

The Systems Thinker



Vol. 2, No. 2

March 1991

Mergers and New Entrants Mark a New Era in Systems Thinking

Although the field of systems thinking has been around for several decades, the last several years have marked unprecedented growth. New entrants have spurred the growth with an injection of new products and services.

In addition, the tremendous success of Peter Senge's book, *The Fifth Discipline* (see "Learning Organizations: From Invention to Innovation," September 1990), now in its sixth printing, has dramatically heightened awareness of the potential power of systems thinking to enhance organizational learning. The acquisition of system dynamics books by Productivity Press, a leader in continuous improve-

ment tools with a strong presence in the manufacturing sector, has also broadened the audience for systems thinking.

Last month, systems thinking made another major stride into the main-

changes (see "Not All Recessions are Created Equal," February 1991). Many rules of the game will be changed, not only in the business realm, but the social and political arenas as well.

"During this period of tumultuous change, old management practices that are no longer effective will be discarded and replaced by a new set of management ideas and methods....The recent growth in systems thinking suggests that it too will emerge as part of the new management paradigm.

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stream of management practice with the announcement that Pugh-Roberts Associates had been acquired by PA Consulting Group. PA Consulting, headquartered in London, is the largest management and technology consulting firm in Western Europe, with worldwide revenues estimated to be about \$300 million. Pugh-Roberts, the oldest of the systems thinking consulting firms, says it views the alliance as a unique opportunity for growth and "looks forward to more rapid international expansion," signalling heightened expectations for both Pugh-Roberts and the systems thinking field.

New Management Paradigm

According to Professor John Sterman of the MIT Sloan School of Management, the current economic downturn will likely spark radical

During this period of tumultuous change, old management practices that are no longer effective will be discarded and replaced by a new set of management ideas and methods. Taylorism and mass production mentality are likely to be abandoned. Total Quality and mass customization will surely be adopted. The recent growth in systems thinking suggests that it too will emerge as part of the new management paradigm.

Rapid growth in any field is usually accompanied by a certain amount of chaos, since there usually isn't enough time to organize and articulate all of the changes. The following description of systems thinking companies and resources will hopefully create order out of the

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Mergers and New Entrants in Systems Thinking

"chaos" by clarifying who the current players are in the field. A directory of firm names, addresses and phone numbers is included on page 3.

Systems Thinking Firms

The newly acquired division of PA Consulting, *Pugh-Roberts Associates* (Cambridge, MA), applies computer simulation modeling to business and technology issues, especially large-scale, complex projects such as shipbuilding, communications, aerospace and defense systems. Their models have been used with great success in contract claims and renegotiations, new project bids, and program performance problems (for a description of one case, see "Systems Think-

ing in Dispute Resolution" in the August 1990 issue). Pugh-Roberts is also a developer and supplier of the DYNAMO family of system dynamics modeling software for IBM mainframes and microcomputers.

Innovation Associates (Framingham, MA) focuses on building organizations that have the inspiration and ability to produce outstanding results while fulfilling the personal aspirations of their members. Their multidisciplinary approach includes vision-based team development, systems thinking, strategy implementation, and an overall emphasis on organizational learning. Innovation Associates offers a variety of workshops, including "Systems

Thinking: A Business Perspective," which is specifically aimed at developing systems thinking competency.

With the release of STELLA in 1985, *High Performance Systems* (Hanover, NH) moved the field one giant step forward. A Macintosh-based modeling software, STELLA, made the systems thinking modeling process accessible to non-practitioners. Their line of products—STELLA®, STELLAStack®, and ithink™—are "visual thinking tools" that build people's capacity for understanding and improving the way complex corporate, social, and physical systems work. Their software programs permit users to first visualize a system by constructing diagrams using pictures and building block icons, then brings the pictures and diagrams to life via animation. High Performance Systems also provides in-house and public workshops as well as client-specific consulting.

Gould-Kreutzer Associates (Cambridge, MA) offers a wide variety of public seminars and in-house training courses in systems thinking that help managers develop an intuitive understanding of their company's underlying structure. By applying visual "mapping" techniques, managers can capture and communicate their mental models more effectively. In addition, they offer custom-designed computer simulation models, which can be used to explore management issues and develop corporate strategy.

Bringing the "technology of learning organizations" to managers in comfortable, small-group settings is the fundamental expertise of *LeapTec* (Cambridge, MA). Using systems archetypes, causal loop diagramming,

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Look for more details in the next issue...

and management flight simulators, they coach management teams in how to develop a systemic view of their organization. They offer both in-house seminars and consulting services.

MicroWorlds (Cambridge, MA), another software developer, offers customized simulation software for use in management training and strategy support. Their products give users the added ability to create interfaces that will turn models created with Professional DYNAMO Plus™ or STELLA™ into interactive learning environments. In addition to its software products (*MicroWorld Creator™* and *MicroWorld Explorer™*), the company offers *MicroWorld Summit*, a three-day workshop designed to introduce managers to the rapidly emerging field of interactive learning technologies.

MicroStrategy (Wilmington, DE) began with a 'radical vision': Corporate strategists would use computer-based tools to drive the strategic planning process with instantaneous access to the latest marketing forecasts, financial assumptions, and competitive intelligence. With this information at hand, planners could use simulation models to peer into the future and look at the implications of all assumptions made by the divisional experts. *Strategy System™* software, is the culmination of that vision: a combination of dynamic industry simulation models, strategy information databases, and an easy-to-use graphical interface. *MicroStrategy* builds custom-designed Strategy Systems for its clients.

Collaborative Efforts

The *System Dynamics Society* (Lincoln, MA) is an international scholarly organization whose membership encompasses teachers and researchers in schools, colleges, and universities, professionals in government and industry, and consultants active in the public and private sectors. What ties these individuals together is the use of a feedback perspective and computer simulation to understand

problems arising in complex social systems and to enhance policy analysis and design. The society publishes a scholarly journal, the *System Dynamics Review*, and sponsors the annual International System Dynamics Conference.

The *MIT Organizational Learning Center* (Cambridge, MA) fosters collaborative research among innovative organizations to advance learning disciplines, develop new learning tools and processes, and study the impact of such innovations in organizations (next issue's cover story will cover the Learning Center in more detail).

Publishing Support

With the recent growth in the field has also come renewed interest in disseminating the growing body of knowledge. *Productivity Press* (Cambridge, MA), now carries the twenty classic texts in system dynamics that were previously available through MIT Press (see "Productivity Press: Integrating System Dynamics and Japanese Management," October 1990). *Productivity's* future systems thinking publications will cover corporate applications of the principles of systems thinking, computer software modeling programs, interactive simulation games, and training programs that support corporate learning.

Pegasus Communications (Cambridge, MA), publisher of *The Systems Thinker*, is committed to helping managers develop a clearer understanding of the nature of complex dynamic systems and their impact at many levels—personal, professional, and societal—through the application of a systems thinking framework and tools. *The Systems Thinker* is designed to stimulate dialogue about systemic issues. It provides an ongoing forum for articulating and exploring the challenges of dealing with a complex, changing business world.



Systems Thinking Directory

• **Gould-Kreutzer Associates**, River Court, 10 Rogers St., Cambridge, MA 02142, Phone: (617) 577-1430

• **High Performance Systems**, 45 Lyme Rd., Hanover, NH 03755, Phone: (603) 643-9636

• **Innovation Associates**, P.O. Box 2008, Framingham, MA 01701, Phone: (508) 879-8301

• **LeapTec**, P.O. Box 938, Cambridge, MA 02140, Phone: (617) 354-4219

• **MicroStrategy**, 1 Commerce Ctr., Wilmington, DE 19801, Phone: (302) 427-8800

• **MicroWorlds**, Kendall Square, P.O. Box 1400, Cambridge, MA 02142, Phone: (617) 547-9898

• **MIT Organizational Learning Center**, MIT Bldg. E40-294, 1 Amherst St., Cambridge, MA 02139, Phone: (617) 253-1549

• **MIT System Dynamics Group**, MIT, Bldg. E40-294, 1 Amherst St., Cambridge, MA 02139, Phone: (617) 253-1549

• **Pegasus Communications**, P.O. Box 1281, Kendall Square, Cambridge, MA 02142, Phone: (617) 576-1231

• **Productivity Press**, P.O. Box 3007, Cambridge, MA 02140, Phone: (617) 497-5146

• **Pugh-Roberts Associates**, a division of PA Consulting Group, 5 Lee St., Cambridge, MA 02139, Phone: (617) 864-8880.

• **System Dynamics Society**, 49 Bedford Rd., Lincoln, MA 01773.