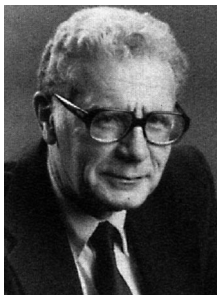


A LIFETIME OF SYSTEMS THINKING

BY RUSSELL L. ACKOFF



Editor's note: This article is drawn from a speech given by Russell Ackoff in March at Villanova University. Dr. Ackoff spoke at a conference honoring his lifetime of work in systems theory and

practice—and celebrating his 80th birthday. In the address below, he reflects on what he has enjoyed most about being a lifelong systems thinker. This article is reprinted by permission of Plenum Press.

When one reaches 80, one is considered to be ripe and ready for picking. Picking usually consists of the pickers asking the pickee to reflect back on the wisdom he has gained over his lifetime. This request is based on the false assumption that wisdom increases with age. The pickee is then expected to share with the pickers the bits of wisdom he or she may have accumulated. Unfortunately, my bag of wisbits is empty. Whatever I may have once possessed, I have dissipated in my writings.

Pickers may also falsely assume that the clarity with which one can foresee the future increases with age. The fact is that whatever we can see clearly about the future we will take steps to prevent from happening. As Kenneth Boulding once said, If we saw tomorrow's newspaper today, tomorrow would never happen. Unfortunately, as you know, I have no interest in forecasting the future, only in creating it by acting appropriately

in the present. I am a founding member of the Presentology Society.

I also have no interest in reconstructing the past as I would like it to have been. I learned from it precisely because it wasn't what I expected, which also explains why I don't remember it. Furthermore, you cannot learn from my mistakes, only from your own. I want to encourage, not discourage, your making your own.

I have no interest in forecasting the future, only in creating it by acting appropriately in the present. I am a founding member of the Presentology Society.

Now where do these self-indulgent reflections leave me? Not surprisingly, where I want to be: discussing the most important aspect of life, having fun. For me there has never been an amount of money that makes it worth doing something that is not fun. So I'm going to recall the principal sources of the fun that I have experienced.

Denying the Obvious

I have very much enjoyed denying the obvious and exploring the consequences of doing so. In most cases, I have found the obvious to be wrong. The obvious, I discovered, is not what needs no proof, but what people do

not want to prove. I have been greatly influenced by [satirist] Ambrose Bierce's definition of self-evident: "Evident to one's self and to nobody else."

Here is a very small sample of the obvious things I have found to be wrong:

- **Improving the performance of the parts of a system taken separately will necessarily improve the performance of the whole.** False. In fact, it can destroy an organization, as is apparent in an example I have used *ad nauseum*: Installing a Rolls Royce engine in a Hyundai can make it inoperable. This explains why benchmarking has almost always failed. Denial of this principle of performance improvement led me to a series of organizational designs intended to facilitate

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the management of interactions: the circular organization, the internal market economy, and the multidimensional organization.

• **Problems are disciplinary in nature.** Effective research is not disciplinary, interdisciplinary, or multidisciplinary; it is *transdisciplinary*. Systems thinking is holistic; it attempts to derive understanding of parts from the behavior and properties of wholes, rather than derive the behavior and properties of wholes from those of their parts. Disciplines are taken by science to represent different parts of the reality we experience. In effect, science assumes that reality is structured and organized in the same way universities are.

This is a double error. First, disciplines do not constitute different parts

of reality; they are different aspects of reality, different points of view. Any part of reality can be viewed from any of these aspects. The whole can be understood only by viewing it from all the perspectives simultaneously.

Second, the separation of our different points of view encourages looking for solutions to problems with the same point of view from which the problem was formulated. Quoting Einstein: "Without changing our pattern of thought, we will not be able to solve the problems we created with our current patterns of thought." When we know how a system works, how its parts are connected, and how the parts interact to produce the behavior and properties of the whole, we can almost always find one or more points of view that lead to better solutions than those we would have arrived at from the point of view from which the problem was formulated. For example, we do not try to cure a headache by brain surgery, but by putting a pill in the stomach. We do this because we understand how the body, a biological system, works. When science divides reality up into disciplinary parts and deals with them separately, it reveals a lack of understanding of reality as a whole, as a system.



Systems thinking not only erases the boundaries between the points of view that define the sciences and professions, it also erases the boundary between science and the humanities. Science, I believe, consists of the search for similarities among things that are apparently different; the humanities consist of the search for differences among things that are apparently similar. Science and the humanities are the head and tail of reality—viewable separately, but not separable. It is for this reason that I have come to refer to the study of systems as part of the "scianities."

• **The best thing that can be done to a problem is to solve it.** False. The best

thing that can be done to a problem is to *dissolve* it, to redesign the entity that has it or its environment so as to eliminate the problem. Such a design incorporates common sense and research, and increases our learning more than trial-and-error or scientific research alone can.

Catching Social Systems Red-Handed

Here's a second revelation that I've really enjoyed exploring: Most large social systems are pursuing objectives other than the ones they proclaim, and the ones they pursue are wrong. They try to do the wrong thing righter, and this makes what they do wronger. It is much better to do the right thing wrong than the wrong thing right, because when errors are corrected, it makes doing the wrong thing wronger but the right thing righter. A few examples:

• **The healthcare system of the United States is not a healthcare system; it is a sickness- and disability-care system.**

These are not two aspects of the same thing, but two different things. Since the revenue generated by the current system derives from care of the sick and disabled, the worst thing that can happen to it would be universal health coverage. Conversion of the current system to a healthcare system would require a fundamental redesign.

• **The educational system is not dedicated to produce learning by students, but teaching by teachers—and teaching is a major obstruction to learning.**

Witness the difference between the ease with which we learned our first language without having it taught to us, and the difficulty with which we tried to learn a second language in school. Most of what we use as adults we learned once we got out of school, not while we were in it, and what we learned in school we forgot rapidly—fortunately. Most of it is either wrong or obsolete within a short time. Although we learn little of use by having it taught to us, we can learn a great deal by teaching others. It is always the teacher who learns

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THE SYSTEMS THINKER™ explores both the theory and practice of the learning organization, with particular emphasis on systems thinking as the cornerstone of the five disciplines (as outlined by Peter Senge in *The Fifth Discipline*). Articles by leading thinkers and practitioners articulate the challenges and issues involved in creating learning organizations. We encourage dialogue about systemic issues and strive to provide a forum for debating such issues. Unsolicited articles and stories are welcome.

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most in a classroom. Schools are upside down. Students should be teaching, and teachers at all levels should learn no matter how much they resist doing so.

A student once asked me in what year I had last taught a class on a subject that existed when I was a stu-

The most valuable and least replaceable resource is time. Without the time of employees, money can produce nothing. Employees have a much larger investment in most corporations than their shareholders.

dent. A great question. After some thought, I told him 1951. “Boy,” he said, “you must be a good learner. What a pity you can’t teach as well as you can learn.” He had it right.

• ***The principal function of most corporations is not to maximize shareholder value, but to maximize the standard of living and quality of work life of those who manage the corporation.***

Providing the shareholders with a return on their investments is a requirement, not an objective. As Peter Drucker observed, profit is to a corporation as oxygen is to a human being: necessary for existence, not the reason for it. A corporation that fails to provide an adequate return for their investment to its employees and customers is just as likely to fail as one that does not reward its shareholders adequately.

The most valuable and least replaceable resource is time. Without the time of employees, money can produce nothing. Employees have a much larger investment in most corporations than their shareholders. Corporations should be maximizing stakeholder, not shareholder, value to employees, customers, and shareholders.

Replacing Confusion with Conceptual Order

I’ve also enjoyed producing conceptual order where ambiguity and confusion prevail. Some examples:

• ***Identifying and defining the hierarchy of mental content, which, in order of increasing value, are: data, information, knowledge, understanding, and wisdom.*** However, the educational system and most managers allocate time to the acquisition of these things that is inversely proportional to their importance. Few individuals, and fewer organizations, know how to facilitate and accelerate learning—the acquisition of knowledge—let alone understanding and wisdom. It takes a support system to do so.

All learning ultimately derives from mistakes. When we do something right, we already know how to do it; the most we get out of it is confirmation of our rightness. Mistakes are of two types: commission (doing what should not have been done) and omission (not doing what should have been done). Errors of omission are generally much more serious than errors of commission, but errors of commission are the only ones picked up by most accounting systems. Since mistakes are a no-no in most corporations, and the only mistakes identified and measured are ones involving doing something that should not have been done, the best strategy for managers is to do as little as possible. No wonder managerial paralysis prevails in American organizations.

• ***Identifying and defining the three basic types of traditional management: the reactive or reactionary, the inactive or conservative, and the proactive or liberal.***

I’ve also shown that a fourth type, the

interactive or radical, denies two assumptions common to the three traditional types. These assumptions are (1) that the future can be forecast accurately enough to be used effectively in planning, and (2) that we should plan the way to get from where we are to where we want to be. The interactive type constitutes a radical transformation of the concept of management. The interactive manager plans backward from where he wants to be ideally, right now, not forward to where he wants to be in the future.

The interactive manager plans backward, because it reduces the number of alternative paths he must consider, and his destination is where he would like to be now. If he did not know this, how could he possibly know where he will want to be at some other time?

• ***Identifying and defining the ways we can control the future: vertical integration, horizontal integration, cooperation, incentives, and responsiveness.*** These are seldom used well. Corporations tend to collect activities that they do not have the competence or even the inclination to run well. They also tend more to adversarial relationships with employees, and to encourage competition between parts of the corporation and conflict with competitors. As Peter Drucker pointed out, there is more competition within corporations than between them, and the internal kind tends to be less ethical.

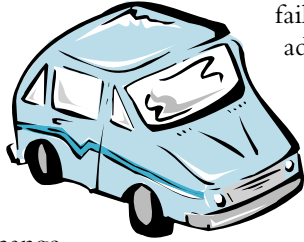
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SIX REVELATIONS

- Improving the performance of the parts of a system taken separately will *not* necessarily improve the performance of the whole; in fact, it may harm the whole.
- Problems are *not* disciplinary in nature but are holistic.
- The best thing that can be done to a problem is *not* to solve it but to *dissolve* it.
- The healthcare system of the United States is *not* a healthcare system; it is a sickness- and disability-care system.
- The educational system is *not* dedicated to produce learning by students, but teaching by teachers—and teaching is a major obstruction to learning.
- The principal function of most corporations is *not* to maximize shareholder value, but to maximize the standard of living and quality of work life of those who manage the corporation.

In many cases, managers unintentionally create incentives that result in activities diametrically opposed to their best interests—for example, rewarding themselves for short-term performance, and ignoring the long-term or paying commission based on the amount of a sale rather than its profitability. This encourages the sale of under-priced, hence usually unprofitable, items.

Few organizations are ready, willing, and able to change in response to unanticipated internal or external changes. They lack the responsiveness of a good driver of an automobile who gets where he wants to go without forecasts of what he will encounter but with the ability to cope with whatever occurs.



reengineering, and scenario planning. Managers are incurably susceptible to panacea peddlers. They are rooted in the belief that there are simple, if not simple-minded, solutions to even the most complex of problems. And they do not learn from bad experiences.

Managers fail to diagnose the failures of the fads they adopt; they do not understand them. Most panaceas fail because they are applied antisystemically. They need not be, but to do otherwise requires an understanding of systems and the ability to think systemically. The perceived need to learn something new is inversely proportional to the rank of a manager. Those at the top feel obliged to pretend to omniscience, and therefore refuse to learn anything new even if the cost of doing so is success.

Exposing Intellectual Con Men

My fourth source of fun has been the disclosure of intellectual con men—for example, propagators of TQM, benchmarking, downsizing, process

Designing Organizations

Finally, my fifth source of satisfaction has derived from designing organizations that can avoid the kinds of traps I

have described here; for example, the designs of a democratic hierarchy, an internal market economy, a multidimensional organizational structure; and learning and adaptation support systems. But I have derived the most fun working with others on the design of INTERACT (see author's biography for more information), the Social Systems Sciences Graduate Program at The Wharton School, and the Operations Research Graduate Programs at Case University and the University of Pennsylvania.

I am indebted to all who have made my "work" a continuous source of fun. ■

Russell L. Ackoff is widely recognized as a pioneering systems thinker. He has taught at Wayne University, Case Institute of Technology, and the Wharton School, where he is Anheuser-Busch Professor Emeritus of the Management Sciences. He is currently chairman of the board at INTERACT: The Institute for Interactive Management. He is also the author of numerous books, including *Ackoff's Fables*, *Creating the Corporate Future*, and *The Democratic Corporation*.

About INTERACT

Russell L. Ackoff is chairman of the board of INTERACT, the Institute for Interactive Management. INTERACT focuses on the development and practice of Interactive Design, first introduced by Ackoff in 1974 in his book *Redesigning the Future*. Interactive Design is a systems methodology for defining problems and designing solutions. It is a holistic approach that deals iteratively with all dimensions of a system, including its structure, function, and processes.

INTERACT traces its origins back to 1951, when Ackoff and C. W. Churchman formed the first Operations Research group at Case Institute of Technology. In 1964, the group moved to the Wharton School of the University of Pennsylvania at the Busch Center. In 1986, INTERACT became an independent organization.

RUSSELL ACKOFF BOOK LIST

Ackoff, Russell L. *Choice, Communications, and Conflict: A Systems Approach to the Study of Human Behavior*. Management Science Center, University of Pennsylvania, 1967.

Ackoff, Russell L., and Maurice W. Sasieni. *Fundamentals of Operations Research*. Wiley, 1968.

Ackoff, Russell L. *A Concept of Corporate Planning*. Wiley-Interscience, 1970.

Ackoff, Russell L., and Fred E. Emery. *On Purposeful Systems*. Tavistock Publications, 1972.

Ackoff, Russell L. *Redesigning the Future: A Systems Approach to Societal Problems*. Wiley, 1974.

Ackoff, Russell L., et al. *Designing a National Scientific and Technological Communication System*. University of Pennsylvania Press, 1976.

Ackoff, Russell L., Richard M. Cyert, and H. D. Woods. *The Zucker Lectures*. McMaster University, 1977.

Ackoff, Russell L. *The Art of Problem Solving*. Wiley, 1978.

———. *Creating the Corporate Future: Plan or Be Planned For*. Wiley, 1981.

Ackoff, Russell L., Shiv K. Gupta, and J. Sayer Minas. *Scientific Method: Optimizing Applied Research Decisions*. R. E. Krieger, 1984.

Ackoff, Russell L., Jamshid Gharajedaghi, and Elsa Vergara Finnel. *A Guide to Controlling Your Corporation's Future*. Wiley, 1984.

Ackoff, Russell L., Paul Broholm, and Roberta Snow. *Revitalizing Western Economies*. Jossey-Bass, 1984.

Ackoff, Russell L. *Management in Small Doses*. Wiley, 1986.

———. *Ackoff's Fables: Irreverent Reflections on Business and Bureaucracy*. Wiley, 1991.

———. *The Democratic Corporation: A Radical Prescription for Recreating Corporate America and Rediscovering Success*. Oxford University Press, 1994.

———. *Ackoff's Best: His Classic Writings on Management*. Wiley, 1999.

———. *Recreating the Corporation: A Design of Organizations for the 21st Century*. Oxford University Press, 1999.

SCHOOL VIOLENCE DISCUSSION

To join an ongoing discussion about how a better understanding of systems might reduce the probability of tragedies like the one that happened in Littleton, Colorado, contact Lees Stuntz (stuntzln@tiac.net) at the Creative Learning Exchange. Also, anyone interested in and connected to K-12 education who wishes to discuss the uses of system dynamics as a tool for learning can join the K-12 listserve; to sign up, email k-12sd@sysdyn.mit.edu.