

**CELEBRATION OF THE 60TH ANNIVERSARY
OF NASH EQUILIBRIUM**

MOVIE:

**A BEAUTIFUL MIND (2001), Ron Howard (director),
Akiva Goldsman (written by), Sylvia Nasar (book).**

BOOKS:

**A BEAUTIFUL MIND(2001) , Sylvia Nasar (Simon and
Schuster) .**

THE ESSENCIAL JOHN NASH, edited by Harold W.

Kuhn and Sylvia Nasar (Princeton University Press, 2002)

JOHN NASH: THE MASTER OF ECONOMIC MODELING

Ariel Rubinstein (1995), Scand. J. of Economics

“During the past two decades non-cooperative game theory has become a central topic in economic theory. **Many scholars have contributed to this revolution, none more than John Nash.** Following the publication of Von Neumann and Morgenstern’s book, **it was Nash’s papers in the early fifties which pointed the way for future research in game theory.** The notion of Nash equilibrium is indispensable. Nash’s formulation of the bargaining problem and the Nash bargaining solution

constitute the cornerstone of the modern bargaining theory. His insights into the non-cooperative foundations of non-cooperative game theory initiated an area of research known as the Nash program. Nash’s analysis of the demand game in which he uses a perturbation of a game to select an equilibrium inspired the construction of several refinements of the notion of Nash equilibrium”.

1. The ability to identify abstract structures.

“The art of economic theoretical modeling is the identification of simple structures which approximately represents the process by which people *reason* about a situation. Nash modeled interactive reasoning. We often make arguments which have the following circular structure:

“I do it because I believe he will do one of the following things and I am aware of why he will do it”.

Nash suggests a reasonable way to model such reasoning”.

“To summarize, an ideal theoretical economic paper should identify a simple frame of reasoning, not necessarily close to “reality” in the physical sense, but close to the way in which people reason about situations. Nash did precisely that!”

2. The question of appropriate mathematical level

“Nash demonstrates a clear principle: generalize the model only as long as the basic logic of the arguments is not lost. Express the idea in a way that reveals the basic argument without trivialization of the proposition.”

3. The relationship between Economic Theory and the Real world.

“I admire Nash’s approach as it makes clear that what theoretical economists do is to model the concepts which are used in natural reasoning. **An economic theoretical model is not required to be tested except in our own brain.** The art of economic modeling requires the avoidance of issues which are certainly connected to the main topic but whose inclusion in the analysis would prevent clear-cut results. In his first bargaining paper in *Econometrica* (1950), Nash states that

“.....we idealize the bargaining problem by assuming that the two individuals are highly rational, that each other accurately compares his desires for various things, that they are equal in bargaining skill...”.

Certain facts which are relevant to a resolution of a bargaining problem and which are omitted by Nash are probably more important than the only element (attitude towards risk) which is included in his model. Nash chose to ignore the other factors in spite their importance, **in order to achieve simple and clear-cut analysis”**.

4. Beauty

“If I had to select a paper for presentation to a group of intelligent students who wish to know what economic theory is about, I would select Nash’s 1950 *Econometrica* paper without hesitation. This is my ideal paper in almost all respects, but above all it is just ... **beautiful**. Every sentence is measured and appropriate. The construction of the model is so logical. The result is surprising. There are plenty of leftover issues”.

“THE PAPER CONSTITUTES ECONOMIC THEORY IN ITS PUREST FORM”.