ABEL PRIZE and the DEATH of JOHN NASH



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Professors John F. Nash, Jr., and Louis Nirenberg receive the 2015 Abel Prize from His Majesty, King Harald V of Norway. The event took place at the University of Oslo on May 19, 2015. Dr. Nash and his wife, Alicia Nash, died five days later in a car crash after they returned to the States. Photo by NTB/Scanpix, all rights reserved. Image provided here as fair use for educational purposes.

In March of 2015, the Norwegian Academy of Science and Letters announced that John Nash and <u>Louis Nirenberg</u> would jointly share the Abel Prize—one of the most-significant honors a mathematician can receive. The ceremony would take place, in Oslo, on May 19th.

The prize is named for <u>Niels Henrik Abel</u> (August 5, 1802 - April 6, 1829), an exceptionally intelligent and prodigious Norwegian math genius who died at the young age of 26. The Norwegian government first announced what soon became one of math's top prizes during the bicentenary celebration of Abel's birth.

Nash (who had previously won the Nobel Prize for his work on "game theory") and Nirenberg received the Abel Prize for their work on partial differential equations (referred to as PDEs). Making the announcement, the Academy noted the pair was being recognized for their:

... striking and seminal contributions to the theory of nonlinear partial differential equations and its applications to geometric analysis.

Jo Røislien, a popular Norwegian mathematician, describes what that means in (sort of) layman's terms:

The world does not stand still. So, if we want to understand it, we need to be able to perform calculations on change.

It is difficult to overstate the importance of PDEs for our modern society. Weather forecasts? PDE. Modern communications technology? PDE. The gas flowing through pipes from the Norwegian continental shelf to Europe? PDE. Einstein's General Theory of Relativity? PDE. This puts an increased understanding of PDEs high on the wish lists of not only mathematicians, but also of everyone who uses mathematics. Engineers, economists, social planners, the healthcare sector.

But this year's winners of the Abel Prize have gone further than simply giving us greater insight into PDEs. With exceptional elegance, they have managed to connect two apparently quite different branches of mathematics. They have used PDEs, the mathematics of change, to gain new insights into geometry, which we usually consider as static.

Wash and Nirenberg have both studied abstract geometric objects. And some of their mathematical results have not only been pioneering but also unexpected. Nash and Nirenberg have quite simply expanded our understanding of what is geometrically possible and have opened up new ways of seeing the world. And they've done it using the branch of mathematics designed to describe change, movement and velocity.

It may sound like some distant reality, but it's basically about how we relate to the world, how it changes, and what is possible and what is not. Several of Nash and Nirenberg's results have already proven central when solving PDEs using computers, but we still don't know what the full practical implications of their work will be. Nash and Nirenberg have laid the foundation, now it's up to us to explore the possible applications.

Norway's King Harald V awarded the prize to Nash and Nirenberg on May 19th, at the University of Oslo. After the celebrations, the pair returned to America.

Arriving at the Stateside airport—on Saturday afternoon, May 23rd—John and Alicia Nash hired a cab for the drive home since their limo driver (who was supposed to meet them at the airport) never showed-up. Their route of travel included the New Jersey Turnpike.

When they were within a few miles from their home, in Princeton Junction, both John and Alicia were ejected from their cab when the driver lost control of the vehicle, hitting a guardrail.

NJ.com reports what the investigating police officers learned about the accident which occurred around 4:30 in the afternoon:

Police said the two were in a taxi traveling southbound in the left lane of the turnpike when the driver of the Ford Crown Victoria [the Nashs' taxi] lost control as he tried to pass a Chrysler in the center lane, crashing into a guard rail near Interchange 8A in Monroe Township, according to State Police Sgt. Gregory Williams.

Both Professor Nash and Alicia Nash died at the scene. He was 86; she was 82.

When the news broke, the following day, people in America and around the world expressed their profound sadness at the loss of this devoted couple. Christopher Eisgruber, Princeton University's President, said:

We are stunned and saddened by news of the untimely passing of John Nash and his wife and great champion, Alicia. Both of them were very special members of the Princeton University community.

John's remarkable achievements inspired generations of mathematicians, economists and scientists who were influenced by his brilliant, groundbreaking work in game theory, and the story of his life with Alicia moved millions of readers and moviegoers who marveled at their courage in the face of daunting challenges.

The image, at the top of this page, is one of the last photos taken of Professor Nash. Together with his long-time colleague, Dr. Nirenberg, he is receiving the Abel Prize from King Harald.

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Media Stream



John F. Nash, Jr. Receives the Abel Prize

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