

# KNOWLEDGE AND POWER

....

THE INFORMATION THEORY  
OF CAPITALISM AND HOW IT IS  
REVOLUTIONIZING OUR WORLD

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## GEORGE GILDER

 Since 1947  
**REGNERY**  
Publishing, Inc.  
An Eagle Publishing Company • Washington, DC

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Cataloging-in-Publication data on file with the Library of Congress

ISBN 978-1-62157-027-1

Published in the United States by  
Regnery Publishing, Inc.  
One Massachusetts Avenue NW  
Washington, DC 20001  
[www.Regnery.com](http://www.Regnery.com)

Manufactured in the United States of America

10 9 8 7 6 5 4 3 2 1

Books are available in quantity for promotional or premium use. Write to Director of Special Sales, Regnery Publishing, Inc., One Massachusetts Avenue NW, Washington, DC 20001, for information on discounts and terms, or call (202) 216-0600.

Distributed to the trade by  
Perseus Distribution  
250 West 57th Street  
New York, NY 10107

# The Need for a New Economics

**MOST HUMAN BEINGS** understand that their economic life is full of surprises. We cannot predict the value of our homes or prices on the stock market from day to day. We cannot anticipate illness or automobile accidents, the behavior of our children or the incomes of our parents. We cannot know the weather beyond a week or so. We cannot predict what course of college study will yield the best lifetime earnings or career. We are constantly startled by the news. We are almost entirely incapable of predicting the future.

Yet economics purports to be strangely exempt from this fact of life. From Adam Smith's day to our own, the chief concern of the discipline has been to render economic events unsurprising. Given a supply  $x$  of corn and a demand  $y$ , the price will be  $z$ . Change  $x$  or  $y$  and hold all else equal and the price will instead be a predictable  $z$ . The discernment of orderly rules governing the apparent chaos of life was a remarkable achievement and continues to amaze. Economists such as Steven Leavitt of *Freakonomics* fame and Gary Becker of the University of Chicago

became media stars for their uncanny ability to unveil what “we should have known.”<sup>1</sup> Closer investigation, however, reveals that even these ingenious analysts are gifted chiefly with 20/20 hindsight. They prosper more by explaining to us what has happened than by anticipating the future with prescient investments.

The passion for finding the system in experience, replacing surprise with order, is a persistent part of human nature. In the late eighteenth century, when Smith wrote *The Wealth of Nations*, the passion for order found its fulfillment in the most astonishing intellectual achievement of the seventeenth century: the invention of the calculus. Powered by the calculus, the new physics of Isaac Newton and his followers wrought mathematical order from what was previously a muddle of alchemy and astronomy, projection and prayer. The new physics depicted a universe governed by tersely stated rules that could yield exquisitely accurate predictions. Science came to mean the elimination of surprise. It outlawed miracles, because miracles are above all unexpected.

The elimination of surprise in some fields is the condition for creativity in others. If the compass fails to track North, no one can discover America. The world shrinks to a mystery of weather and waves. The breakthroughs of determinism in physics provided a reliable compass for three centuries of human progress.

Inspired by Newton’s vision of the universe as “a great machine,” Smith sought to find similarly mechanical predictability in economics. In this case, the “invisible hand” of market incentives plays the role of gravity in classical physics. Codified over the subsequent 150 years and capped with Alfred Marshall’s *Principles of Economics*, the classical model remains a triumph of the human mind, an arrestingly clear and useful description of economic systems and the core principles that allow them to thrive.

Ignored in all this luminous achievement, however, was the one unbridgeable gap between physics and any such science of human behavior: the surprises that arise from free will and human creativity. The miracles forbidden in deterministic physics are not only routine in economics; they constitute the most important economic events. For a miracle is simply an innovation, a sudden and bountiful addition of

information to the system. Newtonian physics does not admit of new information of this kind—describe a system and you are done. Describe an economic system and you have described only the circumstances—favorable or unfavorable—for future innovation.

In Newton's physics, the equations encompass and describe change, but there is no need to describe the agent of this change, the creator of new information. (Newton was a devout Christian but his system relieved God or his angels of the need to steer the spheres.) In an economy, however, everything useful or interesting depends on agents of change called entrepreneurs. An economics of systems only—an economics of markets but not of men—is fatally flawed.

Flawed from its foundation, economics as a whole has failed to improve much with time. As it both ossified into an academic establishment and mutated into mathematics, the Newtonian scheme became an illusion of determinism in a tempestuous world of human actions. Economists became preoccupied with mechanical models of markets and uninterested in the willful people who inhabit them.

Some economists become obsessed with market efficiency and others with market failure. Generally held to be members of opposite schools—"freshwater" and "saltwater," Chicago and Cambridge, liberal and conservative, Austrian and Keynesian<sup>2</sup>—both sides share an essential economic vision. They see their discipline as successful insofar as it eliminates surprise—insofar, that is, as the inexorable workings of the machine override the initiatives of the human actors.

"Free market" economists believe in the triumph of the system and want to let it alone to find its equilibrium, the stasis of optimum allocation of resources. Socialists see the failures of the system and want to impose equilibrium from above. Neither spends much time thinking about the miracles that repeatedly save us from the equilibrium of starvation and death.

The late financial crisis was perhaps the first in history that economists actually caused. Entranced by statistical models, they ignored the larger dimensions of human creativity and freedom. To cite an obvious example, "structured finance"—the conglomerations of thousands of dubious mortgages diced and sliced and recombined and all trebly

insured against failure—was supposed to eliminate the surprise of mortgage defaults. The mortgage defaults that came anyway and triggered the collapse came not from the aggregate inability of debtors to pay as the economists calculated, but from the free acts of homebuyers. Having bet on constantly rising home prices, they simply folded their hands and walked away when the value of their houses collapsed. The bankers had accounted for everything but free will.

The real error, however, was a divorce between the people who understood the situation on the ground and the people who made the decisions. John Allison is the former CEO of a North Carolina bank, BB&T, which profitably surmounted the crisis after growing from \$4.5 billion in assets when he took over in 1989 to \$152 billion in 2008. Allison ascribed his success to decentralization of power in the branches of his bank.

But decentralized power, he warned, has to be guarded from the well-meaning elites “who like to run their system and hate deviations.” So as CEO, Allison had to insist to his managers that with localized decision-making, “We get better information, we get faster decisions, we understand the market better.”<sup>3</sup>

Allison was espousing a central insight of the new economics of information. At the heart of capitalism is the unification of knowledge and power. As Friedrich Hayek, the leader of the Austrian school of economics, put it, “To assume all the knowledge to be given to a single mind... is to disregard everything that is important and significant in the real world.”<sup>4</sup> Because knowledge is dispersed, power must be as well. Leading classical thinkers such as Thomas Sowell and supply-siders such as Robert Mundell refined the theory.<sup>5</sup> They all saw that the crucial knowledge in economies originated in individual human minds and thus was intrinsically centrifugal, dispersed and distributed.

Enforced by genetics, sexual reproduction, perspective, and experience, the most manifest characteristic of human beings is their diversity. The freer an economy is, the more this human diversity of knowledge will be manifested. By contrast, political power originates in top-down processes—governments, monopolies, regulators, and elite institutions—all attempting to quell human diversity and impose order. Thus power always seeks centralization.

The war between the centrifuge of knowledge and the centripetal pull of power remains the prime conflict in all economies. Reconciling the two impulses is a new economics, an economics that puts free will and the innovating entrepreneur not on the periphery but at the center of the system. It is an economics of surprise that distributes power as it extends knowledge. It is an economics of disequilibrium and disruption that tests its inventions in the crucible of a competitive marketplace. It is an economics that accords with the constantly surprising fluctuations of our lives.

In a sense, I introduced such an economics more than thirty years ago in *Wealth and Poverty* and reintroduced it in 2012 in a new edition. That book spoke of economics as “a largely spontaneous and mostly unpredictable flow of increasing diversity and differentiation and new products and modes of production . . . full of the mystery of all living and growing things (like ideas and businesses).” Heralding what was called “supply-side economics” (for its disparagement of mere monetary demand), it celebrated the surprises of entrepreneurial creativity. Published in fifteen languages, the original work was read all around the globe and reigned for six months as the number one book in France. President Ronald Reagan made me his most-quoted living author.

In the decades between the publications of the two editions of *Wealth and Poverty*, I became a venture capitalist and deeply engaged myself in studying the dynamics of computer and networking technologies and the theories of information behind them. In the process, I began to see a new way of addressing the issues of economics and surprise.

Explicitly focusing on knowledge and power allows us to transcend rancorous charges of socialism and fascism, greed and graft, “voodoo economics” and “trickle-down” theory, callous austerity and wanton prodigality, conservative dogmatism and libertarian license.

We begin with the proposition that capitalism is not chiefly an incentive system but an information system. We continue with the recognition, explained by the most powerful science of the epoch, that information itself is best defined as surprise—what we cannot predict rather than what we can. The key to economic growth is not acquisition of things by the pursuit of monetary rewards but the expansion of wealth through

learning and discovery. The economy grows not by manipulating greed and fear through bribes and punishments but by accumulating surprising knowledge through the conduct of the falsifiable experiments of free enterprises. Crucial to this learning process is the possibility of failure and bankruptcy.

Because the system is based more on ideas than on incentives, it is not a process that is changeable only over generations of Sisyphean effort. An economy is a “noosphere” (a mind-based system), and it can revive as quickly as minds and policies can change.

That new economics—the information theory of capitalism—is already at work in disguise. Concealed behind an elaborate mathematical apparatus, sequestered by its creators in what is called information technology, the new theory drives the most powerful machines and networks of the era. Information theory treats human creations or communications as transmissions through a channel, whether a wire or the world, in the face of the power of noise, and gauges the outcomes by their news or surprise, defined as “entropy” and consummated as knowledge. Now it is ready to come out into the open and to transform economics as it has already transformed the world economy itself.

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