

A Beautiful Mind

by Sylvia Nasar

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4 ACADEMY AWARDS 2001 Including BEST PICTURE



DIRECTOR

Ron Howard

WRITER

Aktiva Goldmen

STARRING

Russell Crowe

Ed Harris

Jenifer Connely

Paul Bettany

John Lucas

Russell Crowe
<John Nash>



Jennifer Connelly
<Alicia>



Ed Harris
<William Parcher>

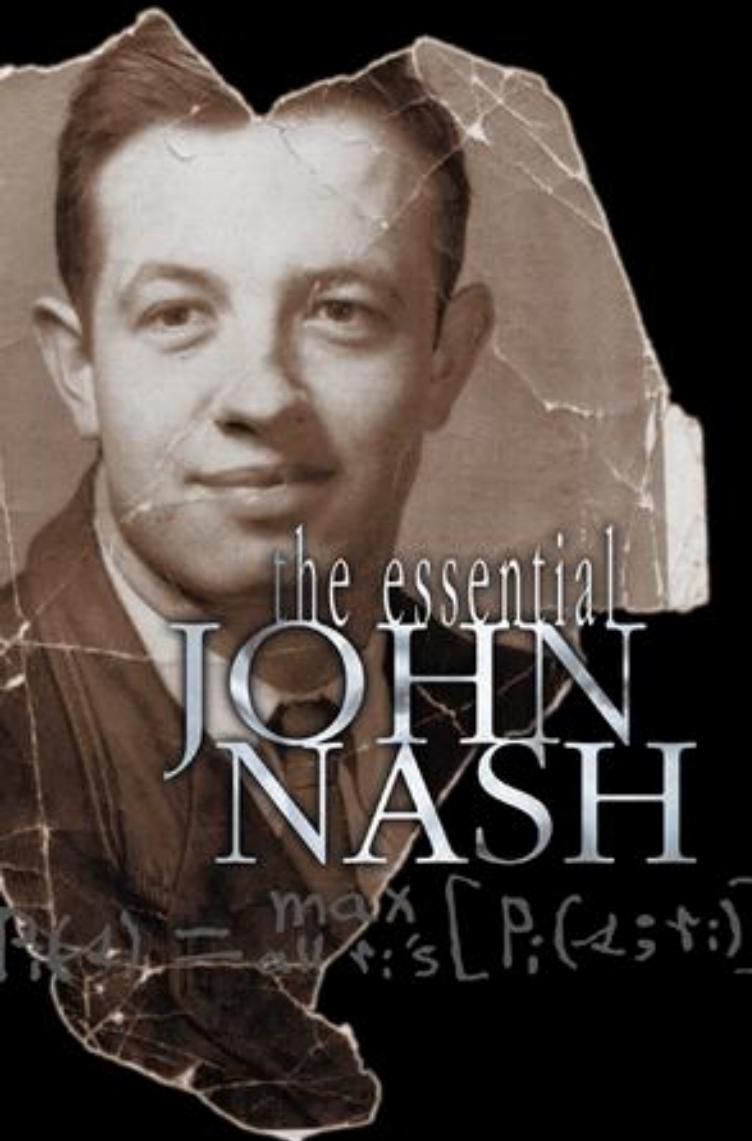


Paul Bettany
<Charles Helmen>



John Lucas
<Martin Hansen>

Game Theory



Schizophrenia

Princeton

Alicia Nash

Nobel Award

A Beautiful Mind

Mathematics

Saluting Survivors

John Forbes Nash



Agenda

- Childhood
- Education
- Princeton Years
- Schizophrenia
- Recovery
- Alicia
- Works / Contributions
- Recognition
- Nobel Award

- Born on June 13, 1928 in West Virginia, USA
- Parents – Margaret Virginia Martin and John Nash Sr.
- At 12, used to carry out scientific experiments in his room
- Young Nash was solitary, bookish and introverted





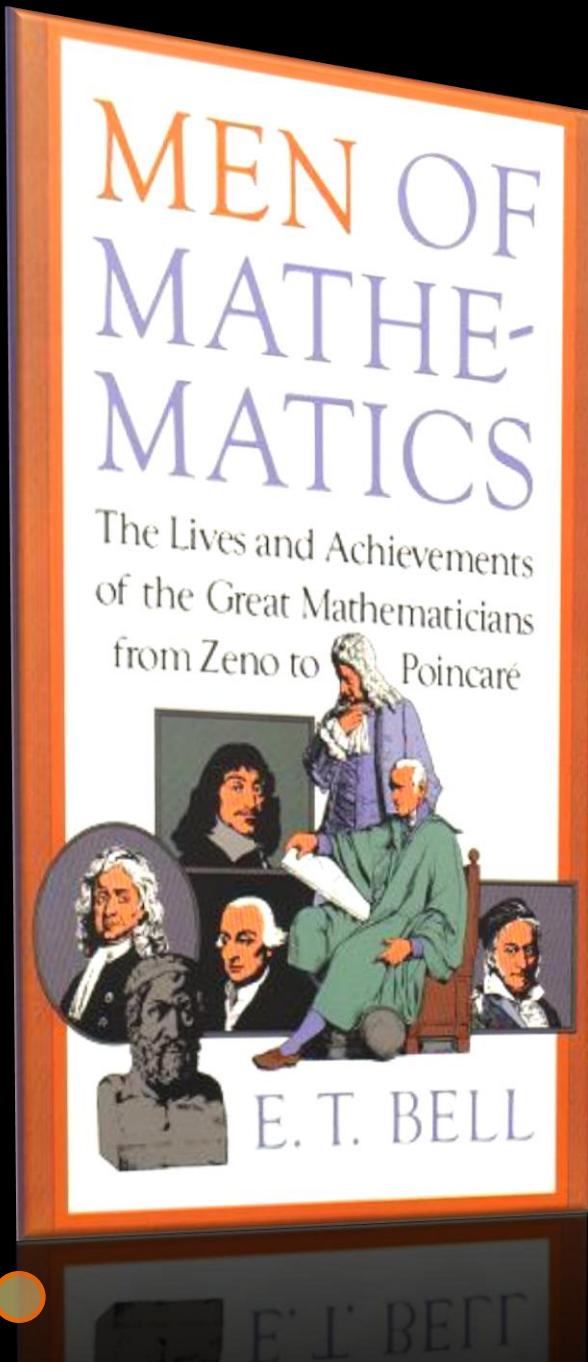
“Johnny was always different. [My parents] knew he was different. And they knew he was bright. He always wanted to do things his way. Mother insisted I do things for him, that I include him in my friendships... but I wasn’t too keen on showing off my somewhat odd brother”

Martha

(John Nash's Sister)

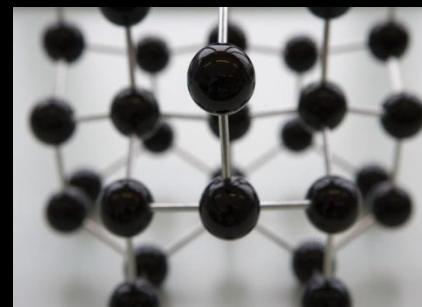
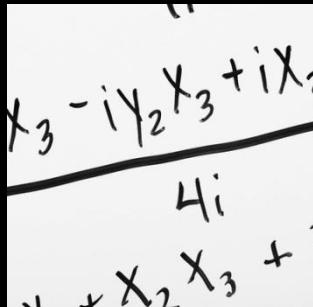
Martha





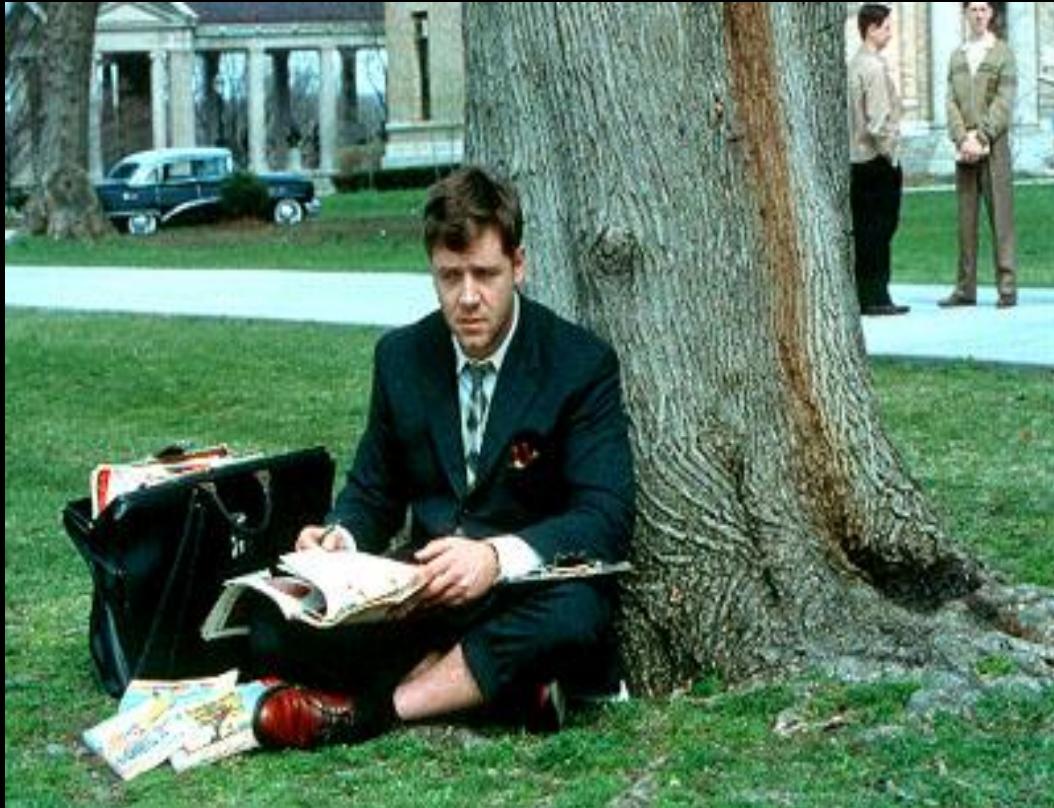
- Was voted as the most 'Original' in his school
- Teachers at school didn't recognize his genius
- Worked on Larger numbers while peers were far behind
- Was inspired to take up Mathematics after reading E T Bell's *Men of Mathematics*

- Entered Bluefield College in 1941
- Studied mathematics and science courses , Chemistry in particular
- One of ten nationally awarded winners of the George Westinghouse Award
- Award got him a scholarship to Carnegie-Mellon University





- Studying Chemistry, he soon realized his interest lies in Mathematics
- Received a BS and an MS in mathematics in 1948
- Was accepted into the mathematics program at Harvard, Princeton, Chicago and Michigan
- But he chose Princeton



In September 1948, Nash entered Princeton. He showed interest in mathematics; topology, geometry, game theory and logic. All of these were among his interests but he escaped to talk about these.



- While Math Professors heaped praise on him, fellow students found him strange
- Being physically strong saved him from being bullied
- Yet, fellow students took delight in making fun of Nash.



“We tormented poor John. We were very unkind. We were obnoxious. We sensed he had a mental problem”

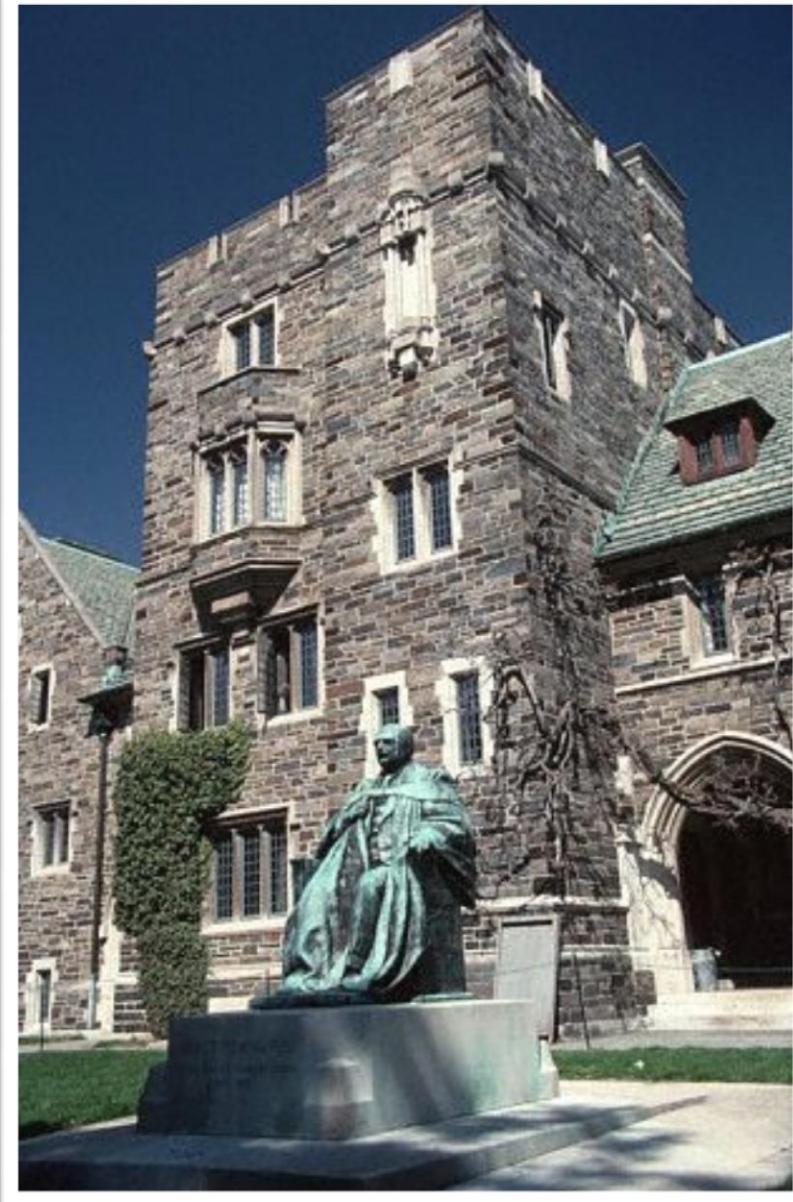
A fellow Student

“He was a country boy unsophisticated even by our standards. He behaved oddly, playing a single chord on a piano over and over, leaving a melting ice cream cone melting on top of his cast-off clothing, walking on his roommate’s sleeping body to turn off the light.”

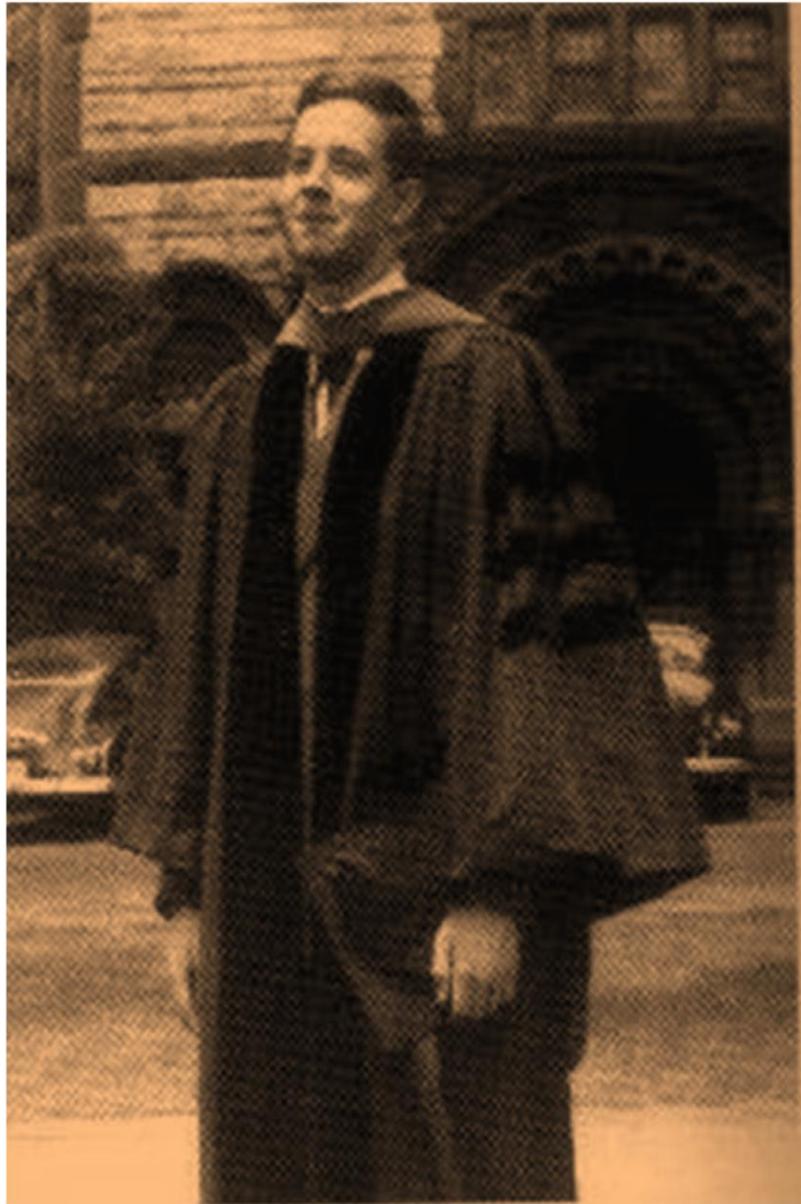
Another fellow student

Fellow Students





- At his time, Princeton was to Mathematics what Detroit was, and still is, to cars
- Joined Princeton after Carnegie in September 1948
- Solomon Lefschetz, Chairman of Princeton invited Nash by offering him the John S. Kennedy fellowship
- Showed interest in broad range of pure mathematics



- In 1949, wrote a paper which 45 years later was to win a Nobel prize for economics
- He earned a doctorate in 1950 with a dissertation on non-cooperative games.



‘ He was always full of mathematical ideas, not only on game theory, but in geometry and topology as well. However, my most vivid memory of this time is of the many games which were played in the common room. I was introduced to Go and Kriegspiel, and also to an ingenious topological game which we called in honour of the inventor

Milnor

*Fellow student,
Describing Nash during his years at Princeton*

Milnor





John Nash

‘ Nash was totally spooky. He wouldn’t look at you. He’d take a lot of time answering a question. If he thought the question was foolish he wouldn’t answer at all. He had no affect. It was mixture of pride and something else. He was so isolated but there really was underneath it all a warmth and appreciation of people’

A fellow student at Princeton

Fellow Students



Schizophrenia



- Pressure, tension and worries led to his downward spiral
- He was first disturbed in 1959 when he started to hear voices. (though his first delusion was his imaginary friend Charles) .
- He became paranoid and was admitted into McLean Hospital.
- Diagnosed with paranoid schizophrenia and mild depression with low self-esteem



- Remained in and out of mental hospitals until 1970
- Given “insulin shock therapy” and antipsychotic medication
- In campus he became “THE PHANTOM OF FINE HALL”, a shadow figure who would scribble arcane equations on blackboards in the middle of the night.

He started to think that he was a great man because of his ideas. He began to hear voices all the time. He hears telephone calls in his head. He also sees some men.



THE PROBLEM IS
NOT IN YOUR
BRAIN BUT HEART.

John doesn't accept
medication. He only wants
to live in a world of
dreams forever...



Recovery



- Slowly over years, Nash started Recovering.
- During the 80s, Nash started recovering. His delusions diminished and he started getting engaged
- Made a recovery from the schizophrenia from which he had suffered since 1959.
- “Marcee can never be real, she never gets old”. These were his exact words from the movie, when he realizes he was living in a fantasy world.





Although he spent large periods in hospital, his mathematical work continued successfully. He said; “I would not say that there is a direct relation between mathematics and madness, but there is no doubt that great mathematicians suffer from maniacal characteristics.”



- Despite spending periods in Hospital, his mathematical work continued to have success after success
- Ability to produce mathematics of the highest quality did not totally leave him
- Delivered a paper at the tenth World Congress of Psychiatry in 1996 describing his illness



“ I would not treat myself as fully recovered if I could not produce good things in my work”

John Forbes Nash



- John's life would have had a harsher arc if not for his wife, Alicia Larde
- Was strikingly beautiful, well groomed and feminine
- She was intellectually sharp, cosmopolitan, witty and socially savvy
- Entered Nash's Life as a young M.I.T student dazzled by a star professor

Alicia



“I walked into the classroom, and I thought he was very nice looking, he was like the fair-haired boy of the math department.”

Alicia



“She was one of the few girls that attracted me”

John Nash

Alicia & Nash





- Alicia and Nash married in February 1957
- After John's sudden onset of Schizophrenia, Alicia tried to hide it from friends and faculty
- She wanted to save his career and preserve his intellect
- Got Nash involuntarily committed to McLean Hospital outside Boston
- After three years of familial turmoil, she filed for divorce

Alicia



- In 1970, a decade after the divorce and with her ex-husband struggling just to survive, she took him into her home
- Alicia supported and was Nash's biggest moral support throughout his suffering from schizophrenia
- They remarried in June 1, 2001

Alicia



“ If she hadn’t taken him in, he would have wound up on the streets. He had no income. He had no home. I think that Alicia saved his life.”

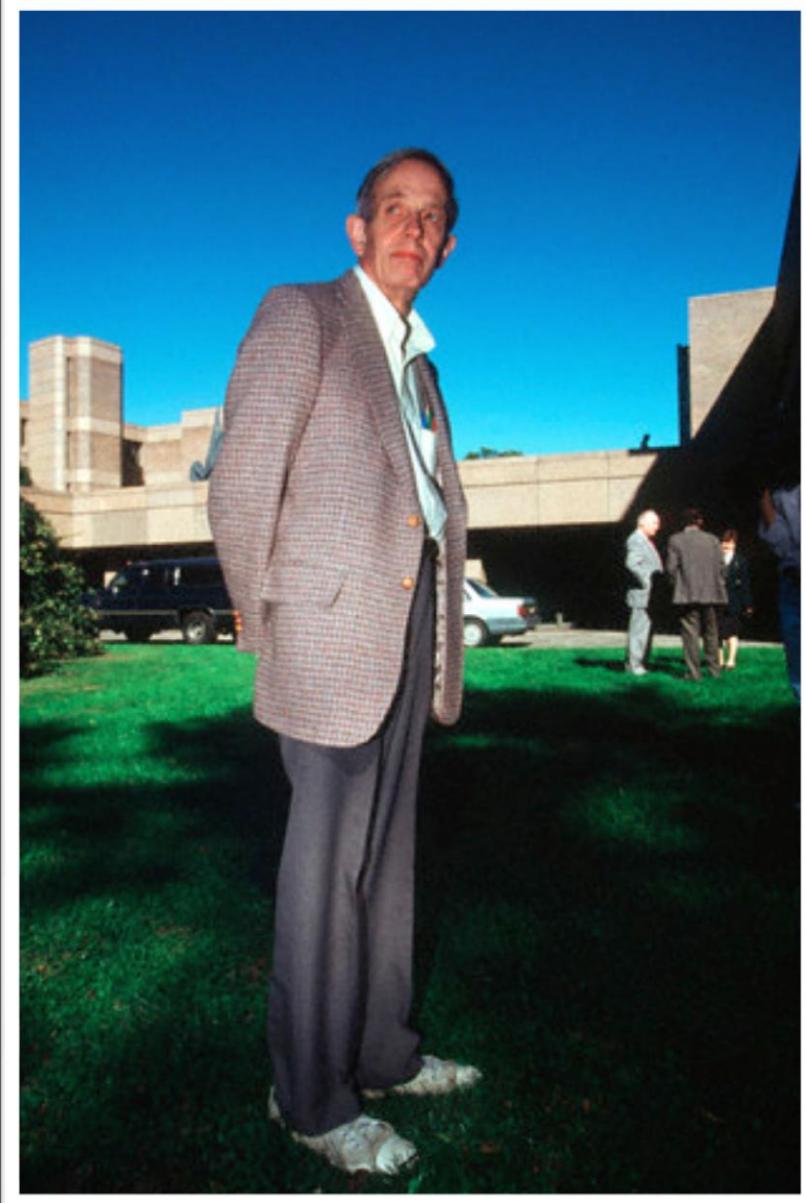
Sylvia Nasar

Biographer, ‘A Beautiful Mind’

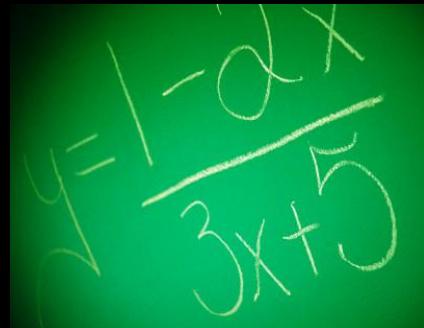
Sylvia Nasar



Works



- Equilibrium points in N-Person Games, 1950
- Non-Cooperative Games, 1951 which contained definition and properties of what would later become Nash Equilibrium
- Nash Embedding Theorem
- Theory of nonlinear parabolic partial differential equations
- Published twenty three scientific studies between 1945 and 1996



- Proved Brouwer's fixed point theorem
- Solved one of Riemann's most perplexing mathematical conundrums
- Theory of non-linear parabolic partial differential equations.

Recognition



- Won the John Von Neumann Theory Prize , 1978
- Nobel Prize in Economics, 1994
- The Leroy P Steele Prize, 1999



- Nobel committee first encountered Nash's name in mid 1980s
- Was awarded the 1994 Nobel award in Economic Science for his work on game theory
- Nash says that nothing would have happened if not for the Nobel.
- The Nobel got him more recognition and awards.



**Currently he teaches at the Princeton University as a
Senior Research Mathematician**

.... exploring mathematics....

.... exploring the world in which he first succeeded....

**.... the world which carried him during his debilitating
illness....**

.... and the world that has embraced him again....

The End