The Application of Sociocybernetics in Organizational Analysis

Ludmila Malinová
PhD Student
University of Economics in Prague, Faculty of informatics and statistics
Czech Republic
ludmila.malinova@vse.cz

Abstract
The diploma thesis is dedicated to the introduction of sociocybernetics and the possibility of utilization of its concepts and methods in organizational analysis. Sociocybernetics is a multi- and interdisciplinary science. Therefore, it contains a wide portfolio of human knowledge. Its contribution is taking theoretical pieces of knowledge related to the practical usage in everyday life in a company. The practical part is focused on analysis in a consulting company.

Keywords: Sociocybernetics, knowledge, information, values, system methodology, organization analysis, consulting

1 Introduction
Modern organizations have to survive in a very turbulent and complex environment. If we wanted to manage an organization we have to understand the background. We should investigate all the interactions, causes and pre-causes, appreciate and develop knowledge of each employee, enable access to all necessary information, provide sufficient communication, be able to understand formal and informal structures, etc.

Sociocybernetics is a science, which provides ways of thinking, methods and tools to reach all similar issues (such as listed above) in one complex systematical picture.

The diploma thesis consists of three parts: theoretical part, methodology and practical part. Sociocybernetics is classified as an interdisciplinary science, as it covers various different fields. Theoretical background focuses on cybernetics, information, knowledge, learning organization, knowledge management, value frame, different system taxonomies, principle of black box, organizational management, etc. Further, it complements closer insight on social cybernetics, observer theory, intentionality, abstraction, system thinking, complexity, circular feedback, autopoiesis – self-organization, sights on organization, social systems, social networks. All of these fragments are necessary for the complex comprehension of an organization and its surroundings.
In methodology, methods of research in particular organization are grounded. The majority of research activities will be realized by questionnaires and interviews with selected employees (mostly the management of company). Furthermore, one of the most important methods will be observing the organizational system. At the end of methodology, hypotheses about the analyzed organization will be stated, which will cover the main issues.

The last but not least part is the practical usage of methods, review and description of results. The final part will contain recommendations and conclusion frame of how to use all of the methods will be outlined, pieces of knowledge and the way of thinking to adapt for organizational environment.

## 2 A brief description of sociocybernetics

Sociocybernetics (alias social cybernetics) is the next stage of classical cybernetics. In practice, it utilizes system thinking and cybernetic principles in sociology and other social sciences. Sociocybernetics aims to analyze social phenomena, along with the complexity and dynamics of the real world. There are two important concepts in sociocybernetics: theory of social systems and theory of autopoiesis, and one milestone: a human being is the most important asset of every organization.

<table>
<thead>
<tr>
<th>Author</th>
<th>Cybernetics of I. order</th>
<th>Cybernetics of II. order</th>
</tr>
</thead>
<tbody>
<tr>
<td>Von Foerster</td>
<td>Cybernetics of observed systems</td>
<td>Cybernetics of observing systems</td>
</tr>
<tr>
<td>Pask</td>
<td>Tend to model</td>
<td>Tend to author of model</td>
</tr>
<tr>
<td>Varela</td>
<td>Controlled systems</td>
<td>Autonomous systems</td>
</tr>
<tr>
<td>Umpleby</td>
<td>Interactions between variables in system</td>
<td>Interaction between observer and observed</td>
</tr>
<tr>
<td>Umpleby</td>
<td>Theory of social systems</td>
<td>Theory of interaction between ideas and society</td>
</tr>
</tbody>
</table>

Figure 1: The differences between I. and II. order cybernetics (Umpleby, 2001)

The cybernetician of I. order knows the model of the system to perfection. He is also able to utilize all of its functions and potential. On the contrary, the cyberneticist of II order works with social system. Such a system has its own rights, self-organization and interaction with its environs and also with the observer. Therefore it is almost impossible to predict the behavior of such a system.
Figure 2: A graphical view of differences between cybernetics of I. and II. order

Figure 2 represents the shift form cybernetics of I. order, where the center of interest system is displayed as a black box. Observers try to reach out to the system from the outside and to describe it. Each of the observers has its own corner of sight. Whereas, the II. order cybernetics has the observers in the center. The observers interact with each other and they are surrounded by many systems, which create complex reality. Interactions pass over particular systems, but also between observers who are mutually influenced.

3 Possible organizational applications

3.1 Abstraction of reality
The abstraction is a thought process based on analysis of phenomena and terms to define a general piece of knowledge. We separate and overlook the accidental and irrelevant. A result is a sum up of the substantial and the creation of general terms.

3.2 Knowledge
A definition of knowledge is: a summary of the acquired theoretical knowledge, ideas and concepts, acquired learning, practical activities and experiences. Knowledge is a dynamic combination of the extent of knowledge, values, in the context of information and insight that provides a framework for evaluating and incorporating new experiences and information. Concerns arise in the mind of each human being.

Two main dimensions of knowledge exist:

- **Explicit knowledge** – knowledge, which can be represented by language, symbols, pictures, formulas or digital records. It is possible to transmit and to record explicit knowledge. Such knowledge is a part of the information system within the organization.

- **Tacit knowledge** – knowledge which is realized and created in the brain. It is a set of skills, experiences, rules, mental models, principles and attitudes. It cannot be separated from the individual, because it is connected with individuals’ activities, procedures, routines, ideas, values and emotions. It is impossible to write tacit knowledge down or to transmit it to another person.
3.2.1 Knowledge management

Knowledge management has affluent history. By ancient times, people noticed the necessity and the importance of knowledge. Thanks to the increasing impact of information systems, people believed that it is possible to store knowledge into information system. As Edersheim wrote „To know and to understand is the priority, but to learn is the need“. This truth gave a new meaning in information (knowledge) society. Knowledge is a competitive advantage, and is one of the essential presumptions of wealth creation. The biggest problem is that we still do not fully understand what knowledge is and how to work with it (especially tacit knowledge). Knowledge management which is used in organizations is very often fuzzy and disorganized.

3.2.2 Knowledge company

The knowledge management also defined the requirements for the knowledge company. Strategy and business performance is not determined solely by financial characteristics, but also takes into account the non-scale growth – the fulfillment of customer satisfaction, employee satisfaction and their learning and education, internal business process functionality.

3.3 Values

Values have a more lasting character than attitudes. Although the values are also changing, they are not changing as turbulent as attitudes. Values represent rules which are fairly deeply rooted in our desire, and are an essential part of our personality. Although each person has its own values, they correspond to his experience, knowledge and the whole previous life. There are values which are accepted by the vast majority of people (or at least most people living in the same society). We can understand that values are also connected to individuals who share the same interests by working in a company. An interaction exists between the values of individuals, values of company and values of other employees and management of the company.

3.4 Systems

We can find a system in every aspect of life, and each of the systems can be defined differently. Technology and especially social science use the systematic approach. Lawrence Henderson used the term to describe a system of living organisms and social systems.

Capra and others emphasize, that the key feature of the organization of living organisms is hierarchical nature, and therefore the property of Nature (life) is to form a multi-level structures, systems of systems. Each organism forms a whole, but also is an element in a system that it is inferior to. This results in social systems, ecosystems, planets, star systems, the universe (universes?). Broad philosophers also introduced the term "emergent properties" for those properties that are available only at a certain level of complexity, but they are not at lower level. The more complex a system is the more features it has.

3.4.1 Weaver’s system taxonomy

One of the possibilities how to classify a system is Weaver’s system taxonomy. According to Rosický, Weaver defined three main types of systems:

- **Systems of organized simplicity** – the systems that have stable properties and relationships. System behavior can be described as deterministic.
The Application of Sociocybernetics in Organizational Analysis

- **Systems of disorganized complexity** – a significant number of homogeneous elements operate within systems and relations between them are random.
- **Systems of organized complexity** – there are interactions of autonomous components. It is impossible to predict their behavior in advance, there are unique relationships and self-organization works to maintain balance.

3.4.2 **Soft system methodology**

Soft system methodology was developed by Peter Checkland. He realized that in social systems, where people interact, it is impossible to apply traditional engineer approaches. He founded different approaches, which contain soft and traditional system methodologies oriented to the nature of the problem.

4 **Other applications**

The sociocybernetic framework is very wide. The applications are spread all around the scientific fields. In the diploma thesis, system thinking will also be used (system approach), which sets up the way of how to perceive and work with social systems. Another approach is autopoiesis – self-organization of social systems. It is a theory of how living organisms are organized and how they keep particular structures due to changes in their environment. Furthermore, theories of complexity, feedback (circular feedback), social networks, Luhmann’s theory of communication, etc will be used.

5 **Research method/approach**

After the adjustment of the theoretical part, the next step will be an agreement with an organization (probably a consulting company), where working with knowledge represents a great potential and where proper management of people is very important.

Methodological part will contain a setting of hypothesis related to knowledge management in an organization, possible bottlenecks in organizations, employee approach and perception of the organization, etc.

The research methods will be a description of consulting company’s system (it will include external and internal interactions), elaboration of SWOT analysis, a questionnaire for all employees (consultants and administrative staff), which will compare employees from two different units. In the case consulting company would be elaborated, the Prague office would be compared with the Vienna office (or one of the German offices), where the assumption is that there will be differences and a possible space for the change of approach in the Prague office. A next step will be interviews with the management of the organization regarding related problems, which will probably arise from the questionnaires.

5.1 **Hypothesis tested by results of questionnaires**

Following hypotheses will be evaluated by the results of questionnaires, and will be the basis for management interviews:

- Unexploited potential of knowledge exists within the organization
- Employees do not know company values
- Overtime disrupts the quality of employees’ lives
• Communication within the organization is at a good level
• The organization has a good corporate culture and working atmosphere

5.2 Probable research questions
Questions are related to problems, which were identified by observing the company system:
• The use organizational knowledge in practice
• Satisfaction with the valuation of the contribution of knowledge of employees in the company
• The level of education in the organization
• Knowledge of corporate values
• The fulfillment of Maslow's pyramid
• The existence of feedback
• Perception of employees in the organization (atmosphere, corporate culture)
• The use of social networks

6 Expected contribution
The expected contribution of the thesis will be the proof that it is possible to do things better and with more efficiency still taking into account the complex environment and all aspects of satisfied employees. The thesis should also show that sociocybernetics is an embracing science, with interdisciplinary possibilities of utilization.

After the analysis of a particular company, a set of problems will be prepared, which will be confirmed by the questionnaires and should be solved by sociocybernetic methods from the theoretical part. As a result, a list of recommendations will be prepared, with a short description of how to achieve them. This should help the organization to address problematic topics from a new point of view. The aim of the research is to secure satisfied and highly motivated employees, who will provide better working performance.

The conclusion of the thesis will be a methodological framework of how to proceed with the organizational analysis, with sociocybernetic methods from the theoretical part of thesis.

Literature
Bureš, V., (2007), Znalostní management a proces jeho zavádění, Praha, Grada publishing,
Edersheim, E. H., (2008), Management podle Druckera – Odkaz zakladatele moderního
managementu, Praha: Management Press.
Heylingen, F.; Joslyn, C., (2001); Kybernetika a kybernetika druhého řádu. New York,
Encyclopedia of Physical Science & Technology, Retrieved: 14th December 2011,
Mládková, L., (2008), Dvě dimenze znalosti, explicitní a tacitní, BPM procesy, Retrieved:
28th November 2011, <http://bpm-tema.blogspot.com/2008/06/dve-dimenze-znalosti-
explicitni-tacitni.html>.
Rosický, A., (2009), Informace a systémy – Základy teorie pro úspěšnou praxi. Praha,
Oeconomica.

