

P R E F A C E

H A R O L D W . K U H N

I have known John Nash for more than fifty years. We were graduate students together in the late 1940s. And, although he went off to MIT, we have never wholly lost touch. Even today, we have offices in the Mathematics Department of Princeton University on the same floor of Fine Hall. As his friend and colleague, it has been a great pleasure to co-edit this volume with his biographer, Sylvia Nasar.

In Nasar's splendid introduction to this volume, we are taken on a guided tour of Nash's scientific life, starting with his brilliant early career, the decades of mental illness that followed, and the subsequent transformation of his life by the award of the Nobel prize in economics in 1994. For me, the defining moment that divided the period when he was in the depths of his despair from his reentry into a world that he had always deserved took place on a bench in front of a minimalist Japanese fountain at the Institute for Advanced Studies in Princeton in October 1994.

Nash and I had just attended a seminar given by Herbert S. Wilf on the generation of identities for hypergeometric functions. I had called Nash earlier to ask him to lunch after the seminar but had not revealed my real purpose. Several months before, I had learned that it was almost

viii certain that Nash would share the Nobel in an award that would recognize the central importance of non-cooperative games in modern economic theory. Using a variety of subterfuges, photos had been taken, a curriculum vitae had been assembled, an appointment to a nominal research position at Princeton had been arranged, and various supporting materials had been sent to Stockholm. In addition, with the active support of Jackie Savani, the press officer of Princeton University, preparations had been made for a press conference on the following day. Three days earlier, I had been informed that the Social Science Class of the Swedish Academy had approved the award unanimously, and I had been given permission to tell Nash the great news. I had already told Alicia Nash to take the day off from work and sworn her to secrecy.

So, as we sat on the bench, enjoying the mild fall weather and the splendor of the Institute woods, I told John that he should be up at 6:30 A.M. the following morning to receive a phone call from Carl-Olof Jacobsen, secretary general of the Nobel Foundation, who would tell him that he was sharing the Prize in Economic Sciences in Memory of Alfred Nobel. John took the news very calmly; it appeared that his son, John David Stier, had sent him an article from the *Boston Globe* saying that he was in contention for the prize and that the only impediment was the fear that his mental illness might lead to behavior that would embarrass the King of Sweden. He seemed more interested in the fact that the prize was split three ways and, after taxes, the net amount would not be that much.

We then went home to lunch where, after many objections, Nash met Jackie Savani. Nash refused to discuss any possible questions that might be asked at the press conference the next day. The press conference went very well, largely due to John's highly developed sense of humor, which turned aside questions that probed his private life with quiet, always logical, answers. On the morning of the announcement, he avoided reporters by coming, at my invitation, to my undergraduate course, where we were starting a section on game theory. It was a morning that those students will long remember.

Recognition is a cure for many ills; although Nash's mental illness had faded into remission in the years preceding 1994, the announcement of the Nobel prize signaled a new period in his life. The monetary

amount of the prize was nontrivial (but subject to taxes in the United States, which is a surprise to most American Nobelists). Much more important was the recognition that was so long in coming.

Although he is one of the most original mathematical minds of the twentieth century, the reasons for this delay are easy to understand. His formally published work consists of about fifteen papers, five in game theory and ten in pure mathematics, produced in the main during the ten-year period from 1949 to 1959. In the past forty years, he has published very little and many people who valued his early work thought he was dead. The truth, as we well know, is that he was suffering from a debilitating mental illness diagnosed as schizophrenia and was living a quiet and secluded life near the academic community of Princeton, sheltered physically and emotionally by his wife, Alicia Nash.

After more than twenty-five years of life isolated in the main from academic activities, Nash began to emerge from the shadows of his mental illness and a number of friends and colleagues began to provide for him the rewards that he deserved. In 1993, at the instigation of Peter Sarnak and Louis Nirenberg, I joined them to collect and edit a sort of “Festschrift,” consisting of papers in the fields in which Nash had made early and important contributions. Nash’s name had been put forward for many years by a number of economists who are asked to make nominations for the Nobel Memorial Prize in Economics. In 1994, their efforts bore fruit. After the Nobel prize, honors appeared from all sides. He was elected to the National Academy of Sciences; the citation reads: “Nash is best known for his work in game theory. He has also made basic and extremely important contributions which have profoundly influenced differential geometry, real algebraic geometry, and partial differential equations.” He was awarded the Steele Prize for a Seminal Contribution of the American Mathematical Society; the citation reads, in part: “This is one of the great achievements in mathematical analysis in this century.” He has received honorary degrees from Carnegie Mellon University and the University of Athens, and many awards from mental-health organizations that wish to recognize his exemplary recovery.

In preparing this volume, Sylvia Nasar and I wish to enlarge the extent of this recognition by making the most important contributions of

HAROLD W. KUHN

Preface

John Nash—both in game theory and in pure mathematics—available to a wider audience. We believe that, in this form, we may also bridge the gap between the economists, on the one hand, and the pure mathematicians, on the other, each of whom has appreciated only part of Nash’s scientific contributions. This book is not a “Complete Works”; we both wish John Nash well in his current research and hope to see many more significant works from him in the future.

× **Acknowledgments**

Sylvia Nasar and I thank the wonderful and wonderfully congenial team at Princeton University Press for their patience, skill, and, above all, infectious enthusiasm. In particular, we thank Linny Schenck, for her careful shepherding of the production process; Tracy Baldwin, for giving the book a very special appearance; Grady Klein, for giving us an inspired book cover; and Vickie Kearn and Peter Dougherty, for their calm stewardship throughout. All editors should be so lucky!

We are also grateful to John and Alicia Nash, Martha Legg, and John Stier for their contributions, and to Avinash Dixit for his many useful suggestions. Working with old friends and making new ones was, for us, the best part of what has been a most rewarding experience.