SELF-Observation: Modeling information flow within a self-steering social corporation

Extended abstract submitted to

the Association for Nonprofit and Social Economy Research (ANSER)

Sean Coutts

University of Toronto, Ontario Institute for Studies in Education

May 15, 2011

INTRODUCTION

Background

Globally we are witnessing a rapid advancement in communications technology and social media, which is increasing the amount of information in our inboxes, as well as the speed at which this is accelerating – and this seems to be spurring an increase in social complexity. This is observable, for example, by the diversity of social structures and variety of corporate arrangements which are brought into existence by governments, foundations and community groups to achieve a broad range of social purpose outcomes. A recent large-scale empirical study in the United Kingdom reveals a paradox at the heart of governance arrangements in many social and public organizations that employ professional managers : managers may run the organization for their own interests rather than the interests of their shareholders, members, or other stakeholders, according to Spear, Cornforth & Aiken, (2009, p. 257). The investigation studied a variety of organizational types and corporate structures across a diverse range of social sectors in the UK. The research study sheds light on the reality that managers have difficulty coping because of role confusion and individuals are often not suitably prepared for their roles within organizations. The researchers concluded that the core of the paradox may be attributed to the difficulty of managing conflicting demands and divergent goals in social contexts.

The difficulty we face, both as managers and members of society, is that corporations are being forced to deal with increasing social complexity, and therefore growing amounts of information that we have never before had to deal with and on levels never imagined, on both the for-profit and not-for-profit sides of organizations. While the British government has a Ministry of the Third Sector to address the new reality of corporations operating in burgeoning social contexts, it

is almost impossible to determine how many social corporations are in operation in Canada, Ontario or even Toronto, as it is difficult to view according to our traditional standard of amount of 'bricks-and-mortar' offices and number of employees. People are coming together to address social issues in ways which have been hereto unknown and which are seemingly imperceptible.

However we popularly look at corporations narrowly and view them as being primarily private-interest businesses, stereotypically driven by greedy CEOs and reckless managers. The word 'corporation' seems to be shorthand in general parlance and the media for "bad" and "greedy" and "self-interested". Such general opinion points of view cloud the reality that our contemporary society is actually comprised of countless corporations which are driven by social purpose and which benefit the common good. In Canada, the Crown Corporation is a widely known concept, where the federal government itself is the owner and operator of a broadly social operation, such as Canada Post for national mail delivery. Provincially, Ontario Power Generation (OPG) is a for-profit business that generates and sells electrical power for the entire province. The Government of Ontario is the sole owner and shareholder and therefore every power user is a direct beneficiary and every citizen is an indirect stakeholder. Locally, the Toronto Community Housing Corporation (TCHC) is responsible for the operation of social housing units on behalf of the city council and its corporate mission is to provide affordable housing to at-risk populations and low and moderate income tenants from a broad spectrum of lifestyles.

In addition to well-known public institutions, there are many rapidly emerging corporate arrangements which are arising as a response to increasing social change and growing diversity. Social enterprise or social entrepreneurship, for example, are terms used to describe some of

these new arrangements, where corporations have a very clear social mandate, at the same time as being financially autonomous from the public purse, yet accountable to a specific group of shareholders or stakeholders. I refer to these newly emerging structures and relationships broadly as 'self-renewing' social organizations because as sophisticated new social arrangements emerge, so too do higher levels of complexity and therefore higher levels of challenge. For emerging corporations that operate in rapidly changing environments with socially complex problems, these organizations have the harsh imperative to adapt or perish.

Issue

The issue is both a governance dilemma as well as a social justice problem in so far as the people in the roles of management within social corporations, who are responsible to serve the goals of the organization, may actually serve their own needs or bring about the collapse of the system. It is very difficult to make decisions and manage conflicting demands in complex social contexts where the goals are by nature contradictory - increased information complexity is one result of human diversity and variability, and we can choose to ignore it or address it. Bottom-lines like profitability and salary results may not be adequate to understand what's happening in organizations as they interact with increasingly complex social and technological environments. The difficulty dealing with multiple levels of complexity - be it financial, social, technological or even ecological - is that the diversity of the external field must be matched by an equivalent internal diversity. This is often referred to as the Conant-Ashby Theorem (1970) which states that any organization cannot respond to more demands than the capacity of the organization

possesses. This can also be restated as an organization can increase its capacity by creating within itself the same degree of diversity as the diversity it must possess (Nonaka, 1994).

If the role of management is to uphold stability and deal with variances, how can we control organizations which seem principally impossible to manage? The recurring governance paradox is posed by Plato in *The Republic*: Quis custodiet ipsos custodies? – Who will watch the watchers? In governmentally held corporations like OPG and TCHC, the mandate is very clear and transparent (power generation, affordable housing), and therefore there are also clear mechanisms to remove management when things go astray.

However, the management cybernetician Stafford Beer compared the Board of Directors of a corporation to the 'brain of the firm' (1972) and he claimed that a prominent feature of contemporary society is that individuals with a profound stake in the organization often render the system 'no longer viable' (1985). It is management itself which lies at the heart of the problem but, like a brain of the firm, we cannot imagine a public corporation without management. He warns that it is often the people who are charged with the responsibility to protect and preserve the firm who damage the organization. It is the very role of management – to maintain order and control variation – that eventually causes the system to fail, Beer states, because management attempts to repeal the basic principle of 'requisite variety'. Management must control variety to ensure consistent organizational outcomes, but this requires steadily increasing management control, which generates more complexity and hence eventually outstrips available resources. Beer (1984) applied this contemporary understanding of information theory and communication control (cybernetics) to the role of management, in a diagnostic tool which he called Viable System Model (VSM). It is not individual managers that suffer from pathology

or greed who cause the destruction of organizations; rather it is the information within the management system which inevitably leads to or inhibits overall viability.

Viewed from this lens, it seems that information load may be a deeper explanation of the Spears *et al.* study and may account for some of the difficulty management has in carrying out the needs of organizations operating in the social realm. However it does not imply that simply increasing the quantity and rate of information processing will relieve management's challenges.

My personal and professional interest is how to design robust, ethical, fair and responsive social organizations in a context of emerging social risk and technological acceleration. How does an emerging social corporation, one that must respond to high levels of social, technological and financial variety, steer itself and conduct its business responsibly and also reflect upon its own governance methods and management decisions? In many cases there is little (if any) regulatory guidance because many social corporations are embryonic and their markets are emerging, or they experience constant renewal and restructuring which may interfere with the capacity and structure of the organization. The crisis is not one of bureaucracy and orthodoxy, but one posed by large degrees of freedom and high levels of autonomy – the possibilities are therefore large and overwhelming because there is, put simply, *information overload*. The situation is exacerbated by the need to continuously renew organizations in order to respond to rapid environmental change, deepening interdisciplinary overlap, widening cultural diversity, as well as cope with accelerating rates of technological advancement.

RESEARCH QUESTIONS

Research Problem

The research problem which drives the study can be stated as: How does an organization, in the midst of rapid change and social complexity, manage information for decision-making?

Main Research Question

What does mapping General Living Systems Theory (GLST) reveal about the management information system and decision-making, specifically in a changing social corporation?

Research Sub- Questions

1. How does the system make decisions? Who and what is the decider echelon?

2. What is the organization's purpose and how and where is it stored?

3. What kind of information comes into the system and how is it measured? And stored? And communicated?

4. Who accomplishes the processes and what roles are in place to perform the key functions of the system?

5. What information is used by each sub-system, that is, the structures and functional processes?

6. How is equilibrium (steady states) quantified? And variances?

7. How are decisions made for overall system adjustments? How does the system deal with adaptation?

PROBLEM

Information Overload

The problem I see is not just processing large quantities of information but *integrating* certain information into the decision-making component of an organization such that it enhances meaning and allows for an increased capacity to respond to change. Heiskanen & Swanson describe management as an 'information-processing component' of organizations. Specifically, it receives information transmissions from various other information-processing components and transmits to them the information that controls the organization (1992, p. 51). We certainly do not want to merely be able to process larger and larger amounts of data, but to be able to filter information and interpret it for effective decision-making. Management doesn't just process information – it *prepares* information for decision-making which affects the overall organization and the constituencies it serves. With the advent of large-scale computation in the 1970's we have come to understand how information and communications networks support both the individual and collective decision-making process in complex social organizations. In the study of a regional Board of Education for a department of educational planning for the Ontario Institute for Studies in Education, Padro (1977) clearly stated that the objective of a management information system is to provide "timely, relevant, reliable and valid information upon which to base decisions" (p.1). Yet while some decisions are very good at a particular time, over a period of time the cumulative effect of some decisions can degrade or become out of sync with reality. In the 1970s and 1980's we were figuring out how to design and use information systems to aid us in making decisions for the 20th century. Our 21st century reality seems to deal with how we can ever apply decision-making in the face of the explosion of information and the acceleration of change. No sooner than a decision is made that conditions render it obsolete and irrelevant.

We must also account for integrating newly created information into the existing structure so that an organization is able to manage information for continuous future processing without causing its own destruction. This might be referred to as planning for the inevitable renewal of social organizations as they adapt to constantly changing circumstances. We can't simply adopt a policy of "out with the old, and in with the new", every time we make a decision. But how much information does one need to determine the overall state of an organization? And how do we account for the reality that new information rapidly renders previous knowledge out-dated, irrelevant and out of sync?

A reconceived role of management therefore is to maintain stability by continuous response to the chaos which constantly surrounds us and which seems to be constitutive of our contemporary context. Some organizations can withstand massive amounts of disorder – and other times it takes a seemingly small fluctuation to throw an entire system out of whack. We can measure chaos in the term often used in the physical sciences - *entropy*, which is a measure of disorder or the rate at which an organization becomes disorganized. It seems odd perhaps to suggest that we should measure how dis-ordered organizations are, as opposed to the conventional measurement of equilibrium, as revealed in traditional balance sheets and year-end reports. Chaos and entropy are really just ways of referring to the fluctuations and instabilities that seem to inevitably permeate our complex world and rapidly shape the reality of our day-to-day activities. Organizations are constantly changing to deal with new circumstances and updated or outdated information. Thus we are faced with the reality of continuous self-renewal for adaptive response to changing circumstances. Evolution and self-renewal seem to aid us in adapting our organizations to chaotic fluctuations and help us to respond to inevitable decline, disorder, failure and death.

Conventional social organizations, such as hospitals and school boards, are being forced to deal with more complex financial information as well as increased social accountability, and a constant demand to address more and more social issues and problems. Relevant decision-making in social organizations relies upon generating information about the people and things within their organization, as well as making sense of everything else interacting with it. Organizations and individuals within organizations often face system failure and collapse from time to time, and perhaps this may be ascribed to severe information overload (Miller, 1962). Therefore social corporations increasingly have to manage the overlapping complexities of information about changing external conditions, in addition to the information about what's going on inside the organization.

PURPOSE AND OUTCOME

Purpose of the Study

The central objective of the study is to map the elements of information processing and decision-making from within a social organization using the particular framework of the organismic view developed by James Grier Miller in the work Living Systems (1978). The reason why I chose General Living Systems Theory (GLST) is that it allows for an integrated hierarchy of structures and division of functions, yet accounts for constant renewal and the evolution of organization over time. Living systems theory offers a means for analyzing the structure, function, and processes of organizations and finding dysfunctions that reduce a system's effectiveness in achieving its purpose" (Miller & Miller, 1985, p.37). This particular study will allow a means for us to visualize the decision-making process as it occurs within an evolving structure composed of

individual corporations that are socially embedded and each possesses a unique diversity of purpose, function and operation.

SELF-Observation

The proposed research will take place from within the Social Entrepreneur Launch Factor (SELF), which is a federally incorporated non-profit corporation with the purpose of identifying emerging social issues, matching them to a social entrepreneur, and generating capital around the activities to sustain attention to the issue. As a socially embedded organization, it must collect large amounts of socially relevant information to detect emerging social issues, and must develop functional processes which generate and regulate pertinent monetary information. The observation of SELF involves detecting the structure of functional systems from within, that is, formal members of the organization will be actively engaged in the study. The research technique involves ways of seeing relationships between the flow of information and levels of human engagement using Miller's Living System Theory methodology.

Proposed Outcome

The outcomes of the study can be summarized as follows:

1. Complete a systems analysis of the management information functions of the organization.
2. Generate a representation of key variables of the management information system.
3. Map of the flow of information indicators through the management information system.
4. Create a visualization of the decision-making structure of the organization.

REFERENCES

Ashby, W. R. (1958). Requisite variety and its implication for the control of complex systems. *Cybernetica, 1*(2), 83-99.

Ashby, W. R. (1965). Measuring the internal informational exchange in a system. *Cybernetica, 8*(1), 5-22.

Ashby, W. R. (1968). Variety, constraint, and the law of requisite variety. In W. Buckley (Ed.), *Modern Systems Research for the Behavioral Scientist: A sourcebook* (pp. 129-136). Chicago: Aldine Publishing.

Ashby, W. R. (1972). Systems and their information measures. In G.J. Klir (Ed.), *Trends in GeneralSsystems Theory* (pp. 78-97). New York: Wiley-Interscience.

Baecker, D. (1984). Why Systems? *Theory, Culture and Society, 18*(1), 59-74.

Bailey, K. D. (1983). Sociological Entropy Theory: Toward a statistical and verbal congruence. *Quality and Quantity, 18*(1), 113-133.

Bánáthy, B. (1988). Systems Inquiry in Education. *Systems Practice, 1*(2), 193-212.

Beer, S. (1972). *The Brain of the Firm: The managerial cybernetics of organization*. London: Allen Lane the Penguin Press.

Beer, S. (1984). The viable system model: Its provenance, development, methodology and pathology. *The Journal of the Operational Research Society, 35*(1), 7-25.

Beer, S. (1985). *Diagnosing the System for Organizations*. New York: John Wiley & Sons.

Brillouin, L. (1951). Maxwell's Demon Cannot Operate: Information and Entropy I. *Journal of Applied Physics, 22*(3), 334-337.

Brillouin, L. (1956/1962). *Science and Information Theory.* New York: Academic Press.

Brillouin, L. (1968). Life, thermodynamics, and cybernetics. In W. Buckley (Ed.), *Modern Systems Research for the Behavioral Scientist: A sourcebook,* (pp. 147-156). Chicago: Aldine Publishing.

Bryant, D. & Merker, S. (1987). A living systems process analysis of a public transit system. *Behavioral Science, 32*(4), 293-303.

Conant, R. & Ashby, W.R. (1970). Every good regulator of a system must be a model of that system. *International Journal of Systems Science, 1*(2), 89-97.

Heiskanen, H. & Swanson, G.A. (1992). *Management Observation and Communication Theory*. Westport, CT: Quorum Books.

Kauffman Jr, D.L. (1980). *Futurism and Future Studies*. Washington, DC: National Education Association.

Luhmann, N. (1990). *Essays on Self-reference*. New York: Columbia University Press.

Luhmann, N. (1992). Operational closure and structural coupling: The differentiation of the legal system. *Cardozo Law Review, 13*, 1419-1441.

Luhmann, N. (1993). Deconstruction as second-order observing. *New Literary History, 24*(4), 763-782.

Luhmann, N. (1995). *Social Systems*. Stanford, CA: Stanford University Press.

Maturana, H. (1975). The Organization of the Living: A theory of the living organization. *International Journal of Man-Machine Studies, 7*, 313-332.

Maturana, H. (1988). Reality: The search for objectivity or the quest for a compelling argument. *The Irish Journal of Psychology, 9*(1), 25-83.

Maturana, H. (1990). Science and daily life: The ontology of scientific explanation. In W. Krohn, G. Kuppers & H. Nowatny (Eds.), *Selforganization: Portrait of a scientific revolution* (Sociology of the Sciences, Volume 14). Boston, MA: Kluwer Academic Publishers.

Maturana, H., & Varela, F. (1980). *Autopoiesis and Cognition: The realization of the living* (Boston Studies in the Philosophy of Science, Volume 42 ed.). Boston, MA: D. Reidel Publishing Company.

Merker, S. & Lusher, C. (1987). A living systems process analysis of an urban hospital. *Behavioral Science, 32*(4), 304-314.

Miller, J.G. (1954). Toward a General Theory for the Behavioral Sciences. *American Psychologist, 10*(9), 513-531.

Miller, J.G. (1962). Information Input Overload. In M.C. Yovits, G.T. Jacobi & G.D Goldstein (Eds.), *Self-Organizing Systems 1962* (pp. 61-78). Washington, DC: Spartan Books.

Miller, J. G. (1978). *Living Systems*. New York: McGraw-Hill.

Miller, J.G. (1986). A Living Systems Analysis of the Canada/U.S. Boundary Region. In T. Huag, B.L. Bandurski & L. Hamilton (Eds.), *Toward a Transboundary Monitoring Network: A continuing binational exploration, Volume 1*(pp.132-145). Ottawa: International Joint Commission.

Miller, J.G. & Miller, J.L. (1985). Applications of Living Systems Theory. *Systems Practice, 8*(1), 19-45.

Nassehi, A. (2005). Organizations as Decision Machines: Niklas Luhmann's theory of organized social systems. *The Sociological Review, 53(*s1*),* 178-191.

Neumann, J.von, (1966). *Theory of Self-Reproducing Automata*. Urbana, IL: University of Illinois Press.

Nonaka, I. (1994). A Dynamic Theory of Organizational Knowledge Creation. *Organization Science, 5(*1*),* 14-37.

Nonaka, I. & Konno, N. (1998). The Concept of "Ba": Building a foundation for knowledge creation. *California Management Review, 40(*3*),* 40-54.

Padro, S. (1977). *Information System: Analysis for the Peel Board of Education (Final Report).* Toronto: Department of Educational Planning, Ontario Institute for Studies in Education.

Ruscoe, G.C. (1985). The Application of Living Systems Theory to 41 U.S. Army Battalions. *Behavioral Science, 30*(1), 7-50.

Samuelson, M. (2006).The System Symbols, from Deep-Insights to Universal Applications. *Systems Research and Behavioral Sciences, 23(3),* 349-363.

Shannon, C., & Weaver, W. (1949/1964). *The Mathematical Theory of Communication*. Urbana, IL: University of Illinois Press.

Shipps, D. (1997). The Invisible Hand: Big business and Chicago school reform. *Teachers College Record, 99,* 73-116.

Simms, J. (2003). Living Systems Science methodology for managing complexity and change. *Systems Research and Behavioral Sciences, 20(*5*),* 401-408.

Simpson, J. & Simpson, M. (2009). System of systems complexity identification and control. *System of Systems Engineering, IEEE International Conference on,* Albuquerque, NM.

Spear, R., Cornforth, C. & Aiken, M. (2009). The Governance Challenges of Social Enterprises: Evidence from a UK empirical study. *Annals of Public and Co-operative Economy, 80(*5*),* 247-273.

Swanson, D.A. (1982). A Living Systems General Theory of Accounting. College of Business Administration, Georgia State University, Unpublished PhD Thesis.

Swanson, D.A. (1995). Concrete Process Analysis – An application of Living System Theory to Accounting. *Systemic Practice and Action Research, 8*(1), 57-68.

Toffler, A. (1970). *Future Shock.* New York: Random House.

Townley, B. (2002). Managing With Modernity. *Organization, 9*(4), 549-573.

Tracy, L. (1989). *The Living Organization: Systems of Behavior*. New York: Praeger.

Varela, F. J. (1975). A calculus for self-reference. *International Journal for General Systems, 2*(1), 5-24.

Varela, F. (1984). The creative circle: Sketches on the natural history of circularity. In P. Watzlawick (Ed.), *The Invented Reality: How do we know what we believe we know? contributions to constructivism* (pp.309-323). New York: W.W. Norton & Company.

Varela, F., Maturana, H., & Uribe, R. (1974). Autopoiesis: The organization of living systems, its characterization and a model. *Biosystems, 5*(4), 187-196.

Wiener, N. (1948/1961). *Cybernetics or Control and Communication in the Animal and the Machine*. Cambridge, MA: M.I.T. Press.

Wiener, N. (1950). *The Human Use of Human Beings: Cybernetics and society*. Boston, MA: Houghton Mifflin.