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An Einstein of the Dismal Science

Founder of Modern Economics, Vol. 1
By Roger E. Backhouse
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BY ERIC MASKIN

FORTY YEARS AGO, Paul A. Samuelson was a household name. The first American Nobel laureate in economics, he wrote a regular column for Newsweek (alternating with Milton Friedman) and was widely remembered as President Kennedy's personal economics tutor. Hundreds of thousands of college students each year were introduced to the principles of economics through his best-selling textbook—the most successful economics textbook ever written.

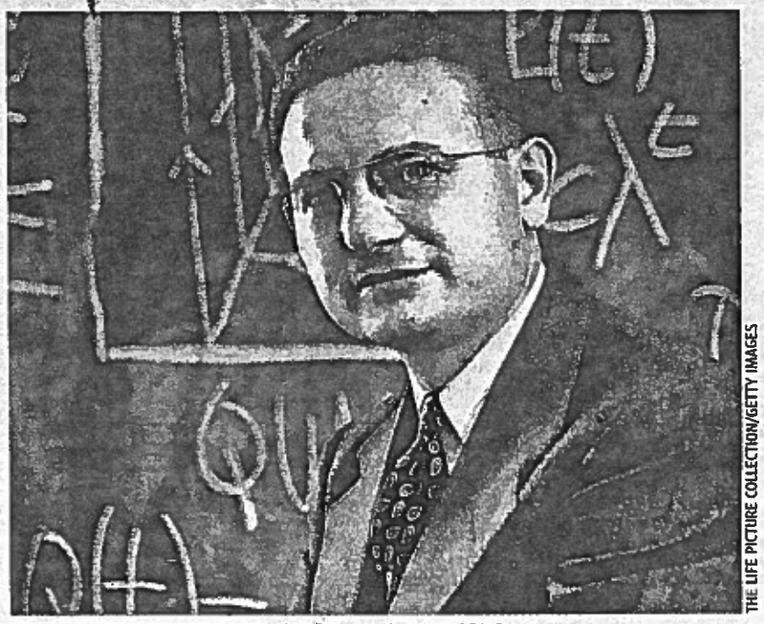
Today Samuelson, who died in 2009 at age 94, is no longer so familiar to the general public, nor does "Economics" (1948) still stand atop the textbook heap (although its current, 19th edition—edited by William Nordhaus—sells well). But Samuelson left a deep and abiding impression on his field. He, Kenneth Arrow and John Maynard Keynes are arguably the most important creative economists of the 20th century. (Friedman was also immensely influential, but—except in his magisterial volume with Anna Schwartz on U.S. monetary history—more as a public intellectual than an economic researcher.) If Samuelson's papers no longer appear frequently on graduate-course reading lists, it's only because their lessons have been so thoroughly absorbed into the subject. Physics students no longer read Newton's "Principia," either.

The first volume of Roger E. Backhouse's two-volume biography,

> 'A good fairy whispered to me,' he said, 'that math was a skeleton key' to solving problems in economics.

"Founder of Modern Economics," makes the case for Samuelson's importance, and largely succeeds. Mr. Backhouse—who here gives us the story through 1948, when Samuelson was 33—notes that the life was neither dramatic nor especially colorful, and so concentrates mainly on Samuelson's work and the people who influenced him.

Unlike Arrow (the father of social choice theory) or Keynes (who revolutionized macroeconomics), Samuelson created no new branch of economics. Instead, as the 1970 citation from the **Royal Swedish Academy** observes, his distinctive contribution was "raising the level of analysis in economic science." He modernized the discipline.



THE LIFE PICTURE COLLECTION/GETTY IMAGES

HE WROTE THE BOOK Paul A. Samuelson in 1950.

Economics was hardly devoid of mathematics before Samuelson; such 19th-century economists as Léon Walras, A.A. Cournot and F.Y. Edgeworth invoked it freely. But even by 1950 many prominent economic scholars—including Jacob Viner, who taught Samuelson at the University of Chicago—had little mathematical skill and were skeptical that math was useful in economics. Alfred Marshall, the foremost economist at the turn of the 20th century, was no mathematical slouch but wrote that mathematics should be used as a "shorthand language, rather than as an engine of inquiry." And once the inquiry was done, the mathematics should be "translated into English"—and then "burned."

Samuelson utterly rejected Marshall's view: He felt that mathematics was exactly the right tool for cutting through the brambles of an economic wood "that have overgrown to the extent that one cannot move." Mathematical arguments not only lent clarity, brevity and precision to a paper but were also good for the disposing of long-standing fallacies.

Mr. Backhouse gives a nice example of fallacy-jettisoning in Viner's graduate theory course, which Samuelson attended. Viner was lecturing on "cost curves," which show how the average cost of producing a commodity varies with the quantity produced. Viner made the claim that a cost curve in the "long run" (when the producer is free to vary all the inputs into production) consists of the minimum points of all the "short-run" cost curves (when some inputs, such as factory sizes, can't be changed). This claim may have been common wisdom at the time but can easily be refuted by a short mathematical calculation, as Samuelson showed Viner. According to Samuelson, Viner was still doubtful and said that, despite the calculation, he could draw the cost curves just as he claimed. "Yes,"

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Samuelson replied, "with a good thick pencil, you can do it."

Just as Samuelson won his skirmish with Viner, he won his war with the profession. Almost any theoretical article in an economics journal today bristles with mathematical formulas. And nearly every proposition makes an assertion that, in principle, could be refuted empirically. Samuelson was interested only in mathematical derivations whose assumptions and conclusions could be checked by *observation*. He had no use for a statement such as "Alice likes apples twice as much as bananas" because there is no experiment that could test such a claim.

Samuelson's own work divides into two categories: *methodological* contributions, which develop technical tools for generating hypotheses in a broad range of applications (his Ph.D. thesis falls largely into this category; after some revision it was published, in 1947, as "Foundations of Economic Analysis," his second most cited work), and *substantive* contributions, which use the tools to derive novel hypotheses in specific settings. (Samuelson proposed novel hypotheses for an astonishingly wide variety of economic subfields: public finance, international trade, business cycles, political economy, welfare economics, consumer demand, monetary theory and more.)

Among other tools, Samuelson developed a technique he called the Le Chatelier Principle (after the 19th-century chemist Henri Le Chatelier, a theorist of equilibrium). To picture this principle in action, imagine a manufacturer (which uses labor and machinery) responding to a fall in the wage rate (that is, the cost of labor). We should not be surprised if the manufacturer employs more workers, but we can also make a stronger prediction: namely, that labor will increase more in the long run (after the manufacturer has had a chance to adjust the number of machines it uses) than in the short run (when the number of machines is fixed). More generally, the principle asserts that responses in the long term tend to be bigger than those in the short term. The technique has proved to be remarkably useful in a wide variety of applications.

Early in his career, Samuelson worked intensively on the theory of international trade. Here is the "substantive" idea (somewhat oversimplified) behind the Stolper-Samuelson Theorem (developed with fellow **Harvard** graduate student Wolfgang Stolper). Imagine that a rich economy (call it the U.S.) is hoping to open its doors to international trade. Before trade is possible, all goods must be produced domestically; if American consumers want both smartphones and rice, American firms must supply both smartphones and rice. Let's now imagine that trade with other countries becomes possible. What effect will this have? Well, the U.S. is rich in large part because so many American workers are highly skilled. That means the labor force is better suited, on the whole, to producing smartphones than rice. Indeed, growing a lot of rice makes inefficient use of high-skilled workers' abilities. So when trade opens up, American production will naturally shift away from rice and toward smartphones. The smartphones that Americans don't consume will be exported, and the rice demanded by Americans but not grown domestically will be imported. Because this arrangement uses the labor force more efficiently, American consumers will have both more smartphones and more rice than before. So GDP is higher because of trade. Moreover, high-skilled workers are better off, because the increase in smartphone production puts them in higher demand and so increases their wages. But less-skilled workers are worse off: Their wages fall with the decline in domestic rice production.

> The Nobel laureate who modernized economics also wrote the field's best-selling textbook.

The Stolper-Samuelson Theorem implies that international trade causes inequality between high-skilled and less-skilled workers to grow in rich countries. The theorem was derived in 1941 but clearly remains relevant in today's America of rising inequality.

Mr. Backhouse spends a good deal of his text's 630 pages describing Samuelson's large oeuvre before 1948, including his work on the Le Chatelier Principle and the Stolper-Samuelson Theorem. In my view, this is one of the less successful aspects of the book—the descriptions seem too involved for a general reader and not detailed enough for an economist. (Mr. Backhouse's treatments usually lack the mathematics that Samuelson found so clarifying.) More revealing are probing accounts of the personal relationships that shaped Samuelson profoundly: Beulah Shoesmith, a mathematics teacher at **Hyde Park High School** (Samuelson's family moved to Chicago from his hometown, Gary, Ind., when he was 8); Frank Knight at Chicago, where Samuelson first studied economics; Edwin Bidwell Wilson and Alvin Hansen at Harvard, where Samuelson was a Ph.D. student, junior fellow in the Society of Fellows and economics instructor; and Marion Crawford Samuelson, his wife and the love of his life.

Knight opened Samuelson's eyes to the power of markets, although the two differed sharply on politics and the wisdom of government intervention, especially in later years, when, according to Mr. Backhouse, "Knight complained Samuelson seemed to consider it his duty to belittle him." Wilson, a mathematician and physicist who lectured in the Harvard economics department, showed Samuelson the ability of mathematics to reveal deep similarities between fields, especially economics and physics; he was the closest thing Samuelson had to a mentor. Hansen got Samuelson interested in Keynesianism, particularly the idea that neoclassical economics breaks down when the economy is below full employment. Marion, an able economist herself, was Samuelson's closest adviser and a significant contributor to his early work before she became preoccupied with family.

Mr. Backhouse's scholarship is impressive. Among much else, he seems to have read every letter and paper in the 155-carton Samuelson archive at Duke, thereby ferreting out much that is new. Here are a few nuggets:

Samuelson liked to present himself as essentially self-taught in mathematics. But Mr. Backhouse discovered that, far from being an autodidact, he took many advanced math courses as a student at Chicago.

The prevailing story for why Samuelson left Harvard for **MIT** (then a backwater in economics) is anti-Semitism. (Samuelson preferred to say simply that MIT made him a better offer.) While not denying the role of anti-Semitism, Mr. Backhouse quotes a long letter from E.B. Wilson to Samuelson making a strong case that his protégé would be better off at MIT for intellectual reasons. In any case, Samuelson made the move and remained at MIT for the rest of his life.

Samuelson's textbook, which had substantial Keynesian elements, was strongly attacked by the chairman of the Visiting Committee to MIT's economics department as likely to bring "discredit" on the institute. The matter was quelled only when MIT's vice president stood up to the chairman and vigorously defended Samuelson's academic freedom.

Samuelson always insisted that he counted Milton Friedman as a friend, despite their professional differences. But, as a letter from Friedman to a Chicago colleague reveals, Friedman tried (unsuccessfully) to block a job offer that Chicago made to Samuelson in 1946-47. He complained about Samuelson's Keynesianism.

Of course, there is much that is missing from Mr. Backhouse's book—in particular, two-thirds of Samuelson's life. This later period includes his more mature papers—his best, in my view, especially a masterpiece on money and overlapping generations—as well as the development of the MIT economics department into the powerhouse that now leads graduate teaching in the U.S. and the world. All good reasons to look forward to volume two.

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