SEJARAH

SYSTEMS THINKING

ORIGINS OF SYSTEMS THINKING

In the early part of the twentieth century, a new breed of (quantum) physicist began to challenge Newtonian precepts. Foremost amongst these was Werner Heisenberg, whose questioning of he Newtonian 'truth' led to his formulating the 'uncertainty principle' in 1923. later, in 1947, Norbert Weiner developed cybernetics, which is the science of human-machine relationships.

Another milestone in systems science was set by Von Bertalanffy's book General Systems Theory, published in 1954. Later, Jay W. Forrester of the Massachusetts Institute of Technology (MIT), in an 1958 Harvard Business Review article, introduced and demonstrated the applications of feedback control theory in simulation models of organizations (Forrester, 1958).

Forrester's seminal work marks the birth of the professional field known as system dynamics which is the application of system theory to economics and organizations. Peter Senge and others, also of MIT, extended the concepts of system dynamics into five disciplines for organizational learning, of which systems thinking is the last discipline.

Another major contributor to the field of system dynamics over the last 30 years has been Geoff Coyle, formerly with the University of Bradford Management Centre. Geoff Coyle received the first lifetime achievement award of the International System Dynamics Society (1998).

In the early 1980s, a different approach to systems thinking was developed in the UK. The hallmark of this approach is known as soft system methodology (SSM). Developed by Peter Checkland (1981) of the University of Lancaster, this approach, sometimes referred to as the 'British' approach or soft OR (operations research) is distinctly different from the MIT approach, which based on system dynamics.

Later, other methods such as cognitive mapping and strategic options developments and analysis (SODA) were introduced. These developments are also considered under the banner of systems thinking

(Maani et al., 2000: 6).