For the Russian Academy of Sciences conference on Reflexive Processes and Control

October 16-17, 2017

THIRD ORDER CYBERNETICS AS THE EVOLUTION OF SOCIETY

Stuart A. Umpleby

Department of Management

George Washington University

Washington, DC 20052

[umpleby@gmail.com](mailto:umpleby@gmail.com)

Expanded Abstract

When the International Academy for Systems and Cybernetic Sciences met in Chengdu, China, in 2015, the theme of the conference was Systemic Solutions for Systemic Problems. It seemed to me that problems could arise on several conceptual levels. Examples of problems at the first level would be finding better ways to build roads and buildings and increasing production and improving trade. At a second level there may be problems with the theories we use to solve problems, for example if we do not have a theory or understanding of a new disease. A third level of problems lies in philosophy, for example if we do not have an adequate epistemology to guide our work with social systems, where people both observe and act, thereby experiencing and creating uncertainty. Those reflections led me to think that there is a fourth level, namely the historical experiences of societies that shape the theories and philosophies that have been invented to guide our problem solving activities. But I did not feel that I knew enough about Chinese history, culture, and philosophy to speculate on differences between East and West.

Soon thereafter Vladimir Lepskiy said that he and his colleagues in Russia were developing third order cybernetics (Lepskiy 2010, 2015a, 2015b). We quickly agreed to organize a panel of scholars from Russia and the West (the U.S. and Western Europe) to discuss these ideas. We met in January 2017 in Rome at a conference of the World Organization for Systems and Cybernetics. As I read the abstracts and papers prepared by Russian scholars, I realized that this was another example of history influencing science and philosophy in addition to science and philosophy influencing history.

The Russian scholars were saying that post non-classical cybernetics, the third stage in the development of cybernetics, would be more humanistic than previous conceptions of cybernetics. These descriptions made me think of the work of Locke, Rousseau, and Voltaire, a literature from the seventeenth century which had contributed greatly to the development of democratic ideas in the west. However, the Russians were citing more recent Russian scholars. So, I wondered whether the Russians were reinventing ideas developed earlier in other countries or were they developing important new ideas?

I interpret Lepskiy’s topic as another version of the question, How do historical experiences in a society shape the development of its science and philosophy? This paper will focus on how societies evolve and restructure themselves by identifying problems and then designing laws and institutions and procedures to solve those problems.

Second order cybernetics, as developed in the US, focused initially on the biology of cognition. For a long time there had been a consensus among scientists that the observer should be eliminated from scientific consideration in an effort to be unbiased and objective. However, a few scientists felt that the observer could not be eliminated from science, since scientific theories are created by observers and are interpreted by other observers. To claim that the observer could and should be removed from discussion was a way of neglecting or overlooking the purposes that scientists are pursuing when they do research.

A second interpretation of second order cybernetics was that including the observer in science would involve social concerns, since these exist in the minds of observers. At the time a third order cybernetics was thought not to be necessary, since reflection would be sufficient to encompass both the biology of cognition and the influence of society on the development of science. However, third order cybernetics could be interpreted to mean a concern with the evolution of society, with the interaction between ideas and society and with the invention and dissemination of ideas which, if they became widespread, might aid the development of society (Umpleby 1999, 2002). This presentation will consider this interpretation of third order cybernetics by looking at the evolution of society as a series of problem-solving experiments.

The book by Acemoglu and Robinson (2012), *Why Nations Fail,* suggested that there are two processes in creating a successful nation. The first process requires creating a centralized authority that has the ability to combine resources and use them for the purposes of the society. The second process is the development of institutions and social arrangements that guide the use of resources for the development of society as a whole, not just for the benefit of elites. To illustrate the importance of institutions compared with culture, climate or geography Acemoglu and Robinson cite many examples. Nogales, Arizona, in the U.S. and Nogales, Mexico, are just across the border from each other. The populations are very similar in language and religion. But the residents in Arizona have higher average incomes and quality of life than residents in Mexico because the institutions (schools, police and courts) work better in Arizona than in Mexico. Other examples of institutional differences being more important than culture and geography are East and West Germany and North and South Korea. The authors note that countries can change their economic trajectories by changing their institutions, as has happened in China and Russia in recent decades.

The book *Social Inventions* by Stuart Conger (1974) offers a list of past social inventions which illustrate the long history of innovations in countries around the world. A social invention is a new law, organization or procedure that changes the ways people relate to themselves or to each other, either individually or collectively. Conger’s book lists innovations in the areas of education, social services, economics, government, psychology, law, and voluntary organizations. Donald Campbell (1969) spent his career describing how to design social experiments to test the effectiveness of government programs. The more recent work on quality improvement methods is another way of improving institutions in both business and government. (Walton 1986)

Presently there is growing interest in systems science in “translating” knowledge so that it is easier for practitioners to use it. The intent is to minimize jargon and maximize the utility of knowledge. Applied knowledge is very important, particularly for transdisciplinary fields. However, if we devote too much attention to translation or technology transfer or applications, we may miss some opportunities. Understanding systems theories developed in other societies requires understanding the problems that people in those societies are trying to solve. Theories are answers to questions. One cannot fully understand a theory until one first understands the question that gave rise to the theory (Umpleby 1999).

In universities around the world people use essentially the same theories and methods in the physical sciences. In legal systems there has been convergence between North America and Europe due to the recent growth of the European Union and the desire to facilitate trade by adopting similar rules and procedures. In biology there are some differences in how medicine and agriculture are practiced. In social, political and economic systems there is great variety and much to learn from other societies.

Do societies develop similar ideas eventually as they encounter situations requiring those ideas? Or do they develop different solutions to similar problems? Or are they trying to develop in different directions? If the latter, what explains the difference? Since scholars now interact globally rather than nationally, we have new opportunities to learn from each other.  If societies can preserve and enhance their traditions, while learning from other societies, we should experience a remarkable flowering of human society.  My particular interest is in methods of governance which enable societies to be secure, stable and innovative.

Our thinking about how to improve our societies has changed from revolution or reform to evaluating government programs with controlled experiments (Campbell 1969), to expanding our conception of science (Umpleby 2017), to noting the importance of institutions and engaging in multi-country studies (Acemoglu and Robinson 2012) and the deliberate design of experiments (Dunn 1998).

**References**

Acemoglu, Daron & James A. Robinson. (2012). *Why Nations Fail: The Origins of Power, Prosperity, and Poverty.* New York: Random House, 2012.

Campbell, Donald T. (1969). “Reforms as Experiments.” *American Psychologist,* 24 (4), pp. 409-429.

Conger, D. Stuart. (1974). *Social Inventions*. Prince Albert, Canada: Saskatchewan Newstart, 1974.

Dunn, William N. (1998). *The Experimenting Society: Essays in Honor of Donald T. Campbell.* Transaction Publishers, 232 pages.

Lepskiy, V. (2010), Reflexive and Active Environments of Innovative Development, "Kogito-Center" Publishing House, Moscow (in Russian). <http://www.reflexion.ru/Library/Lepsky_2010a.pdf>

Lepskiy, V. (2015a), Evolution of concepts about control (methodological and philosophical analysis, "Kogito Center" Publishing House, Moscow (in Russian). <http://www.reflexion.ru/Library/Lepskiy2015.pdf>

Lepskiy, V.E. (2015b).”Economic cybernetics of self-developing environments (third-order cybernetics)”, Management sciences. No. 4, pp. 22-33 (in Russian). <http://www.old.fa.ru/dep/upravnauki/Documents/%D0%A3%D0%9D_4_2015.pdf>

Umpleby, Stuart & Eric Dent. (1999). “The Origins and Purposes of Several Traditions in Systems Theory and Cybernetics.” *Cybernetics and Systems:  An International Journal,*30:79-103.

Umpleby, Stuart. (2002). “The Design of Intellectual Movements.” Proceedings of the annual meeting of the International Society for the Systems Sciences, Shanghai, China, 2002.

Umpleby, Stuart. (2017). “How Science is Changing.” *Cybernetics and Human Knowing*, 24(2), pp. 89-91.

Walton, Mary. (1986). *The Deming Management Method.* New York: Perigee.