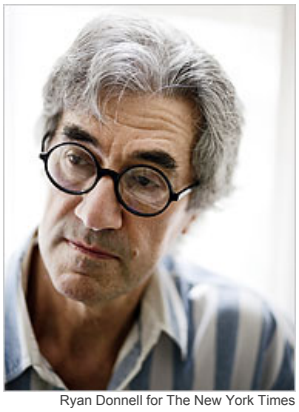
A CONVERSATION WITH GINO SEGRE

In the Footsteps of His Uncle, Then His Father

By CLAUDIA DREIFUS
Published: August 14, 2007



Ryan Donnell for The New York Times

Gino Segre, 68, a physicist and author whose father was a historian and whose uncle won the Nobel Prize for the discovery of the antiproton.

In Gino Segre's family, physics seems to be in the genes.

Dr. Segre is physics professor at the University of Pennsylvania. His uncle, Emilio Segre, was a winner of the 1959 Nobel Prize for the discovery of the antiproton. An older brother is a physicist, and an additional "six or seven" cousins do physics, too.

But Dr. Segre, 68, has a second profession: he writes popular books about the history of science. His most recent book, "Faust in Copenhagen: A Struggle for the Soul of Physics," about a 1932 conference at Niels Bohr's Institute for Theoretical Physics, has just been published, drawing praise from reviewers.

Q. *Why write a book about one scientific meeting?*

A. Because this was no ordinary meeting. For much of the 1930s, Niels Bohr invited young physicists to Copenhagen for an annual gathering where they could talk, joke and trade theories.

The 1932 conference took place at a moment of profound transitions. This was the "miracle year of physics," when a rapid succession of discoveries brought an end to the uncovering of quantum mechanics and the beginning of nuclear physics. Within the year, the Nazis would take power in Germany. Many of the conferees were Jewish. They'd soon be refugees.

At the end of their week, the physicists mounted a small entertainment, a skit where they parodied Goethe's "Faust," which is, of course, the story of a man who sells his soul to gain, among other things, all knowledge. Reading their script today, one can't help but wonder, could they foretell the future?

Q. *And what futures awaited the conferees?*

A. Max Delbruck would leave physics to found modern molecular biology. Paul Ehrenfest, depressed about the rise of Nazism, committed suicide. Lise Meitner was to discover nuclear fission, though she wouldn't get the Nobel Prize for it. Werner Heisenberg would lead Hitler's atom bomb program, while Niels Bohr would help organize the rescue of Denmark's Jews. Bohr himself fled Europe in 1943. Once in America, he worked on the Manhattan Project.

So this 1932 conference was the last moment when all these legends could be happy and relatively innocent together. There were no political choices they had to make.

Q. *A few years ago, there was a Broadway play, "Copenhagen," about the personal relationship between Heisenberg and Bohr. How is your book different?*

A. That play is set in 1941, almost a decade after the conference that is the centerpiece of my book. Though Michael Frayn, the playwright, based his drama on a true event, it is a fiction, speculative.

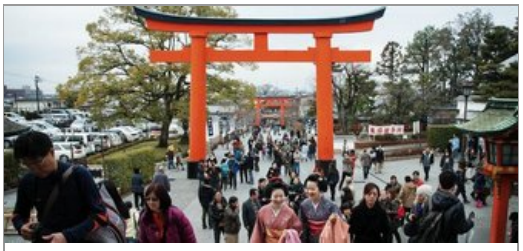
More Articles in Science »

MOST POPULAR

EMAILED | SEARCHED | VIEWED

1. Op-Ed | Pamela Druckerman: What You Learn in Your 40s
2. Loose Ends: The Sound of Philadelphia Fades Out
3. Interview | Philip Roth: My Life as a Writer
4. Torontoâ€™s Ethnic Buffet
5. End of the Ride for Lance Armstrong
6. Dispatch: The Cuban Evolution
7. Op-Ed Contributor: When May I Shoot a Student?
8. Missions Signal a Growing Role for Mormon Women
9. MAUREEN DOWD: Brace Yourself for Hillary and Jeb
10. Rare Mutation Kills Off Gene Responsible for Diabetes

Go to Complete List Â»



What is known is that in 1941, while the Germans were occupying Copenhagen, Werner Heisenberg arrived at Bohr's home and asked to see him. Historians only know fragments of what occurred next. In the play, the audience is left to wonder. Was Heisenberg spying on his mentor? Was he trying to enlist Bohr to the German cause? Or was he trying to transmit some kind of message to the Allies about the German nuclear program?

My own feeling is that Bohr and Heisenberg had been very close in the 1920s. With all that was happening, Heisenberg may have wanted to see if they were still close. That was naïve on his part.

Q. *You clearly love the culture and lore of physics. Is that why you became a physicist?*

A. No, I did it, at first, because I was a dutiful son. I grew up in Florence, Italy. My father was a historian, and I sensed there was a great rivalry between him and his brother, Emilio, a protégé of Enrico Fermi's. When I was 15, my father said, "I think you should become a theoretical physicist, and I want you to surpass your uncle."

I was good at math. Science is a good career for very introverted, solitary people who like figuring out little puzzles. That was me, at that stage in my life. So when I was 16, I went to the Santa Maria Novella station in Florence, took a train, a boat, another train and a subway and ended up at Harvard.

Q. *What did your uncle think of that?*

A. I didn't know him. He and my father were estranged. They were both very difficult people, interesting, but hard to get along with. In fact, I didn't really know my uncle until 1965, when I went to Berkeley as a post-doc. He was there, and I discovered I liked him. We spoke to each other in Italian. He told me wonderful stories about Enrico Fermi.

My uncle remembered Fermi as being able to calculate, very quickly, the order of magnitude of anything. During the war, my uncle worked with Fermi on the atomic bomb at Los Alamos. At the Trinity test site, as soon as he saw the blast, Fermi started ripping up little pieces of paper. At the very moment the shockwave from the blast arrived, it blew Fermi's paper scraps away. Fermi then took out a slide rule and said, "Ah, 12,000 tons of TNT." From the papers and his position, he could calculate the explosive power of this new weapon.

Q. *Your family is Italian-Jewish. How did they survive World War II?*

A. Well, both my uncle and father traveled widely, and they had a sense of what was coming. In 1938, my uncle left a position as director of the physics lab at the University of Palermo to accept a much lower job as a research assistant in Berkeley.

As for my father, in the spring of 1939, he went to the American consulate in Florence and applied for tourist visas so that he, my mother, my older brother and I could visit the World's Fair in New York. The consul pointed to me, an infant, and said, "He's quite young to enjoy such an exposition." My father replied, "You know, Jewish children these days, they grow so quickly." That's how we came to America on tourist visas.

Q. *Does it ever trouble you that you didn't fulfill your father's demand that you surpass his brother?*

A. Oh, I'm pretty comfortable with my place in physics. I work on neutrinos, which I like because they are the strangest, weirdest elementary particle. They can travel millions of miles unimpeded by any encounter with other materials.

The neutrino problem I work on has to do with what happens when stars are born. They form pulsars, little stars, that shoot off hundred of miles an hour in one direction. No one knows why. I think it has to do with neutrinos they emit, which act like a recoil rifle. This is not universally accepted, but I find it fascinating.

The thing that's surprising is that I've begun writing about history. I do wonder what my father, the historian, would think of that.

Sphere: Related Blogs & Articles

More Articles in Science »

36 hours in Kyoto, Japan
ALSO IN TRAVEL »
Skiing in my own backyard
It remembers, you fold: Packing-list apps

nytimes.com TRAVEL

Tips

To find reference information about the words used in this article, double-click on any word, phrase or name. A new window will open with a dictionary definition or encyclopedia entry.

Related Searches

- Segre, Gino
- Physics
- Science and Technology
- History

INSIDE NYTIMES.COM

BUSINESS »

A Tiny Publisher Returns Newsweek to Print

OPINION »

Letters: If Obesity Is a Disease, Then What?

SPORTS »

Collins's Debut Recalls Robinson's in 1947

THEATER »

Emotional Pitfalls of the Acting Life

OPINION »

The Stone: The Philosophy of 'Her'

Is a romantic relationship between a man and a machine possible?

HEALTH »

The Perils of Toughing It Out