DUPONT SUMMIT 2013

Pressing Issues, Economic Realities

December 6, 2013 * Historic Whittemore House, Washington, DC

The Policy Studies Organization

Speakers
Stuart Umpleby – *George Washington University*
Kent Myers - *Leidos*
Peter Tuddenham - *The College of Exploration*
Ranulph Glanville - *American Society for Cybernetics*

" A General Theory of Regulation: Implications for Science Policy and Educational Policy" – Stuart Umpleby

Regulation (or control or management) occurs throughout biological and social systems. There are many examples. The iris in the eye regulates how much light the eye receives. Hunger controls when and how much we eat. Government agencies enforce standards in air and water pollution and food and drug production. The citizens of the U.S. decide, through their votes, who will represent them in Congress. In each case there is a regulator and a system being regulated, and there is a circular causal process connecting the two. Other disciplines tend to describe a system being regulated rather than the interaction between a regulator and what is regulated. A general theory of control and communication would focus on regulation independent of the material in which the process occurs. Hence, instances of the basic principles of regulation can be found in biological systems, in individuals, groups, organizations, nations, the international system, or in automatic control machines.

Cybernetics, has evolved considerably since its early days in the 1940s. It has passed through a period of engineering cybernetics when most work was concerned with computers, automatic control devices, and man-machine interfaces; a period of biological cybernetics when the emphasis was on understanding cognition; and a period of social cybernetics when the focus has been on management, economics, and creating a stable interaction between the environment and human society.

(Continued on next page)

" A General Theory of Regulation: Implications for Science Policy and Educational Policy"

There has also been attention to the philosophy of science in an effort to ensure that it describes the social sciences as well as the physical sciences. Science expands by adding a new dimension – any new theory should reduce to the old theory, to which is corresponds, for those cases in which the old theory is known to hold. This "correspondence principle" can also be applied to the philosophy of science. Accordingly, two dimensions could be added to the classical philosophy of science – amount of attention paid to the observer and the effect a theory has on the system it describes. Both dimensions can be disregarded in the physical sciences, but not in the social sciences.

Expanding the philosophy of science would change how social science is done. There would be less emphasis on finding linear relationships and more attention to circular processes – positive and negative feedback loops. There would be more attention to decision methods, such as group facilitation, since social scientists participate in as well as observe social systems. There would be more attention to multi-disciplinary or interdisciplinary research to counteract overly narrow disciplinary research.

Presently the fields of systems and cybernetics are growing in other countries but declining in the U.S. as indicated by the addresses of the authors of articles in the journals in the field. Currently there are no university departments in the U.S. that teach systems and cybernetics, other than systems engineering. The fields of systems and cybernetics have been developing a general theory of management, of information society, and of knowledge management. They offer theories that can help the social sciences communicate with each other more successfully. Consequently, increasing support for these fields would seem to be wise policy.

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Biography

Stuart Umpleby is a professor in the Department of Management at The George Washington University. In the 1970s he worked on designing programs for computer-based communications media, what we now call the internet. In the 1980s he organized a series of meetings on systems and cybernetics with Soviet scientists through the American Council of Learned Societies and the Soviet Academy of Sciences. In the 1990s he worked on the Year 2000 computer problem, viewing it as the first large problem of an information society. In recent years he has endeavored to expand the philosophy of science so that it more adequately encompasses the social sciences. He is a past president of the American Society for Cybernetics and associate editor of the journal *Cybernetics and Systems*. His website is www.gwu.edu/~umpleby.

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"Reframing Federal Microgrid Development" – Kent Myers

The federal government is currently replacing conventional electric power plants with advanced microgrids at major military bases. A microgrid is a significant upgrade, having high potential locally by exploiting new energy sources and better ways to integrate, but also setting a new national pattern.

Policy levers are being applied to make the transition to microgrids a success. A direction has been set, and this has been followed up with favorable acquisition mechanisms, ample funding, and political support. It would seem that everything is in place, except that an underlying organizational culture is poorly matched to what microgrid development requires, and this organizational culture is relatively immune to the policy levers that have been applied.

By "culture" we mean interlocking management practices that are actively reinforced in the everyday dealings of the federal workforce. Several common and even best practices in federal acquisition and project management are not well matched to microgrid development and may seriously limit their benefits. These practices grew from experience with technologies, organizations, and standards of a different era and continue to be considered the proper way to purchase and manage services. While these practices continue to be workable in many situations, they suppress systemic, evolutionary approaches to technology development. An alternative approach and associated practices are proposed that are more likely to bring out the full potential of microgrids while maintaining conventional safeguards.

In sum, an important overlooked target is identified for policy intervention that will unlock microgrid development, but successful intervention hinges on overcoming a persistent organizational culture – a difficult prospect.

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Biography

Kent C. Myers, is a management consultant with Leidos (formerly SAIC), currently helping the intelligence community create a single information enterprise. Some of his recent projects include development of expertise in identity intelligence, building a diagnostic tool for adaptive organizational capability (which won an innovation award), and creating a campus-wide knowledge strategy for the US Army War College. He has devised methods in process design, performance management, and organizational development to cope with complex environments and to build novel capabilities. Recently he published Reflexive Practice: Professional Thinking for a Turbulent World. Myers has a PhD in Social Systems Sciences from the Wharton School, University of Pennsylvania and a BA in International Relations from the School of International Service, American University. His website is www.linkedin.com/in/myerskent/

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"Reflexivity of the Ocean and the Human" – Peter Tuddenham

This session will explore how reflexivity and theories of communication and control offer approaches to help different groups develop shared language and actions concerning the relationship of the ocean and humans.

Ocean scientists tend to focus on one of the following fields: Ocean Physics (i.e. ocean structure, circulation, tides and internal waves), Ocean Chemistry, Biological Oceanography, Air-Sea Interactions, Ocean Models (i.e., physical, chemical, biological and biochemical, coastal and shelf edge processes), and Paleooceanography. Each field has its own language and sub-discipline scientific and academic career paths. Most K-12 schools do not teach about the ocean. Did you learn about the ocean in school? Up to now the topic of the ocean is not necessarily included in science education or other topics, including geography. There are some policy makers from coastal areas of the USA who are concerned about ocean policy.

Most adults are not literate about the ocean. Being ocean literate means understanding the ocean's influence on you and your influence on the ocean. There are seven essential principles. 1. The Earth has one big ocean with many features. 2. The ocean and life in the ocean shape the features of the Earth. 3. The ocean is a major influence on weather and climate. 4. The ocean made Earth habitable. 5. The ocean supports a great diversity of life and ecosystems. 6. The ocean and humans are inextricably interconnected. 7. The ocean is largely unexplored.

Since 2002 small groups of scientists, educators and policy makers have worked together to help advance the idea of ocean literacy in the USA and recently globally.

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Peter Tuddenham is a co-founder of the College of Exploration http://www.coexploration.org an online not-for-profit educational organization. Since 1992 over 16,000 learners from around the world have attended workshops and courses online on ocean science, earth science, space science, educational pedagogy and leadership and related topics. His background is in large system management and change and the importance of an integrated, interactive role of technology, networks, communication processes and learning strategies. In business he headed a Strategic Issues Management Department for Arizona Public Services, a nuclear power utility, and before that was Corporate Communications Systems Manager for the Coors Brewing Company in Golden, Colorado. Mr. Tuddenham worked in compensation and benefits and professional recruitment for Coors and before that the US Department of Defense. He has served as guest faculty for executive development at the US Army War College in Carlyle, Pennsylvania, as Adjunct Professor in Distance Learning at George Mason University and the University of Maryland University College. He has studied systems design at Saybrook University in San Francisco and the Open University in England, has a BS in Business from Regis University in Denver. He served in the British Army and was commissioned as an officer in the British Army Corps of Royal Engineers from the Royal Military Academy Sandhurst. His website is http://www.linkedin.com/in/petertuddenham.

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"When Good Enough is Better than Best: Cybernetics and Design, Preconditions and Policy"

Cybernetics offers us much more than control, feedback and communication! In this talk I shall introduce several concepts that are central to thinking in contemporary cybernetic terms, and which may have considerable value when we try to consider policy, especially what policy might, in principle, be able to achieve. I will not explore a particular example, as the others in the panel do, but will introduce the broad range of these concepts, pointing to how we can treat them as bringing benefit rather than detriment.

The ideas include the unavoidability of error; insoluble (wicked) problems; undecidable propositions; side effects; and the value of being good enough.

I will suggest that many of our most highly regarded professions act on and incorporate these concepts.

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Biography

Ranulph Glanville is the current President of the American Society for Cybernetics. He attended the Architectural Association School in London, and then undertook a PhD in cybernetics and a second in human learning at Brunel University. The same university awarded him a DSc (higher doctorate) in cybernetics and design in 2006. He has published over 350 works, as well as having a small art practice, mostly involving sound.

He is a professor in several universities around the world, helping these universities build their understandings of what research might be, and developing new research programs where none existed previously.

He sees cybernetics and design as complementary: opposite sides of the same coin. However, what he, as a designer, means by "design" is very different to the use of the word by engineers and others, who treat design as a branch of problem solving and a defective science. Rather, he positions design as an alternative, and deeply cybernetic, way of looking at and acting to resolve problems.