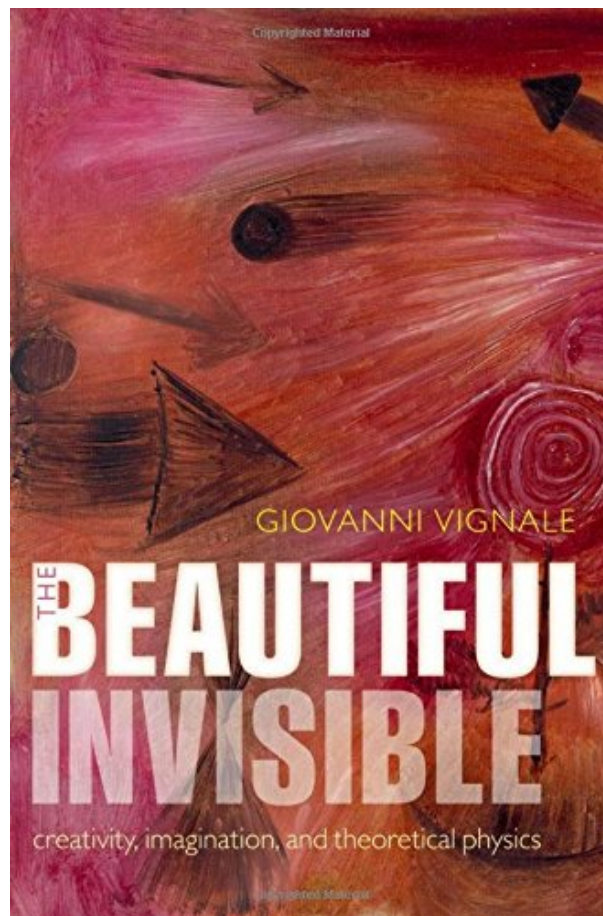
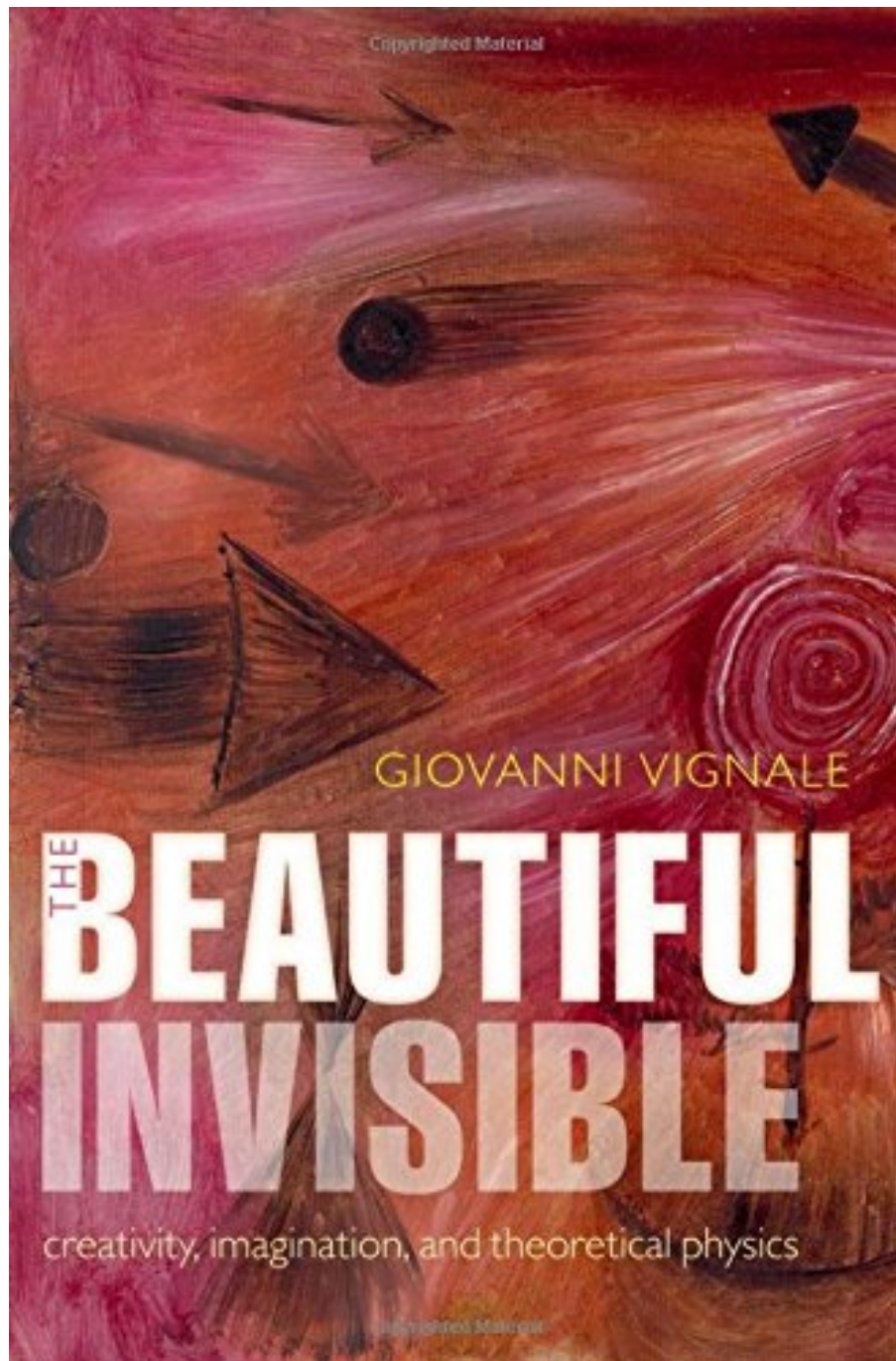


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this book is the best Christmas reading for physicists this year CERN Courier For anyone thinking of starting a physics degree, or wishing they had done one, this is an excellent book...by someone who is evidently a first-rate teacher. Andrew Crumey, *The Scotsman*

## **About the Author**

Giovanni Vignale is Curator's Professor of Physics at the University of Missouri-Columbia and a Fellow of the American Physical Society.

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# **THE BEAUTIFUL INVISIBLE: CREATIVITY, IMAGINATION, AND THEORETICAL PHYSICS BY GIOVANNI VIGNALE PDF**

Challenging the image of theoretical physics as a dry discipline, *The Beautiful Invisible* shows that this highly abstract science is in fact teeming with beautiful concepts, and the task of imagining them demands profound creativity, just as creative as the work of poets or magical realist novelists such as Borges and Musil. "A good scientific theory is like a symbolic tale, an allegory of reality," writes Giovanni Vignale, as he uncovers the unexpected links between theoretical physics and artistic creativity. In engaging and at times poetic prose, and with ample quotations from many of the writers he admires, Vignale presents his own unorthodox accounts of fundamental theoretical concepts such as Newtonian mechanics, superconductivity, and Einstein's theory of relativity, illuminating their profound implications. Throughout, the author treats readers to glimpses of physics as "exercised in the still night, when only the moon rages." Indeed, as we delve behind now-familiar concepts such as "electron spin" and "black hole," the world that we take for granted melts away, leaving a glimpse of something much stranger.

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## Most helpful customer reviews

13 of 13 people found the following review helpful.

A fascinating tale of theoretical physics

By Tapash Chakraborty (Winnipeg)

This is a wonderful book that I believe should be a must read for all physicists. In this book, Giovanni Vignale chronicles an epic journey that began a few centuries ago, and continues to the present day, to understand a science within a science, theoretical physics. Vignale compares this with poetry and proceeds to explain the success of this science, and eulogizes its major players, ancient and modern. Being a theoretical physicist all my life, I was always conscious of our role as someone unraveling the laws of nature by pure intellect. However, my dream is now shattered by Vignale's claim that the success of a theory at explaining

or predicting the facts in no way proves the objective reality of that theory! According to him, it merely reflects our intellectual ability to explain the tailored reality that we wish to focus on. However, it is not as bad as it sounds, because he thinks that a successful theory actually transcends nature. It does that by creating abstract models where we use our preconceived notions about which aspect of reality should be discarded and what should be retained. His way of describing the glories of theoretical physics is unorthodox. While there are the usual heroes, Boltzmann, Heisenberg, Dirac, Maxwell, the DNA double helix (a theoretical masterpiece), quantum mechanics, etc., we also get to learn about the evil teacher Drona from Mahabharata, Zeno's paradox, Buridan's ass, and about Alice and Eve from quantum cryptography. It is mesmerizing how Vignale makes a smooth transition from one to the other. Analogies with poetry are everywhere in the book. Whoever thought of 'duality' in quantum theory expressed in a Rubaiyat of Omar Khayyam! This book excels while most others fail, by not composing a requiem in memory of all the dead heroes, but rather by creating an anthology of verse and prose that goes beyond the endless praise of a few individuals. In today's mean world of h-index, and the mad rush to publish in 'high impact factor' journals, it is reassuring to realize that the inner beauty of theoretical physics, so profoundly portrayed by Vignale, and the pioneering contributions of all the practitioners past and present (often not appreciated in their times) and their timeless, brilliant ideas, were not touched by this numerical madness. Some of those pioneers were quirky, but for other reasons: Boltzmann killed himself and Demokritos plucked out his eyes to be able to think more clearly. But they were spared the agonies of obsessively hopping from one conference to another to be able to sell their ideas!

The prose in this book is simply delightful and engaging. Let me conclude (apologies to Omar Khayyam) with the following:

The moving finger writes; and having writ,  
Weaves a wonderful tale that adds wit  
To the triumphs and tribulations of theorists over centuries,  
For bright minds everywhere to be inspired by it.

7 of 11 people found the following review helpful.  
a pleasure to read...revised review after finished the book

By Morsi

i still keep the 5 stars even i was tempted to reduce it a bit, it's wonderful read any how, my only problem that i sometimes even suffered when the author finished explaining a physical phenomenon and try to go abstract, my own opinion is that when it gets terribly boring and i never could understand what he wants to say, he uses very strange english all the time which irritated me oftenly.

the part on symmetry is also very vague, compared with my other book readings about the subject.

the part on poisson brackets i thought it was wonderful and insightful.

all in all i still Love this book and i think it worth reading....thanks for reading my review.

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