

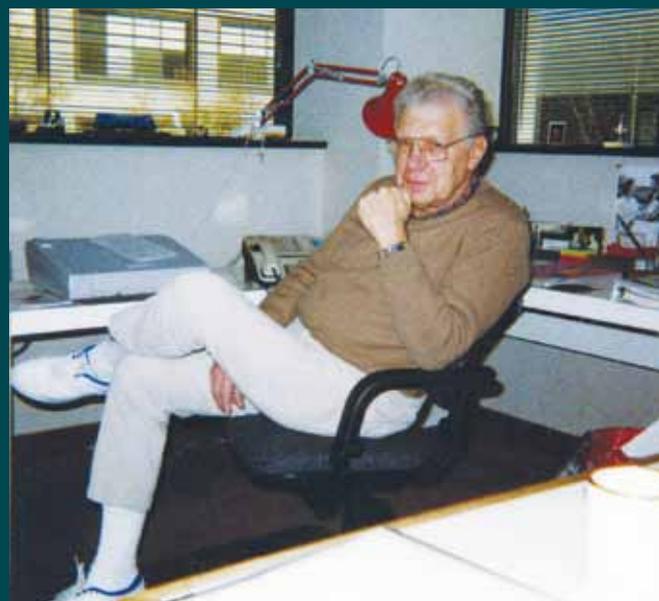
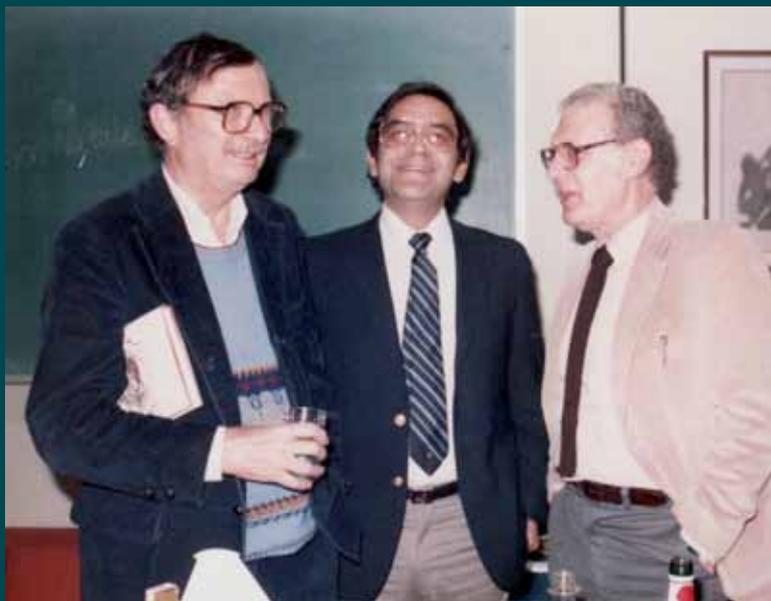
Breaking from the Pack

In 50 Words Or Less

- With Russ Ackoff's death, the world lost one of the pioneers of systems thinking.
- Ackoff embraced qualitative methods and opened the door to more effective problem-solving techniques.
- Despite his contributions, Ackoff rejected the guru label and encouraged others to adapt his ideas as they saw fit.

By **rejecting the status quo**, Russ Ackoff took systems thinking **to greater heights**

by Gregory H. Watson



LEFT PHOTO: Russ Ackoff (far right) joined fellow systems thinkers Wes Churchman (far left) and Jamshid XXXXX.
RIGHT PHOTO: Ackoff in his office at the University of XXXXXX.

AFTER WORLD WAR II, the U.S. War Production Board sought to preserve the scientific knowledge gained during the war support efforts. Major advances expanded theoretical knowledge, such as the development of the discipline of operations research. Practical advances of knowledge resulted from the intense manufacturing efforts, such as the application of statistical methods in a practice of control for production methods. But somehow, theory and practice diverged—and today we are worse off because of it.

That was the lifetime message of Russ Ackoff, who died this past October. He was a man who had one foot firmly planted in mathematical-analytical disciplines and the other in humanistic-participatory teamwork. His life story is instructive for quality professionals as it traces the development of systems thinking during its 60-year migration.

Two paths diverged, but why?

The quality movement missed incorporating some important ideas from great thinkers who, in an indirect way, influenced the movement. This happened because we didn't view these people as quality professionals and didn't consider their concepts part of the quality body of knowledge (BoK). In doing this, we limited our perspective.

In the period following World War II, many great minds were focused on the mathematical modeling of real-world problems. This was tightly coupled with the emerging quality movement.

For example, George B. Danzig, the man who invented linear programming, was a colleague of Eugene L. Grant in the Stanford University industrial engineering department. Today, Danzig's methods for linear programming and queuing theory are gaining attention for possible inclusion in the Six Sigma BoK, and Grant's control-chart lessons from the eight-day World War II courses are the foundation of all training in statistical process control.

A significant advancement of knowledge occurred in the New York-Philadelphia corridor during the mid-1950s. This was the Silicon Valley of the emerging analytical age that was the precursor to the information age. George D. Edwards, Walter A. Shewhart, Harold F. Dodge and Harry G. Romig all worked at Western Electric; Albert Einstein and John W. Tukey taught at Princeton University; Mason E. Wescott and Ellis R. Ott taught at Rutgers; and Peter F. Drucker, Joseph M. Juran and W. Edwards Deming were part of the faculty at the New York University Graduate School of Business.

The first book on operations research was written by Philip M. Morse and George E. Kimball and was based on the work of the Antisubmarine Warfare Operations Research Group in the United States.¹ Morse returned to the Massachusetts Institute of Technology after the war to begin the Operations Research Center and apply these methods to society's problems. Kimball returned to New York City and taught operations research and chemistry at Columbia University.

Bridging the gap

Meanwhile, in the Midwest, an influential center of analytical thinking was created at Case Institute of Technology (now named Case Western Reserve University) in Cleveland, where Ackoff in 1951 founded one of the first academic departments of operations research.

Ackoff is often called the father of operations research. He introduced the subject in a 1952 article in *Industrial Quality Control* (the previous name of *Quality Progress*), which illustrates the high degree of crossover that occurred among these disciplines during their infancy.²

While Ackoff began his academic career in operations research, he gradually transitioned to focus on developing a purposeful approach to systems. Ackoff's *Introduction to Operations Research* observed that problems arise if management responsibility is highly segmented. If operations research is used to identify the "best decisions relative to as large a portion of total organizations as possible," then it can help resolve this problem.³

Of course, this is a core idea of systems thinking. Through the years, Ackoff gradually became disenchanted with intense analytical models that were applied on ever-reduced practical problems. Ackoff moved his group to the University of Pennsylvania in 1963, and by the early 1970s, he became one of the chief critics of what he called a "techniques-dominated" approach to operations research while becoming a leading advocate for a more participative systems approach.

Ackoff straddled quantitative and qualitative disciplines. His legacy endures as a pioneer of operations research and systems thinking. He made a career transition during the early 1970s, when he realized that numbers are not enough to describe reality and that measures are part of a management system and should support how managers make decisions.

This sentiment echoes Deming, who Ackoff agreed with on many points. Deming—along with Drucker and Juran—also advocated a systems approach to solving problems: "You can't run a company based on visible figures alone—it is important to know what is behind the figures."⁴

Ackoff greatly influenced Drucker, and they were long-time friends. Ackoff was familiar with Deming's work, having met him in the early 1950s during the period in which Deming was interested in operations research. Ackoff lectured about systems in "The Deming Library" videos produced by Clare Crawford Mason in 1993, and his systems thinking had a strong influence on Deming.⁵

Ackoff identified himself more with systems thinking, claiming operations research had become too "narrow and inward-looking," and was limited by an in-

RUSSELL LINCOLN ACKOFF



Born: Feb. 12, 1919, in Philadelphia.

Educated: Ph.D., philosophy of science, University of Pennsylvania, 1947.

Occupation: Anheuser-Busch professor emeritus, management science, Wharton School, University of Pennsylvania.

Service:

- President, Operations Research Society of America (ORSA), 1956–1957.
- President, Society for General Systems Research, 1987.

Awards and recognitions:

- Silver Medal from the British Operations Research Society, 1971.
- George E. Kimball Medal, ORSA, 1975.
- Outstanding Achievement Award, United Kingdom Systems Society, 1999.

- Fellow, American Statistical Association.
- Fellow, International Academy of Management.
- Fellow, Institute for Operations Research and Management Sciences.
- International Federation of Operational Research Societies Hall of Fame, 2005.

Honorary doctorates:

- University of Lancaster (U.K.), 1967.
- Washington University (St. Louis), 1993.
- University of New Haven (CT), 1997.
- Pontificia Universidad Catolica del Peru (Lima), 1999.
- University of Lincolnshire and Humberside (U.K.), 1999.

Published works: Authored 22 books and more than 250 articles. Among his most important books are:

- *Introduction to Operations Research* (John Wiley & Sons, 1957), which he co-authored with C. West Churchman and Leonard Arnoff.
- *On Purposeful Systems* (Aldine-Atherton, 1972), which he co-authored with Frederick Edmund Emery.
- *The Art of Problem Solving* (John Wiley & Sons, 1978).
- *Creating the Corporate Future* (John Wiley & Sons, 1981).
- *Ackoff's Fables* (John Wiley & Sons, 1991).
- *The Democratic Corporation* (Oxford Press, 1994).
- *Management f-Laws* (Triarchy Press, 2007), which he co-authored with Herbert J. Addison and Sally Bibb.

—G.W.

creased emphasis on mathematics.⁶ But, to understand Ackoff, we must learn about thinking flaws, problem solving and analysis of purposeful systems.

Dealing with the mess

In 1972, Ackoff wrote *On Purposeful Systems*. In it, he observed, “A system is more than the sum of its parts; it is an indivisible whole. It loses its essential properties when it is taken apart. The elements of a system may themselves be systems, and every system may be part of a larger system.”⁷

Ackoff said a purposeful system is formed by linking work, people and things, and examining their so-

cial, cultural and psychological implications. In a purposeful system, participants are dedicated individuals who intentionally and collectively formulate objectives that are part of the greater purpose in a larger system that seeks to achieve a specific ideal or objective. This behavior distinguishes humans from the things they make.

This helps explain why Ackoff rejected operations research. The analytic way to solve problems is to address the complex system, divide it into parts and evaluate each one separately. In theory, when all individual parts behave well, the total system will behave well. In reality, however, that doesn't work.

The only problems that have simple solutions are simple problems.

It isn't possible to improve the performance of each part of a system separately because doing so destroys the integration of the system as a whole. It's like having just one organizational function operate at a world-class level while the rest of the organization struggles to keep up. The weakest part of a system will ultimately destroy the whole.

Finding the f-laws

Part of the problem, Ackoff observed, was the behavior of managers, whose shortcomings he humorously characterized as “f-Laws”:

- The lower the rank of managers, the more they know about fewer things. The higher the rank of managers, the less they know about many things.
- Managers who don't know how to measure what they want settle for wanting what they can measure.
- There is nothing a manager wants done that educated subordinates cannot undo.
- The less sure managers are of their opinions, the more vigorously they defend them.
- The more time managers spend trying to get rid of what they don't want, the less likely they are to get what they do want.
- A bureaucrat is one who has the power to say “no” but none to say “yes.”
- The legibility of a male manager's handwriting is in inverse proportion to his seniority.
- The less important an issue is, the more time managers spend discussing it.
- The more important the problem a manager asks consultants for help on, the less useful and more costly the solutions are likely to be.
- Managers cannot learn from doing things right, only from doing them wrong.
- The amount of irrationality executives attribute to others is directly proportional to their own.
- There is no point in asking consumers, who do not know what they want, to say what they want.
- Overheads, slides and PowerPoint presentations are not visual aids to managers. They transform managers into auditory aids to the visuals.⁸

Flawed thinking creates problems over time. Ackoff called it “the mess,” which occurs when organizations concentrate on growth—volume of productivity or revenue—over the development of its people and processes. Growth stimulated by mergers and acquisitions may make a company bigger, but it does not necessarily improve development by increasing capacity of processes or the ability to serve customers.

Consider human growth: Our bodies eventually stop physical growth, but we can continue mental development. Thus, we shouldn't focus on system development from a single dimension of growth, which is limited.

This objection is raised by those who argue against using gross domestic product (GDP) to indicate economic vitality. GDP measures productivity and emphasizes growth, but it does not measure development, which is a product of social dimensions—such as education, healthcare and quality of life—that require a more socially responsive metric.

Solving the problem

“The only problems that have simple solutions are simple problems. The only managers that have simple problems have simple minds,” Ackoff said. “Problems that arise in organizations are almost always the products of interactions of parts (of a system), never the action of a single part. Complex problems do not have simple solutions.”⁹

He enjoyed Einstein's admonition to make things as simple as possible, but not simpler, which describes a systems way to approach problem analysis.

Problems, according to Ackoff, generally arise from disconnects in systems. His approach to systemic problem solving is to dissolve complex societal or organizational problems by engaging stakeholders in designing permanent solutions. He often quoted Einstein's warning that, “We can't solve problems by using the same kind of thinking we used when we created them.”¹⁰ To manage a system effectively, you must focus on the interactions of the parts rather than their behavior taken separately—systems thinking as opposed to analytical reductionism.

Problem solving requires a system that must not only solve problems by developing corrective actions, but also must maintain control over solutions and prevent new problems from occurring. These elements interact with each other. If the interactions are well designed and organized, problem solving will be effective. If problems are not dissolved (solved permanently so they do not return), then the act of problem solving will create the mess—future problems we create today.

Our modern culture is built on the analytical lessons of the World War II years. The assumption is that if we understand how the parts of something work, then by assembling all the parts you are competent to build the whole. We run our businesses this way. Operating organizations are divided into different functions, products or geographic regions, and then aggregated to assemble an entire organization. This is a great way to construct the mess.

Our society supports a culture of specialists who apply analytical-reductionist logic to all core disciplines. For example, accounting systems record mistakes of commission—when an activity does not proceed according to plan. But accounting does not record mistakes of omission—things that have not been done that should have been—nor does it identify opportunity costs or correct analytical problems from the over-reliance on poor statistical models.

To gain profound knowledge of systems requires us to blend analytical and systemic perspectives so we can discover the invisible connections between things that don't have obvious connections. If our society is going to move beyond the mess we have today, we must integrate analytical thinking with systems thinking.

The road less traveled

The recent economic crisis is a good example of how systems thinking is still applicable today. Just ask: Why did we get into this mess? Did we apply restricted analytical thinking to parts of the financial system, or did we think broadly about the entire system?

A systems thinking approach requires the discipline to reason differently. Of course, we used the approach that worked effectively 60 years ago: the analytical-reductionist viewpoint. We developed financial instruments independent of their potential impact on global economic systems. The mess was created because we failed to understand interactions of the elements in our global economic system.

Ackoff could have been an intellectual leader moving us toward this objective. Instead, we have made little progress applying systems thinking to social systems. There are some successes: A systems thinking approach is embedded in the performance model of the United Nations Global Compact, and it has also been adopted by the corporate social responsibility community. It needs to become a dominant way of thinking, not just a cultural artifact.

Ackoff preferred we learn for ourselves. He rejected the label of guru even though it was often used to describe him in the press. He once said, "I am not a guru. ... Gurus encourage followers who do things their way. I am an educator. ... I encourage others to go out and adapt these ideas ... to do whatever is going to be the most effective solution for them."¹¹

Ackoff encouraged people to think differently and inspired progressive learning through systems thinking. This is a fundamental cornerstone for quality methods in the 21st century.

If we think like Ackoff and use a systems approach, maybe we can act more decisively and remove ourselves from the mess we find ourselves in—a mess that exists because we used yesterday's thinking to try to solve today's problems. **QP**

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