

Leadership in a Changing Society

by

Jay W. Forrester

for the

Cultural Leadership Forum

Center for American Studies at Concord

Concord, Massachusetts

September 28, 1996

Lincoln's Gettysburg Address, as a background for this forum, occurred at a turning point in demands on leadership.¹

Eleven score years ago, our founders brought forth a new nation dedicated to the proposition that leadership, based on a liberal education and a study of history, could ensure liberty and equality.

Now we are engaged in a great intellectual war, "testing whether that nation or any nation so conceived can long endure." We meet here on a great conceptual battle-field to dedicate ourselves to filling the leadership vacuum now existing in every corner of society.

This forum was organized to examine leadership in different professions. But social and economic shortcomings arise not so much from individual professions as from how different components interact in today's complex society.

Two hundred years ago, society was far simpler. Agriculture dominated. Children grew amidst the adult working world. Business, families, and government existed on a scale that could be comprehended. Self-evident national policies were usually correct. The future presumably would be much like the past. Open land to the west relieved the pressure of crowding.

A hundred-year transition began in Lincoln's time. The industrial revolution moved economic activity from agriculture toward manufacturing.

¹ The program restricted this talk to six minutes, twice the time taken by Lincoln in his Gettysburg Address.

Children became excluded from the adult working world. Crowding gradually increased social pressures as seen in today's human migrations and conflicts between people and the environment. Social stresses led to increasing government intervention. Individual responsibility became submerged in governmental programs. In short, simplicity of two centuries ago has been overtaken by complexity.

Complex social systems behave in ways quite different from expectations arising from experience with simple systems. But simple systems still form the basis for most principles of leadership. Lessons from simple systems of the past can be dangerously misleading as a basis for leadership in an increasingly complex world.

In the last several decades, computer simulation modeling of social, economic, and technological systems has revealed how we are misled by complex systems. A few examples of the counterintuitive nature of complex social systems illustrate many misunderstandings that underlie leadership failures:

1. **Short-term vs. Long-term consequences.** A change in policy that enhances the immediate future almost always leads later to negative consequences. Pressures on government for immediate social improvements generate processes leading to future crises. Example: government welfare programs in many countries have evolved into nonsustainable financial burdens. Reversing such bankrupt programs produces severe political clashes.
2. **Cause and Effect not Closely Relate in Time or Space.** In simple systems, cause and effect are closely related in time and location. In complex systems, causes of troubles often lie far back in time and come from policies in a different part of the social system. Example: the spotted owl fight between loggers and environmentalists arises from lumber demands of a growing population that in turn was fueled by two centuries of improved agriculture, public health measures, and technology.
3. **Low-Leverage Policies.** Behavior of simple systems is directly affected by most control points in those systems. However, in complex systems, the majority of control policies

have little leverage, yet most political debate addresses those policies of little consequence. Example: time after time business and political leaders adopt policies and laws chosen to solve a problem, but years later the problem still exists. The frustrating results arise not from bad luck but from choosing policies and laws that generate self-defeating counterpressures.

4. High-Leverage Policies, Often Wrongly Applied.

Fortunately, a few high-leverage policies exist that can alter the behavior of a system. But, high-leverage policies lay another trap for the unwary. One occasionally finds people working with a high-leverage policy. However, perhaps as much as 90% of the time, they are pushing the high-leverage policy in the opposite direction relative to what they want to accomplish. In complicated systems, intuition provides no reliable guide even as to the direction that a high-leverage policy should be changed. Example: For years the U.S. tried unsuccessfully to revive decaying cities by building low-cost housing; low-cost housing is a high-leverage policy, but it should be reduced, not increased. Low-cost housing acts as a double-edged sword for producing poverty; it reduces the land available for job-creating opportunities while drawing in people who need jobs.

5. Collapse of Goals. There is a strong tendency for goals of all kinds—personal, community, corporate, or national—to drift downward. Pressures tend to cause performance to fall short of goals. Failing to meet goals is uncomfortable. The response is often to let the goals adjust downward toward the actual performance. As goals fall, incentives for high achievement decline. Performance continues to fall short of the new lower goals and the downward spiral continues. Falling goals will in time lead to crisis, but by then recovery may be impossible. Example: one sees erosion of goals in attitudes toward the national deficit. Thirty years ago, the present size of the national deficit would have been unthinkable. But as the deficit rose, people came to accept each new rise and adjusted to the higher deficit. Eventually such goal erosion can lead to disaster. Successful people, successful corporations, and successful countries have leadership or deeply held beliefs that stop such goal erosion.

Experience with complex systems does not reveal valid insights because those systems are baffling to people who filter evidence through interpretations gained since childhood from simple systems. There is no other way than through computer simulation for understanding such complexity.

If leaders of the future are to succeed, they must take actions contrary to those now accepted by the public. But leaders can not move against strong currents of public opinion. Future leaders can only be successful if the public comes to understand how complex systems create our discontent, to realize how to make social systems more benign, and to accept policies for the long-term good that may be opposed to immediate gratification. Years are required to achieve and internalize such understanding.

My optimism for the future lies in experimental programs now under way to base kindergarten through 12th grade education on system dynamics, the discipline that deals with behavior of complex systems. Many schools in the United States and in several other countries are now embarking on such programs. In Massachusetts, pioneering schools include Concord, Carlisle, Harvard, and a new charter school in Chelmsford. Students find the programs exciting and challenging as they come to understand better the behavior of families, schools, towns, economies and countries. As children see how policies can be chosen for better outcomes, they are becoming leaders for the future. Only if we can create both leadership and an equally understanding and essential followership consistent with complexity can we hope “that government of the people, by the people, and for the people, shall not perish from the earth.”

Further Reading:

- Alfeld, Louis Edward, and Alan K. Graham. (1976). *Introduction to Urban Dynamics*. Waltham, MA: Pegasus Communications. 333 pp.
- Forrester, Jay W. (1961). *Industrial Dynamics*. Waltham, MA: Pegasus Communications. 464 pp.
- Forrester, Jay W. (1968). *Principles of Systems*. (2nd ed.). Waltham, MA: Pegasus Communications. 391 pp.
- Forrester, Jay W. (1969). *Urban Dynamics*. Waltham, MA: Pegasus Communications. 285 pp.

- Forrester, Jay W. (1971). *World Dynamics*. (1973 second ed.). Waltham, MA: Pegasus Communications. 144 pp.
- Forrester, Jay W. (1975). *Collected Papers of Jay W. Forrester*. Waltham, MA: Pegasus Communications. 284 pp.
- Goodman, Michael R. (1974). *Study Notes in System Dynamics*. Waltham, MA: Pegasus Communications. 388 pp.
- Mass, Nathaniel J., ed., (1974). *Readings in Urban Dynamics: Volume I*, Waltham, MA: Pegasus Communications, 303 pp.
- Schroeder, Walter W., III, Robert E. Sweeney, and Louis Edward Alfeld, ed., (1975). *Readings in Urban Dynamics: Volume 2*, Waltham, MA: Pegasus Communications, 305 pp.

Bibliography edited
D-4620-2, Sept. 9, 2001

