



Intellectual Capital



**FORTY YEARS of the
NOBEL PRIZE in ECONOMICS**

THOMAS KARIER



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Preface

There were probably no more than twenty Nobel Prize winners in economics when I first started thinking about this book. Trying to find my way around the catacombs of the University of Illinois library stacks, I came across speeches of the first Nobel Prize winners in economics. Here was a fascinating attempt by the laureates themselves to explain their own contributions to a more general, highly educated audience without the aid of mathematics. While not all the laureates fully succeeded in conveying the significance of their accomplishments, they often revealed much about the state of economics as well as their own character and motivation. I started a file about Nobel Prize winners that accumulated over the next twenty years. A lot has changed over this time, including the fact that source documents, once only available in a restricted area of a university library, became widely available on the Internet.

The concept for the book finally took shape after I read something totally unrelated to economics, *A Brief History of Time* by Stephen Hawking. This extraordinary book explained scientific theories without mathematics and included lucid explanations of the achievements of Nobel Prize winners in physics. If it was possible to explain the great ideas of physics, the general theory of relativity, and quantum mechanics, then surely it was possible to explain the great ideas of economics. The period of accumulating documents came to a close and I started writing about the contributions of all sixty-two Nobel winners in economics for the first forty years of the prize, which was first awarded in 1969. Astute readers will note that the winners in the forty-first year are also included, since they were announced while the book was still in production.

Any project that spans such a long period of time incurs many debts and this one is no exception. I especially appreciate the intrepid readers of the first drafts who helped me fine-tune the focus and tone. Paul DePalma and

Doug Hammond read early drafts and are responsible for more changes in the book than they will probably ever appreciate. The Honorable Lisa Brown provided invaluable suggestions for both content and presentation, including the unusual suggestion that I consider the achievements of Nobel Peace Prize winner and economist Mohammed Yunus, who is now a major part of the final chapter. Other readers were helpful in reviewing selected chapters and I appreciate the time they dedicated to the effort, including Doug Orr, William Milberg, Clair Brown, George Akerlof, Zohreh Emami, John Davis, and Teresa Ghilarducci. All of their comments were appreciated and if the book falls short in any respect, it is only because of my failure to adhere more rigorously to their advice. The team at Cambridge University Press was a pleasure to work with and I have to thank both Scott Parris and Adam Levine for making this publication process so effortless. The fine artwork on the cover was donated by Karier Design and my creative sister Nancy.

My deepest appreciation, however, is reserved for my family, who tolerated and encouraged my immersion in this marathon project. Victor, Mirna, Jose, Marco, and my wife Maria Ester never seemed to mind when I was lost to the world, sorting out the great Nobel ideas, and for this they have my love and gratitude.

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Economic Nobel Laureates

Year	Nobel Laureate	Country	Chapter
1969	Frisch, Ragnar A.	Norway	13
	Tinbergen, Jan	The Netherlands	13
1970	Samuelson, Paul A.	United States	7
1971	Kuznets, Simon S.	United States	9
1972	Arrow, Kenneth J.	United States	11
	Hicks, John R.	Great Britain	5
1973	Leontief, Wassily W.	United States	9
1974	Hayek, Friedrich A.	Great Britain	2
	Myrdal, K. Gunnar	Sweden	7
1975	Kantorovich, Leonid V.	Soviet Union	9
	Koopmans, Tjalling C.	United States	9
1976	Friedman, Milton	United States	2
1977	Meade, James E.	Great Britain	12
	Ohlin, Bertil G.	Sweden	12
1978	Simon, Herbert A.	United States	6
1979	Lewis, Sir W. Arthur	British West Indies	12
	Schultz, Theodore W.	United States	3
1980	Klein, Lawrence R.	United States	7
1981	Tobin, James	United States	7
1982	Stigler, George J.	United States	3
1983	Debreu, Gerard	United States	11
1984	Stone, Sir J. Richard N.	Great Britain	9
1985	Modigliani, Franco	United States	7
1986	Buchanan, James M. Jr.	United States	2

(continued)

Year	Nobel Laureate	Country	Chapter
1987	Solow, Robert M.	United States	7
1988	Allais, Maurice F.	France	11
1989	Haavelmo, Trygve M.	Norway	13
1990	Markowitz, Harry M.	United States	4
	Miller, Merton H.	United States	4
	Sharpe, William F.	United States	4
1991	Coase, Ronald H.	United States	3
1992	Becker, Gary S.	United States	3
1993	Fogel, Robert W.	United States	14
	North, Douglass C.	United States	14
1994	Harsanyi, John C.	United States	10
	Nash, John F.	United States	10
	Selten, Reinhard	Germany	10
1995	Lucas, Robert E.	United States	8
1996	Mirrlees, Sir James A.	United States	5
	Vickrey, William S.	United States	5
1997	Merton, Robert C.	United States	4
	Scholes, Myron S.	United States	4
1998	Sen, Amartya K.	United States	12
1999	Mundell, Robert A.	United States	12
2000	Heckman, James J.	United States	13
	McFadden, Daniel L.	United States	13
2001	Akerlof, George A.	United States	6
	Spence, A. Michael	United States	6
	Stiglitz, Joseph E.	United States	6
2002	Kahneman, Daniel	United States/Israel	6
	Smith, Vernon L.	United States	5
2003	Engle, Robert F.	United States	13
	Granger, Sir Clive W. J.	United States	13
2004	Kydland, Finn E.	United States	8
	Prescott, Edward C.	United States	8
2005	Aumann, Robert J.	Israel	10
	Schelling, Thomas C.	United States	10
2006	Phelps, Edmund S.	United States	8
2007	Hurwicz, Leonid	United States	10

Year	Nobel Laureate	Country	Chapter
	Maskin, Eric S.	United States	10
	Myerson, Roger B.	United States	10
2008	Krugman, Paul R.	United States	12
2009	Williamson, Oliver E.	United States	14
	Ostrom, Elinor	United States	14

ONE

An Economic Prize

Alfred Nobel was probably the richest man in Europe when he died in 1896. A serious scientist and inventor, he had taken great personal risks in his early experiments with the unstable explosive nitroglycerine. In fact, during a low point in his career, he lost his younger brother in a laboratory explosion and came close to losing his own life. But because of a stubborn dedication to his work and a confidence in his own ability, he persevered, overcoming technical difficulties and ultimately succeeding in creating a more stable and more practical explosive, dynamite. Equally powerful as nitroglycerin but many times more useful, dynamite would revolutionize mining and construction of canals, roads, and railroads. It was one of the great discoveries of the nineteenth century and would open the door to the industrial revolution and the modernization of industry and transportation.

The potential uses for dynamite were almost immediately apparent, creating a huge demand and opening up a great business opportunity. Unlike many inventors, Alfred Nobel easily made the transition to business and found that he was just as good at manufacturing and marketing as he was in the laboratory. He built factories to produce dynamite, fought to protect his patents from rivals, and developed a sales program to sell dynamite across the globe. Like his father, he also dabbled in the development of military explosives, but it was dynamite that made him rich.

As Alfred Nobel neared the end of his life in the late nineteenth century, he recognized that he had accumulated one of the greatest fortunes in the world but had no heirs. He had never married or had any children, so he decided to give his fortune away. His will of 1895 provided the largest philanthropic gift ever made to that point in history, when he established a series of five Nobel Prizes, the first three of which – physics, chemistry, and physiology or medicine – reflected his own professional passion as a scientist and inventor. But Nobel had more interests than just work; he had been

a prolific reader and writer in his entire life and left behind an immense and eclectic personal library. He wanted to honor great writers who had inspired him during his lifetime, and therefore he created a prize for literature. His final prize became known simply as the Nobel Peace Prize. You might wonder why the inventor of dynamite and other explosives created a “peace prize.” Was it penance for the military weapons he had invented or was it a concession to his close friend, Bertha von Suttner, a prominent pacifist writer? Historians have speculated about both possibilities without any clear resolution. These five were the only prizes requested by Alfred Nobel. The first prizes were awarded in 1901 and were accompanied by a significant financial award equal to the sum of the interest on his gift.

This constituted the entire list of Nobel categories, at least until 1968 when the Bank of Sweden (*Sveriges Riksbank*) persuaded the Nobel Foundation that they needed one more award; they needed a Nobel Prize in economics. More importantly, the Bank offered to come up with the money every year to match the financial award of a Nobel Prize (valued at \$73,000 in 1969 and growing to \$1.4 million in 2008). It was an offer too good to refuse. Beginning in 1969, economics became the sixth prize granted by the Nobel Foundation to be awarded to those economists “who have during the previous year rendered the greatest service to mankind.”

And what was their service to mankind? How is the world a better place because of the contributions of these scholars? What are the mysteries that these Nobel laureates have solved for the human race? The explanations in the media and editorials are seldom enlightening. The typical Nobel laureate in economics is acclaimed for “inspiring an outpouring of future research” and sometimes for creating a new field of study within economics. We are told that the work is seminal or path breaking, as when the media reported that laureate James Buchanan “had a great seminal influence,”¹ or that laureate Joseph Stiglitz “shared the prize for seminal work,”² or that laureates Robert Engle and Sir Clive Granger did “their seminal work in the 1970s and 80s,”³ or that laureate Ronald Coase wrote a “seminal book.”⁴ But none of this tells us what they discovered. It only begs the question, what did they actually do? What did they discover that benefited mankind? This book is about those discoveries, the Nobel Prize-winning ideas in economics and the economists who won the awards.

Economists may not be universally held in such high esteem, but every October with the announcement of a new Nobel Prize winner the profession gains a little respect as yet another economist, or two, or three, join the exalted ranks of the Nobel laureates. Albert Einstein and Marie Curie were Nobel Prize winners, as was Enrico Fermi, who probed the mysteries

of nuclear fission, and Albert Michelson, who measured the speed of light. Writers Ernest Hemmingway, Toni Morrison, and John Steinbeck were also winners. Winston Churchill, Theodore Roosevelt, and Barack Obama won as well. With the creation of the economic Nobel Prize, economists were invited to join the small but elite party of some of the greatest scientists, authors, and peace advocates in modern history.

How did professional economists respond to this invitation? It wasn't long before they started to bet on the winners. People organize pools and bet on the National Collegiate Athletic Association (NCAA) basketball tournament, the Super Bowl, and the Kentucky Derby; economists enjoy betting on themselves, and the Nobel Prize offered the perfect opportunity. Every year, students and professors at top U.S. economics departments enter a pool and bet on who will win the prize.

All of the first sixty-two winners of the Nobel Prize in economics during its first forty years, which is the time period covered in this book, were men. The streak was finally broken in its forty-first year, when Elinor Ostrom from Indiana University won the 2009 Nobel Prize in economics for the study of voluntary cooperative organizations. Why so few women? The record isn't much better among the other five Nobel categories, in which women have won only 4.4 percent of all Nobel Prizes. Most of these have been in the categories of peace (twelve women), literature (ten), and physiology and medicine (eight). Physics has had only two female winners and chemistry three.

There were earlier opportunities to honor great women economists. Cambridge Professor Joan Robinson was a giant in the economics profession and could have won the award for several different achievements including contributions to monopoly theory, Keynesian economics, and the theory of economic growth. Her own path-breaking work in monopoly theory has been included in almost every economics principles textbook since she and Harvard economist Edward Chamberlin separately discovered it in the 1930s. She was also a colleague of John Maynard Keynes and provided the sounding board he needed to refine his revolutionary theories. But apparently that was not enough for the small group of Swedish economists that constituted the Nobel Prize committee. Professor Robinson's work made her eligible for the Nobel Prize for fourteen years until 1983, the year she died. Posthumous awards are not permitted under Nobel rules.

There was some speculation that Joan Robinson was rejected because she was too political or because the committee was afraid that she might reject the prize. Assar Lindbeck, a chair of the selection committee, confessed that Robinson was excluded because he "feared that she would either refuse it, or

worse, use the Nobel limelight to attack mainstream economics.”⁵ Neither reason had anything to do with her contribution to economic sciences, nor was this standard applied to other winners. Fear of rejection didn’t stop the Nobel committee from awarding the Prize in Literature to Jean Paul Sartre, who actually did reject it. For whatever reason, one of the top economists of the twentieth century did not win the Nobel Prize, and she also happened to be a woman.

The list of Nobel Prize winners in economics is not by any means a complete list of the most important economists of modern times. The Nobel committee has its biases, which caused it to pass over another one of the most famous and admired economists of the twentieth century. Harvard economist, advisor to President Kennedy, and past chair of the American Economics Association, John Kenneth Galbraith stands out as one of the greatest economists of the twentieth century whose work addressed the big issues facing society, including poverty, income distribution, and unemployment. His academic work on financial bubbles, countervailing power, and the internal operations of the modern corporation was supplemented by his many popular books. His fame as a leading economist and writer earned him access to the highest levels of national politics and society, making him something of a national celebrity.

One of Galbraith’s important books was *The Great Crash* about the stock market collapse of 1929. Some fifty years after it was first published, *The Great Crash* remains one of the most important historical and economic accounts of the catastrophic event that ushered in the decade of the Great Depression. His unique literary style allowed him to write about sophisticated economic topics while still attracting a large popular audience. Galbraith also brought economic issues into the mainstream through his memorable debates with Nobel laureate Milton Friedman. But his popularity may have actually worked against him when it came to the Nobel Prize. More conservative economists were known to grumble about his popularity and to suggest that this popularity was evidence that his work was not sufficiently “rigorous.” Perhaps he was also too liberal or not mathematical enough for the Nobel committee. Whatever the reason, his name is another conspicuous omission in the roll call of laureates. His death in 2006 brought an end to speculation that the Nobel committee would remedy this omission.

In 1968, when the Nobel Foundation accepted the Bank of Sweden’s offer to fund an award and medallion for economics, it decided to model it after the original five prizes contained in Alfred Nobel’s will. Like the other prizes, the winner of the economics prize is formally notified by the Nobel committee in October, followed by an announcement and press release. The

winner receives the same amount of money in Swedish kronor as the winners of the original five categories and a gold medallion presented by the King of Sweden in the same formal ceremonies held in December. Just like the other categories, the winner in economics is given an opportunity to present a lecture and is identified as a Nobel laureate on the official Nobel website. With all these similarities how could there be any doubt that the economics prize enjoys equal standing with the other prizes? Not everything, however, is exactly equal.

A closer look reveals some differences. The Foundation couldn't quite see its way to giving the economics winner the same medallion as the original science and literature categories. This isn't such a big deal since the Nobel Peace Prize medallion is also unique. The more significant difference, however, is that the formal name of the economics prize is unlike any other: "The Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel." So is it a Nobel Prize or is it a Bank of Sweden Prize? Even more striking is that the Nobel Foundation seldom, if ever, uses the term "Nobel Prize" in reference to the economics award, nor is the term uttered by members of its official committees. The official Nobel website lists the "Nobel Prize in Physics," the "Nobel Prize in Chemistry," and so on, but when it gets to the last category, it is the "Prize in Economics." All of the other laureates give "Nobel Lectures"; but it is only called the "Prize Lecture" when it comes to economics.⁶

In contrast, the press accounts have ignored this nuance and routinely refer to the award as the Nobel Prize in Economics. From their perspective, it is a prize issued by the Nobel organization in Sweden, so that makes it a Nobel Prize in Economics. No one has succeeded in correcting them; even the Nobel Foundation doesn't seem to mind. The term "Nobel prize" is used in this book, but in recognition of the fact that it is not the official title of the economics award, the "p" is not capitalized. It is not, apparently, the formal title of the award. The formal title is the Sveriges Riksbank Prize, which does have a capital "P."

Economics: A Science?

Is economics a science? Does it deserve the same scientific award for its contribution to society as Alfred Nobel envisioned for physics, chemistry, medicine, and physiology? The other Nobel sciences are dedicated to uncovering the hidden nature of matter, energy, and the human body. No one doubts that this nature exists, more or less independent of time and place, and that this nature is amenable to discovery. The relentless

application of the scientific method slowly unravels these mysteries until basic truths emerge. In this process, theories are either confirmed or on occasion refuted, creating opportunities for new hypotheses.

So how does economics stack up against the sciences? Can economists simply follow the scientific method and create a science? Economics is a field of ideas about how people organize themselves through institutions and rules to meet their various wants and desires. People organize themselves in businesses, markets, and governments to produce goods and services, and to distribute the outputs among themselves. If there are basic laws in economics, as in the sciences, then these laws must be derived from human behavior because people are the essential building blocks of all businesses, markets, and governments. But human behavior is notoriously fickle and difficult to summarize with a few fundamental equations. This is one of the most difficult challenges facing economics and also what distinguishes it from the sciences.

The Bank of Sweden and the economists who awarded the Nobel Prize were not interested in differences; they were interested in similarities. Toward that end, they ensured that the award was granted for “economic sciences” and not just “economics.” They also wanted the winners to “appear” like scientists, and that meant that there was an immediate preference for academics whose work emphasized mathematics and statistics. They hoped economics would join the ranks of physics, chemistry, and medicine, even if it is somewhat compromised by the caprice of human behavior.

Mathematics

Almost all of the Nobel winners in economics had strong mathematical backgrounds, and most of their theories were originally presented as formulas that emulated those in physics and other sciences. As you will see, a surprising number of the winners of this prize began their training as majors in physics, engineering, mathematics, or related sciences. Economics was already moving toward a greater mathematical rigor, but this emphasis in the Nobel Prize has no doubt reinforced the trend. In fact, some laureates like John Nash, featured in *A Beautiful Mind*, and Robert Aumann had doctorates in mathematics and almost no formal education in economics.

The economic ideas in this book are described in words, not formulas. Where prize winners simply took an idea and translated it into mathematics, it is relatively easy to explain the original concept. It may seem odd that translating ideas into mathematics can qualify for a Nobel Prize, but that is, in a sense, a large part of modern economic theory. Economists find a

high degree of satisfaction from converting familiar ideas into mathematics and an even greater sense of accomplishment from proving mathematically what anyone else might recognize as common sense.

Mathematics has the advantage of requiring precise definitions and providing a common language for a diverse and multinational profession. While there is no doubt that mathematical representations appear more scientific and are favored by the Swedish Nobel committee, they do have their limitations. For example, formulas, with their underlying assumptions, tend to overstate the degree of precision that can realistically be expected from an economic theory. And the introduction of advanced mathematics, like topology, has completely transformed some fields in economics. It is safe to say that this development has placed full comprehension of many of these theories beyond the grasp of a large number of professional economists.

As a result of these developments, many economic theories tend to be less about any actual economy and more about an entirely imaginary world. And herein lies the danger that economic models may become little more than castles in the sky – elaborate constructions with limited real-world application. This book, however, is about economic ideas, not mathematics, so all the theories and insights are described in the English language.

Another danger in the mathematical approach to economics is the fact that it can create a false impression of objectivity and truth. When an economic theory is cast in a mathematical formula, the presumption exists that it is unbiased. This is not necessarily so. On the one hand, economists who favor free markets are more likely to make assumptions that present markets in the best possible light. For example, they would be more likely to assume that people are completely rational and behave with complete information and objectivity so that markets work efficiently. Perfect outcomes are more likely under perfect conditions.

On the other hand, skeptics of free markets are more likely to assume less than perfect behavior and conditions, and are less likely, as a consequence, to find perfection in free markets. Both kinds of economists have been awarded Nobel Prizes over the past forty years, and while both groups start with similar equations, they can modify them and steer their models in different directions. For this reason, it is possible for two economists to achieve mathematically correct conclusions that are, nonetheless, entirely contradictory. You would expect to see few contradictory theories among the winners of the Nobel science awards, but such conflicts are common among economics laureates. The most notable was the 1974 prize that was

shared by Friedrich A. von Hayek, an outspoken antisocialist, and Gunnar Myrdal, a socialist. Neither winner that year had anything good to say about their co-winner.

Origins

A surprising number of Nobel Prize winners in economics can trace their work back to one of two giants in the profession, Adam Smith and John Maynard Keynes. Smith, of course, presented a remarkably compelling argument in favor of free markets in his classic volume *Wealth of Nations* published in 1776. By means of simplifying assumptions, he described the operation of a stylized market driven by the forces of supply and demand. Prices played a central role in his eighteenth-century model economy as they signaled either scarcity or surpluses and provided desirable market outcomes. Smith's primary theme was that free markets effortlessly and efficiently regulated production and distribution in an economy, as if guided by an invisible hand. The villain in Smith's narrative was generally played by government, which interfered with price signals and tended to disrupt the otherwise ideal outcomes generated by free markets.

Many Nobel economists owe an intellectual debt to Adam Smith because they share his belief in the superiority of free and unregulated markets. Several of these free-market economists, featured in Chapter 2, fought a high-profile campaign against government and in defense of private markets. These economists, including Milton Friedman who was a leader of the Chicago School of Economics, invoked abstract models of perfect competition to defend their vision of a market economy.

Adam Smith's influence is even greater because of his effect on the development of *neoclassical economics*. Smith's depiction of a market economy provided the inspiration for a more mathematical representation of markets in the late nineteenth century. Neoclassical economists simply assumed rational behavior that was consistent, predictable, infallible, and deeply rooted in self-interest. The assumption that human beings acted in this way was so prevalent in economic models that it was represented by the term *homo economicus*, a mythical creature combining all of these characteristics.

These ideas followed one evolutionary path toward English economist Alfred Marshall, who consolidated the theories of nineteenth-century economists into what eventually became known as *microeconomics*. He introduced new ideas related to supply and demand, and showed how they could be applied to taxes, trade, and other economic policies. Following

in this tradition, many Nobel Prize winners in economics were micro-economists who developed new concepts or simply applied the concepts to completely new areas. Chapter 3 describes the application of microeconomics by Chicago School economists to a broad range of topics including the family, crime, education, pollution, and the public airwaves. Other Nobel laureates who focused exclusively on applying microeconomics to financial markets are presented in Chapter 4. Their work, once lauded for expanding markets for stocks, mutual funds, and derivatives, have recently been questioned because of the instability of these same markets. There were still other “micro” laureates, described in Chapter 5, who continued to refine formulas or to apply the theory to determine optimum taxes or understand auctions.

Not all economists were entirely convinced that perfect rationality was the best model of human behavior. Several Nobel winners, called behaviorists, challenged some of these microeconomic assumptions; their work is described in Chapter 6. These economists were interested in the effects on markets when people act like people, imperfect and sometimes lacking complete information and perfect foresight.

Not all economic theory can be traced back to Adam Smith. An entirely different type of economics was pioneered by Cambridge economist John Maynard Keynes, a student of Alfred Marshall. The starting point for Keynes was not the hypothetical operation of perfect markets; it was the reality of failed markets that struck the industrialized world in the 1930s. In the end, Keynes produced a very different theory that was not limited by homo economicus or any of the other assumptions of neoclassical economics.

Keynes’ approach appealed to a new generation of academics, and his ideas spread from Cambridge to economics departments across America. In a familiar pattern, one of the first actions taken by the new Keynesians was to translate the theory into mathematical formulas and geometric figures. This allowed for more precise definitions and further refinement. It also created opportunities for Nobel awards for some economists featured in Chapter 7 who defended and expanded Keynesian economics. Like many revolutionary ideas, it inspired a reaction from free-market economists, who objected to both the theory and the policy implications. In its place they attempted to revive classical economic ideas in the 1970s, as described in Chapter 8.

A special group of Nobel laureates invented tools that were uniquely suited to analyzing economic problems. Although influenced by Smith, Keynes, and other economists, they relied on their own detailed observations of the real economy to produce their own original insights. These