

THE ART OF EXPLAINING

A Conversation with:

Freeman Dyson, Princeton Physicist & Writer

*Author of *Disturbing the Universe*, and *The Rebel Scientist**

Ekaterina Eremenko, Berlin Filmmaker

*Director and producer of the film *Colors of Math**

Graham Farmelo, London Writer

*Author of *The Strangest Man*, *The Hidden Life of Paul Dirac**

Siobhan Roberts, Toronto Writer

*Author of *Genius at Play*, *The Curious Mathematical Mind of John Horton Conway* (forthcoming)*

Moderated by:

Jochen Brüning

Institut für Mathematik der Humboldt-Universität zu Berlin

Monday, May 26, 2014

6pm-8pm, Einstein-Saal, Urania

The Panelists:

Freeman Dyson

Dyson, an emeritus professor of physics at the Institute for Advanced Study in Princeton, has written a number of books about science for the general public, a number of them based on his personal experiences, such as his work as a civilian scientist for the Royal Air Force in World War II, and his collaborations with Hans Bethe and Richard Feynman.

“Disturbing the Universe” (1979) is a portrait-gallery of people he has known during his career as a scientist. “Weapons and Hope” (1984) is a study of ethical problems of war and peace. “Infinite in All Directions” (1988) is a philosophical meditation based on Dyson’s Gifford Lectures on Natural Theology given at the University of Aberdeen in Scotland. “Origins of Life” (1986) is a study of one of the major unsolved problems of science. “From Eros to Gaia” (1992) is a collection of essays and lectures, starting with a science-fiction story written at the age of nine, and ending with a mugging in Washington at age fifty-four. “Imagined Worlds” (1997) is an edited version of a set of lectures given at the Hebrew University in Jerusalem about human destiny, literature and science. “The Sun, the Genome and the Internet” (1999) discusses the question of whether modern technology could be used to narrow the gap between rich and poor rather than widen it. “The Scientist as Rebel” (2006) is a collection of book reviews and essays, mostly published in *The New York Review of Books*. “A Many-colored Glass: Reflections on the Place of Life in the Universe” (2007) is an edited version of a set of lectures given in 2004 at the University of Virginia.

Currently Dyson is working on a collection of essays with the title “Birds and Frogs,” to be published by World Scientific Publishing Company in Singapore, and a collection of book-reviews with the title “Dreams of Earth and Sky,” to be published by the *New York Review of Books*.

Dyson is a fellow of the American Physical Society, a member of the U.S. National Academy of Sciences, and a fellow of the Royal Society of London. In 2000 he was awarded the Templeton Prize for progress in Religion, and in 2012 he was awarded the Henri Poincaré Prize at the August meeting of the International Mathematical Physics Congress.

Ekaterina Eremenko

Ekaterina Eremenko is a filmmaker, a producer and director, based in Berlin. Born in Moscow to a family of engineers and scientists, Eremenko was amazed by the beauty of math from a young age. She graduated with Honors from Moscow State University in mathematics, followed by a PhD.

After working as a model and actor, Eremenko undertook a second education in filmmaking. Her award-winning documentary film “My Class” (2008) chronicles the lives of 26 gifted pupils, including Eremenko herself, who in 1982 were accepted at the elite school for Natural Sciences in the Soviet Union. As the synopsis for the film describes: “Graduating from this school guarantees a most

promising future. But then Perestroika happens, the old order collapses. Today, those pupils are spread all over the world, hardly any of them are still employed with scientific research.” In *My Class* Eremenko journeys into her past and finds her former classmates to discover what became of them after graduation and political upheaval.

Eremenko’s most recent film “Colors of Math” (2012), a documentary about modern mathematics, premiered at the Moscow International Film Festival and continues in its run as one of most popular documentaries in Russian cinema over the last two decades. It has also been screened at film festivals around the world, as well as many universities and science conferences, and it has been translated into 12 languages. As the synopsis describes: “To most people math appears abstract, mysterious. Complicated. Inaccessible. But math is nothing but a different language to express the world. Math can be sensual. Math can be tasted, it smells, it creates sound and color. One can touch it — and be touched by it...” And as some of the critics commented: “The topic is difficult, the approach is highly unusual” — “Completely true to its title, this film bypasses the brain and immediately reaches all senses...”

Graham Farmelo

Graham Farmelo is a Bye-Fellow at Churchill College, Cambridge, Senior Research Fellow at the Science Museum, London, and Adjunct Professor of Physics, Northeastern University, Boston USA.

Inspired by the achievement of Paul Dirac, Farmelo studied theoretical physics at Liverpool (BSc in 1974, PhD in 1977). He became the youngest tenured academic in Britain. In 1990, he moved to the Science Museum, where he chaired the vision of its new Wellcome Wing and became its Director of Exhibitions. He was elected Fellow of the Institute of Physics in 1999.

From 2003, he has been an independent consultant and writer, authoring “The Strangest Man,” a biography of the physicist Paul Dirac, which won the Costa Prize for biography (2008), the Los Angeles Prize for Science Writing (2009), Finalist for the PEN Prize biography (2009) and was the Physics World book of the year in 2008. His latest book, “Churchill's Bomb” was published in October 2013.

His next project is about the relationship between mathematics and physics, drawing from personal experience.

Siobhan Roberts

Siobhan Roberts is a Toronto journalist and author whose work focuses on mathematics and science. Her next book, “Genius at Play — The Curious Mathematical Mind of John Horton Conway,” is forthcoming with Bloomsbury in spring 2015. Over the past two years, while finishing the Conway biography, she was a Director's Visitor at the Institute for Advanced Study, in Princeton, and a Fellow at the Leon Levy Center for Biography, based at the CUNY Graduate Center in New York City.

She is currently the Writer-in-Residence at Humboldt University's Institut für Mathematik and the Berlin School of Mathematics. During her stay in Berlin she is researching a biography (co-authored with mathematician Helmut Hofer, of the Institute for Advanced Study in Princeton) about the late German mathematician Andreas Floer, who invented Floer homology and made seminal contributions to the areas of geometry, topology, and mathematical physics.

Roberts' first book was “King of Infinite Space — Donald Coxeter, The Man Who Saved Geometry” (Bloomsbury/Walker 2006), which won the Mathematical Association of America's 2009 Euler Prize for expanding the public's view of mathematics. Roberts also wrote and produced a documentary film about Coxeter, which aired in September 2009 on TVOntario's *The View From Here*.

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