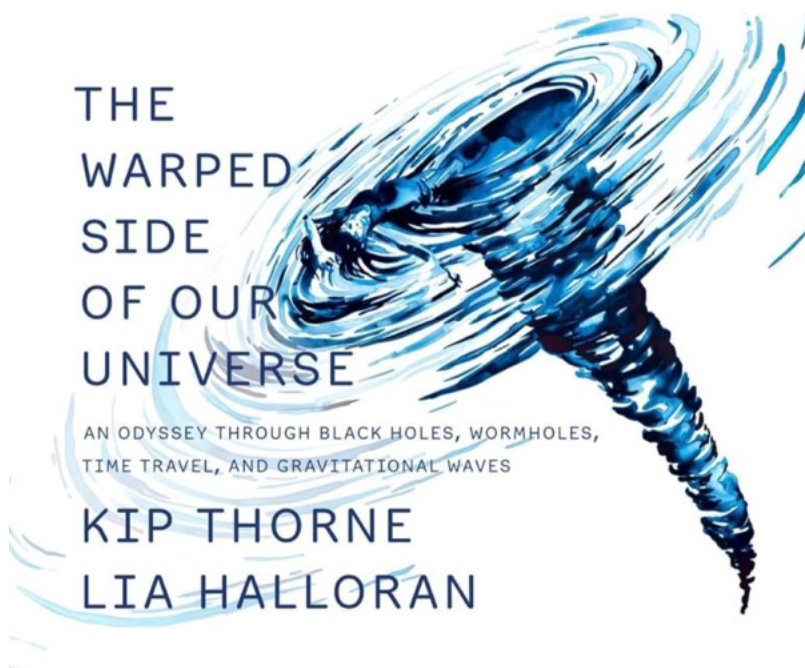


## The Warped Side of Our Universe: A Painted Epic Poem about the Dazzling Science of Spacetime

---

BY MARIA POPOVA

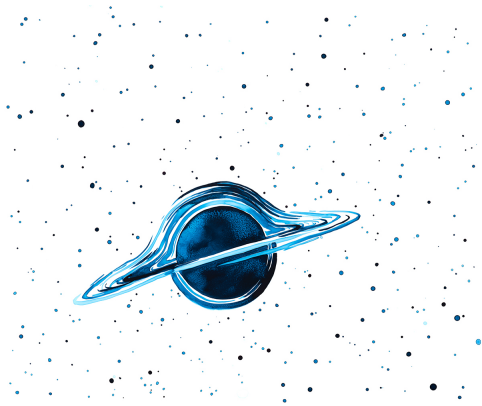


The first English use of the word *space* to connote the cosmic expanse appears in line 650 of Book I of Milton’s epic poem *Paradise Lost*: “Space may produce new Worlds,” he wrote, and grow rife with them.

In the centuries since Milton, who lived through the golden dawn of telescopic astronomy and traveled to Italy to look through Galileo’s telescope, our understanding of space has changed profoundly — it is no longer the ethereal blank of religious cosmogonies but a fabric of energy and matter laced with forces, a fabric the warp thread of which is time. This hammock of spacetime tells matter how to move, and matter pulled by gravity tells spacetime how to bend — such is the simplest summation of Einstein’s revolutionary theory of general relativity, out of which arose the mathematics of nature’s strangest and most enchanting creations: black

holes and gravitational waves, wormholes and singularities.

These cosmic wonders come alive in ***The Warped Side of Our Universe: An Odyssey through Black Holes, Wormholes, Time Travel, and Gravitational Waves*** ([public library](#)) — a labor-of-love collaboration between artist Lia Halloran and physicist Kip Thorne, more than a decade in the making, rendering the science of spacetime in an epic poem of playful free verse and breathtaking art.



Art by Lia Halloran from *The Warped Side of Our Universe*

What began as a series of animated conversations between these intergenerational friends — long before Kip won the Nobel Prize for the detection of gravitational waves that marked a new golden age of listening to the universe after four centuries of looking at it, long before Lia endeavored on her subversive cyanotype celebration of astronomy — bloomed into an unexampled book that does for the science of space what Erasmus Darwin did for the science of Earth when he popularized a new branch of botany with his 1791 epic poem *The Botanic Garden*.



Art by Lia Halloran from *The Warped Side of Our Universe*

What emerges from these luscious pages is something in the spirit of mathematician Lillian Lieber's free verse about science that so enchanted Einstein, yet entirely original — verses partway between Shel Silverstein and *Interstellar* (on which Kip served as chief scientific advisor), anchored in Lia's blue dreamscapes of wonder.

Out of it arises a reminder that art — be it poetry or painting or music — is the best tool we have for translating the abstract language of reality, the language of mathematics, into the language of human life, the language of feeling that pulsates beneath reason.



---

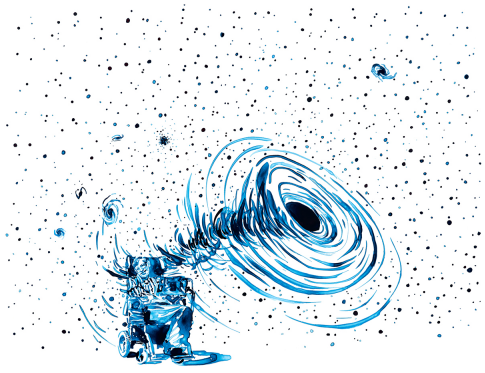
Art by Lia Halloran from *The Warped Side of Our Universe*

The book begins with a perspectival reminder:

Our universe is varied and vast —  
galaxies, planets, stars and moons  
quasars, pulsars and magnetars  
all made from atoms and molecules  
just like you and me  
and all that we hear and touch and see.

Our universe is also endowed  
with a marvelous, shadowy side that is warped —  
phenomena forged  
from warped spacetime.

To tell the story of these phenomena — black holes and wormholes, cosmic strings and gravitational waves — is to tell the story of the human hunger for truth and the generations of humans who have devoted their lives to unraveling the mysteries of nature. Galileo, Stephen Hawking, and Kip himself make cameos as the story of spacetime unfolds in verse and image.



---

Art by Lia Halloran from *The Warped Side of Our Universe*

Underpinning these reckonings with the nature of reality is the subtle recognition that our theories are provisional and our knowledge a reliquary of self-revision. “So sayeth the quantum laws,” writes Kip in a verse about vacuum fluctuations, “if we have discerned them correctly.”

*If, the great fulcrum of is.*



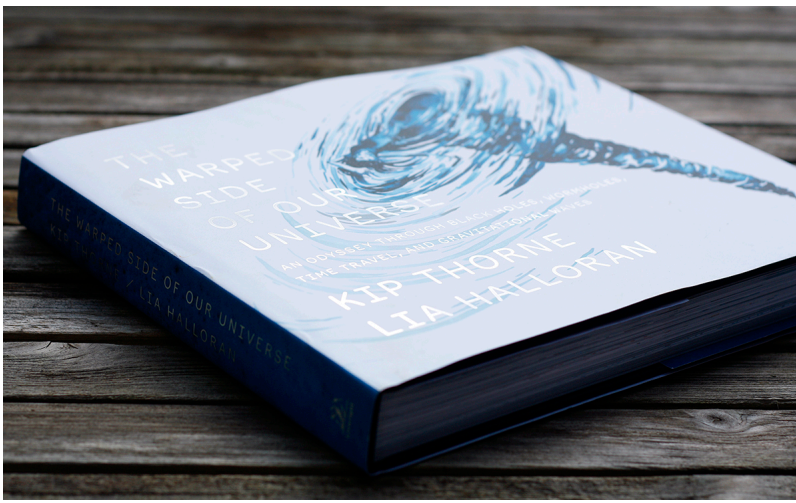
---

Art by Lia Halloran from *The Warped Side of Our Universe*

Contemplating whether vacuum fluctuations could keep a wormhole open long enough to allow such a shortcut passage through spacetime — the pinnacle of our cultural fascination with time travel — a verse ends with an incantation of our destiny as creatures animated by the passion for knowledge and swaddled in mystery:

We don't know.

We simply do not know.



In their wonderful *Design Matters* conversation with Debbie Millman, Lia and Kip delve into their respective unorthodox paths to art and science, the story of their collaboration, the power of drawing as a mode of understanding, and the importance of embracing the unknown as the common ground between doing science and making art — a testament to Nobel-winning poet Wisława Szymborska’s lovely observation that “whatever inspiration is, it’s born from a continuous ‘I don’t know,’” which is also the crucible of science.

—

Published October 31, 2023

—

<https://www.themarginalian.org/2023/10/31/the-warped-side-of-our-universe-lia-halloran-kip-thorne/>

—



[www.themarginalian.org](http://www.themarginalian.org)