MODELING ORGANIZATIONAL ETHICS AS NONLINEAR DYNAMIC SYSTEMS (A MODEST PROPOSAL)

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INTRODUCTION

All human beings and human communities make decisions. Those decisions range from the banal to the draconian, from who should be a member of the system or citizen of the state to whether or not a war should be waged with another human community. Regardless of the weightiness of the decision, all but the simplest decisions have one fundamental characteristic in common; all decisions that are intentionally made are made because one or another of the alternatives is preferred over another. This preference may be based upon conscious or unconscious factors or physical necessity; yet most of these conscious decisions are based on values, norms or preferences, or at least are the result of the exercise of values, norms or preferences.

The inquiry into ethics (the good) and norms (the accepted) has extended over millennia and has occupied the energies of philosophers, theologians, social scientists, judicial scholars and the rulers of mankind probably for the same period of time as organized society has existed. During the time that human beings have been making inquiries into the good, little research has been done in the area of why a person, community or other human system would choose one value over another, or one value system over another. Good reasons exist to believe that the subject of ethical selection has not been explored more than it has due to the difficulty of understanding the relationship between human values, value systems and their relationship to the environment and conditions in which they exist. As human beings and human systems do not exist in a vacuum; human values, value systems and ethics do not exist in a vacuum either. Human value systems exist within humans, human systems, and physical environment that supports human systems. Values are as much a part of human systems as the communication that occurs between people.

It is difficult to make sense of the dynamics of any system; particularly such a complex one as a dynamic human system by using only language; we need more than words to understand the constantly shifting landscape of human ethical systems and the environment in which they exist. In this paper I argue that using the model of nonlinear dynamic systems (NDS) to understand human ethical systems can be a useful method to make sense of the changing ethical landscape that all human organizations must come to terms with in their deliberative processes. I will use the terms “ethics” and “values” from time to time; although the two terms are similar they are

not the same thing. I will use the term “values” to indicate the fundamental beliefs of a person or an organization and I will use the term “ethics” to mean the process by which the fundamental beliefs of the person or the organization is mediated into action.

WHY MODEL?

Before we discuss modeling human ethical systems it seems appropriate to ask why such an occupation is necessary or even useful. More to the point, why is modeling useful for any discipline? Is an inquiry into modeling a snare that can lead to the reification of the model to the point that we conflate the model and that which is modeled? Finally, can these questions be approached on a cursory level at all or does this subject require an in depth exposition in the study of the systems of cognitive psychology?

The last question is the easiest to answer. A short survey of the notion of modeling can be helpful without necessitating an in-depth exploration of cognitive psychology. Much the same as a survey course a short discussion of the basis and use of modeling can be helpful to understand the use of non-linear dynamic systems as a model for value systems within human organizations. An understanding of physics is not necessary to understand the operation of a new car, just the operator’s manual. Forrester (1971) remarked that "The image of the world around us, which we carry in our head, is just a model. Nobody in his head imagines all the world, government or country. He has only selected concepts, and relationships between them, and uses those to represent the real system." It has been argued that the process of making map or other models is essential to the creation of the human mind and even the brain itself, Damasio (2010) through a systemic, recursive process of observation, interaction, interpretation and action.

Woolfram (2002) says that the process of finding models consists of two phases, perception and analysis. Both processes consist of reducing the data that we are immersed in to manageable proportions. Perception occurs automatically in our eyes, ears and in the brain though the filtering of data. The data that remains is then subject to analysis, the conscious manipulation of the data in ways that allow us to make sense of it. If all of the data that is perceived becomes part of the model that is constructed then there is no difference between the reality that we apprehend and the model is then not representational at all but simply a duplicate of reality. What becomes a model are the differences between elements of the perceived reality. Bateson (1972) uses the example of the map. What is placed on a map are differences; differences in altitude, differences in structure, differences in vegetation, differences in populations and so on. Within the organizational and communicative realm effects come into existence though differences, the differences between the world of organizations, communication and all of human experience give rise to ideas. As Miller and Page (2007) point out all model making requires the faith that we can turn the sand of the real world into stone; that the constantly shifting puzzle that is reality can be fixed in some way that will allow human beings to make sense of the sand. The success of a model is its ability to capture the behavior of the real world. Structurally a model will abstract elements of the real world to the model; a model that seeks to express an understanding of a

change of state in an aspect of a dynamic system is referred to as having the characteristic of homomorphism. A homomorphist model consists of several distinct elements; a representation of the first state, a representation of the second state and a transition function that allows sense making of the change between the two states. For example, a model of the weather has homomorphism if for a specific day we can predict the temperature and humidity by knowing the pressure and humidity in some prior time period.

This paper examines modeling human ethical structures as nonlinear dynamic systems and in this paper I argue that being able to think of such structures as NDS may be useful in understanding the relationship between the choices that humans and human organizations make under certain conditions and why other choices are not made; in other words why do people follow one value when another value might serve them just as well or better?

THE ETHICAL LANDSCAPE

The field of ethics is vast. The Stanford Encyclopedia of Philosophy has approximately 30 different entries under the topic of ethics in its table of contents. Perhaps one of the reasons that the field is so large is that like the 12 men and the elephant, everyone seems to have their own perception of what the word ethics means. Niebuhr (1999) says that ethics is reflection on the response of man to the action and nature of God, to be distinguished from Theology-which is reflection on the action and nature of God. In contrast Nietzsche (1966) casts aside any transcendent reference and essentially develops what MacIntyre (2007) has called "virtue ethics". Nietzsche understands ethics as the process by which a person becomes a "higher man"; the ethical process then is one of self guided evolution to self create the person or the organization in the image that is desired.

In every ethical system the final question is what should the individual do, how the community should act in response to the particular conditions that exist at the time. The very fact that over thirty entries for ethics in the Stanford Encyclopedia of Philosophy (2012) exist points to the existence of numerous ethical structures co-existing at the same time. At any particular time the individual has the theoretical choice of a variety of ethical structures that she can apply to her life choices; organizations have the ability to apply differing evaluative criteria to their corporate decision making processes. Nations will base their deliberative processes upon some ethical structure, even if that structure is perceived self perpetuation.

THE CHANGING ETHICAL LANDSCAPE

Joas (2000) says that all values and ethical systems arise, change and subside. Vickers (1968, 1970) has made the point that the fact that one of the terrifying aspects of modern society is that human values have not kept pace with the technical ability of society. There are illustrations of Vickers' warning everywhere in the world; the value of industrialization has not come to terms with climate change, the values of capital and capitalism have not addressed the questions of global poverty and the ethics of globalization have not come to terms with the value of

indigenous knowledge. This increasing disconnection between values and the concomitant ethical systems that humans and human organizations use to guide action in response to a changing reality is not well understood and certainly not modeled.

THE MODEL OF A NONLINEAR DYNAMIC SYSTEM AND TAXONOMY.

I have chosen the model of a non-liner complex adaptive system to model ethical systems because there is an increasing body of knowledge applying this model to human systems: Prigogine and Stengers,(1984), Prigogine (1984), Bryne (1998), Rihani (2002), Gunderson & Holling (2002),Nowotny (2005), Miller and Page (2007), Guastello & Liebovitch (2009), Page (2011). Prigogine and Stengers (1984, 312) say:

> We know now that societies are immensely complex systems involving a potentially enormous number of bifurcations exemplified by the variety of cultures that have evolved in the relatively short span of human history. We know that such systems are highly sensitive to fluctuations. This leads both to hope and a threat: hope, since even small fluctuations may grow and change the overall structure. As a result individual activity is not doomed to insignificance. On the other hand, this is also a threat, since in our universe the security of stable, permanent rules seems gone forever.

Byrne (2002) makes the important point that any discussion of nonlinear complex dynamic systems must begin with the rejection of analytic strategies in which things are reducible to the sum of their parts and the acceptance of a reality in which changes do not occur in a linear fashion. Change occurs in time; changes in small elements may bring about large results and bring about changes which are completely unexpected. Changes may occur very rapidly as opposed to those occurring in a linear system. The changes that occur are evolutionary and involve the explicit rejection of the Newtonian concept of time as reversible in macro systems.

Modeling social systems as nonlinear dynamic systems focuses upon the edges or boundaries of social systems and such a model develops an interest in the between spaces; the intervals between simple and strategic behavior, between pairs and infinities of agents and between anarchy and control, Miller & Page (2007). The taxonomy of nonlinear dynamic systems mirrors that philosophy of modeling and is concerned with the contours of systems that are dynamic, systems that are in a state of change. The final vocabulary of a nonlinear dynamic system model is one that describes the conditions of the system in imminent change and accordingly the fundamental of such a model is what Bryne (2002) and others call the “phase state” or “phase space”, a representation of all the possible states in which a system might exist in theoretical terms. All of the dynamic elements of the nonlinear system model will take place within the phase space.

A primary element within phase space is the “attractor” Guastello & Liebovitch (2009). An attractor can be seen as an area within phase space in which a condition can exist or not, for example the condition of an automobile turning-right or not-turning-right can exist within the

phase space as an attractor. An attractor can be analogized to a magnet, when a piece of iron enters within the area of a magnet it is drawn to it unless there is another force that draws it away from the magnet. An attractor is regarded as a stable structure since it represents a point at which equilibrium is reached, the automobile turns right, the populace votes for a certain measure or the family decides that no more heroic efforts should be undertaken to extend the life of the grandmother. An attractor can be imagined as a point in phase space, a set of points, a curve or a complicated fractal set known as the strange attractor. The form of the attractor will be developed as the process or phenomenon under study reaches equilibrium. Each attractor (there may be several within any particular phase space) will lie within a basin of attraction, which will dynamically evolve toward the specific attractor.

Events occur within the structure of phase space; these events are associated with the change of phenomenon within that space. The primary event that occurs within phase space is "bifurcation". Guastello & Liebovitch (2009) define a bifurcation as a pattern of instability in which a system attains greater complexity by accessing new types of dynamical states, a split into a field where different types of dynamics are occurring in each part or a change in the attractor itself. Capra (2005) puts it more forthrightly: "When the flow of energy increases, the system may encounter a point of instability, or bifurcation point, at which it can branch off into an entirely new state where new structures and new forms of energy may arise" (p.37). The point of bifurcation may result in a new attractor, a change to an attractor, a change of a system from one attractor to another or a change in the manner in which system is dynamic. The point of bifurcation is often referred to as "emergence" or unanticipated patterns of human interaction, Nowotny (2005, 21).

MODELING ETHICAL STRUCTURES AS NONLINEAR DYNAMIC SYSTEMS

In order to make sense out of the changing ethical landscape that we exist in it may be helpful to search for models that reflect the variables within which ethical structures exist and illustrate the change in those variables from one set of ethical structures to another. Modeling ethical structures, the changes that occur between structures and the changes within any particular structure as nonlinear dynamic systems may help to explain how human organizations change their decision making processes. Indeed such modeling may give insight to the leverage points within organizations that allow the guided evolution of an organizations ethical structure. Dooley (2009) explains that modeling organizational structure and change as nonlinear dynamic systems avoids the necessity of categorizing such a system as either mechanistic or organic since no judgment is made about either and such a model takes into account that it can be useful to create the conceptual bridge that a nonlinear dynamic system model provides for both notions.

The model of nonlinear dynamic systems can aid the understanding of ethical structure and change in at least three ways. First it can lie above existing ethical theories and unify the theories of ethical change and development described by Joas (2000); it can unify mechanistic and organic theories, control and emergence and thought versus action. Second it can exist below

ethical theories and suggests that the causation of ethical change is not linear or simple, causation of ethical change can involve complex dynamics and multiple variables interacting in unforeseen ways. Finally nonlinear dynamic system theory can provide a methodological framework with which ethical theories can be studied, Dooley (2009).

BEYOND HERE BE DRAGONS

Ancient mapmakers would put a warning on their maps for dangerous and uncharted territory, "beyond here be dragons". Taking the largely uncharted step to model the process of human decision making into the world of nonlinear dynamic systems involves certain risks that sense-making enterprises must contend with, one of these is reification. Berger and Luckman (1966, 89) define reification as:

> The apprehension of the products of human activity *as if* they were something other than human products – such as facts of nature, results of cosmic laws, or manifestations of divine will. Reification implies that man is capable of forgetting his own authorship of the human world, and further, that the dialectic between man, the producer, and his products, is lost to consciousness.

To paraphrase Korzybski (1933) the reification of a model results in the map becoming the territory and the model becomes reality. The dragons appear when we conflate the two and stubbornly cling to the human construction of reality despite existing or potential disconnections with the territory itself.

As long as we can understand and fundamentally appreciate the difference between the map and the territory; as long as we can use the model as helpful for navigating the landscape that we are traveling though the use of models to understand change and potential change is a useful tool, but only a tool that should not be confused with the reality that it attempts to depict. Using the model of nonlinear dynamic systems is a useful tool to make sense of the bewildering array of ethical choices individuals and organizations have at their disposal to evaluate acting in the world. It is only when we mistake the tool for reality that we separate ourselves from the rest of humanity and by so doing lose some of our humanity

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