Strategic Planning for Systems Applications: Position Paper

Robert G. Dyck
Urban Affairs and Planning Program, School of Public and International Affairs, Virginia Tech, 2905 Ashlawn Drive, Blacksburg, VA 24060, USA bobdyck@vt.edu

Premise: We need to identify and prioritize the most important objectives and criteria for applying systems science in a knowledge society, so that we can focus our efforts for greater success in generating institutional and political support, financing, and collaboration. The following list of topics is intended as a basis for discussion:

1. **Great Moral Dilemmas of our Time**. War, poverty, sustainability are among the most intractable moral dilemmas. Sub-areas requiring systems attention include conflict management, international relations, prevailing economic theory and business practices, the interface of government and the private sector, the organization of science and technology, and the cultural imperatives of empire.

2. **Education**. Almost all public education, from the earliest grades to the university level, is organized around discrete subject areas (disciplines). More effective ways of incorporating systems thinking need to be developed to promote convergence of educational and systems theory, encourage systems thinking among faculty and students, and generate adoption of systems theory and its methodologies as well as modes of cooperative endeavor.

3. **Health**. There is a great divide between medical science and the practice of positive health (including illness prevention), which could mitigate the need for the curative approach. At stake are the fiefdoms of medical practice, medical insurance, pharmaceuticals, and hospital care. In addition to the growing practice of alternative methods of health care and illness prevention, other key areas to be integrated include the elimination of poverty, universal access to food and water, non-reversible environmental degradation, disparities between urban and rural regions, etc.

4. **Science and Technology**. The compartmentalization of natural science, social science, the humanities, and technology has led to enormous historical increases in human knowledge and innovation. However, it is now time to capitalize on our growing ability to interface across the borderlines defining the different disciplines in the interest of generating new knowledge, new applications in technology and design, and new ways of assuring better progress in dealing with society's great moral dilemmas, improving general levels of education, and improving the health and sustainability of natural populations (including the human population). Organization and financing are a large part of the issue.

5. **Methodology and Computation**. Our ability to conceptualize complexity through the use of systems theory and various forms of nonlinear analysis, including fractal geometries, requires that we also give attention to financial support, equipment, and methodologies for computation of complex systems.

Keywords: moral dilemmas, education, health, science and technology, methodology and computation.