European Systemics Seminars

Charleroi, Belgium 20 September 2013

Book of Abstracts



Foreword

The European Union for Systemics (EUS) aims at disseminating research results and practitioners experiences, as well as promoting international collaborations in the multidisciplinary field of systemics. In addition to the tri-annual congress of the EUS that is being held across Europe since 1989, the Union launches a new initiative: the European Systemics Seminars; a cycle of seminars that focus on bleeding edge topics, investigating the possible and necessary relationships between systems thinking in the broadest sense and the exponentially growing complexity of our modern societies. Industrialized societies were originally based on human and machine workforce, and on a fundamentally empirical approach to scientific discovery. In those days, knowledge was based on control, planning, optimization, reduction,... Building on these premises has dramatically facilitated the fast technological advances, allowing postindustrial societies to emerge, reaching unprecedented levels of virtualization, communication and interdependency. But these technological evolutions have not been followed at the same pace by the corresponding necessary social changes. As Thomas Kuhn may have put it, had he dared applying his theory to the global society: modern technologies and our exponentially growing interconnectivity reveal an increasing number of "anomalies" in our current worldview, insistently calling for a paradigm shift. The current globalized crisis could consequently be interpreted with Kuhn's theory in mind, further strengthening the necessity of leaving the concepts of linearity and planning, leading to embrace those of interaction, interdependence, complexity and convergence. In all disciplines, academic researchers and practitioners alike, are working on building new paradigms that need to be discussed, tested, and confronted. The goal of the European Systemics Seminars is to offer one such convergent point for these important and necessary questionings. We further believe that transdisciplinarity is the fundamental ethic that allows the circular encounter of theory and practice. A first series of three seminars will be held in 2013 (and possibly early 2014) in Charleroi. This former industrial area for the production of iron, steel and glass is located in the center of a coal basin. The decline of the coal industry in the 1970's has left Charleroi in a bad economic shape: its unemployment and poverty rates were one of the highest in Europe during the 1980s and 1990s. Since the early 2000s, this ravaged area has opened itself to new horizons (health care, transportation and telecommunications) and reinvented itself. Therefore, we believe that Charleroi represents a highly symbolic and inspiring metaphor for the seminars: "Changing our paradigms to open new perspectives in a changing environment". The seminars' main goal is to be a starting point for questionings and to promote new collaborations by bringing together researchers and practitioners with diverse backgrounds and fields of interest, mutually feeding a common reflexion that should make practitioners experiences help theories evolve, and allowing the latter to improve the former.

Themes for the 2013 seminar

1. The post-industrial societies dealing with complexity: knowledge to manage the knowledge society.

In the seminar we consider the conceptual differences between Industrial and Post-Industrial Society and the knowledge used. We discuss the inadequateness of the knowledge used to manage Post-Industrial Society which, by its utilisation of theoretical knowledge as a basic resource, is also termed Knowledge Society. We list specific concepts that, rather than updating, need to be reformulated by using the principia of the science of complexity and then translated into cultural meanings. Examples of such concepts are Causality; Coherence; Completeness; Computing; Decision; Dynamics; Equilibrium; Environment; Foresee as anticipation; Linearity and linear correspondence between micro and macro; Localisation; Measure; Objective; Observer; Openness; Optimisation; Organisation; Precision; Proprieties possessed rather than acquired; Reversibility; irreversibility; Separability; Solve; and Stability.

Themes for forthcoming seminars

2. The research activity on architecture and social systems

Architectural studies are also devoted to the description and the analysis of architectural fabrics. Since human settlements and their architecture are the product of human societies, they are mostly built up and developed by a huge number of interacting conscious and unconscious acts over long periods, rather than only by individual, purposely designed acts. Such a vision generates the idea of an implicit project that relies upon processes of emergence occurring within social systems. In a more subtle way, architectural structures even induce collective approaches in social issues. For instance, a school designed with monodisciplinary teaching in mind will induce the same approach in the general public; and a hospital designed with a limited repairing approach in mind, will induce the same approach in the patients and their families.

3. The project meta-structure

A meta-structure may be tentatively identified with a sequence of structures of interactions establishing the set of the different systems characterizing a Multiple System, together with the relationships between the systems themselves. The project consists on identifying a possible general approach to model processes of emergence of collective phenomena in such a way to allow researchers, for instance, to 1) Recognise a phenomenon as emergent such as collective behaviours acquiring emergent properties; 2) Induce emergence of collective behaviour in populations of agents collectively interacting; 3) Act on collective emergent phenomena with the purpose to change, regulate and maintain acquired properties; 4) Merge different collective emergent phenomena. The core idea of the project is to consider emergence as mesoscopic coherence and collective behaviours as coherent sequences of different systems.

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Abstracts

A Non-standard Society Is Getting New Clothes: Evidencing Knowledge Gaps with C-K Design Innovation Theory

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Emergence of post-industrial societies is found on knowledge as a primary resource. The paper evidences changes from previous society's phases of functioning and shows ways for centering knowledge in post-industrial times. Concepts are reformulated with C-K design innovation Theory, fostering the way towards transdisciplinarity. The case of generating co-working spaces illustrates knowledge absorption and network- based intensities, opening avenues for altering working paradigms that shift collaborative experiences. This is core to the advent of fully-fledged Knowledge societies (KS) where ternary models develop, socio-economic molds spiral up qualitative growth, thus departing from past dual fragmentations.

Chronicle of Managerial Transformation Foretold

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In this period of global economic turmoil, organizations are being sorely tested. They and their leaders are obliged to adapt to changing economic, social, and even political contexts. For this reason, then, it is of primordial importance to better understand the dynamics that will make it possible to guide organizations through times of great change. Sounding out specialists and well-placed informants for their views of the avenues organizations can explore is thus of great topical interest. The aim of this piece, then, is to spark debate about the mechanisms relied on by organizations to better help try out other management cultures.

Water: A Trigger for Innovative Partnerships

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Water plays a crucial and unique role in our society. It has been a policy issue since the early stages of human civilization but this was a time for conquest and control. In response to environmental concerns, the European water policy has developed since the years 70s and has resulted into a comprehensive legislative framework. In 2012, the European Commission carried out an in-depth assessment of the EU water policy. It concluded that the objective of restoring the ecological quality of all water bodies will be not met as soon as foreseen but also showed no need to revise the EU legislative package even if implementation difficulties were initially underestimated and climate change adaption will add pressure. In order to fully enforce this legislation and make it delivering on the field, the water stakeholders must be fully engaged into the river basin management. This calls for the creation of new partnerships that work across socio- economic borders and traditional lines of responsibility. To get these partnerships working, it is necessary to question the economic valuation processes of water resources given that water is a collective patrimony that cannot be traded but needs to be properly maintained.

Changing the cultural model to create a new development dynamic in old industrial regions

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Thanks to coal and iron, Wallonia was from 19th till the second half of 20th century one of the most prosperous regions of Europe. Heavy industries have created thousand of jobs, however the hard pay and working conditions that very strong Trade Unions fought and succeeded to improve. This has deeply printed its history and the culture of its population and leaders. As in many other places, those industries have been declining from World War II. Walloon Coal mines closed down, and iron, mechanical, glass, transport industries, which were exporting throughout the world, lost their competitiveness from 1973. Today, the few which survive provide less and less jobs, and for more and more skilled workers. From 1950, Belgian Government and ECSC have invested billions of Euros to cover the losses of coal mining, to maintain the jobs and activities they provided and their suppliers and subcontractors. Important economic infrastructures were created, hoping to attract international investments, with to weak results to compensate the loss of thousands of jobs. From 1993, European Fund for Regional Develoment provided important funding to Wallonia, especially to its most populated Province (Hainaut). In 1980, the Walloon Region was created, with large autonomy and legislative power. Many people and lobbies proposed various plans for recovering. However, few was done, Governments and Economic and Social Council being frightened at that time by stopping complaining and turning towards the future. In the last 90's, the social and economic situation of Wallonia was one of the worst in the EU (15 Member States): GDP and employment rate were 75% of the average. In some cities, unemployment was higher than 50%, even more for young people. The new Government published a "Contrat d'Avenir", a document listing a hundred of projects and a goal: to reach the European average in GDP and employment 10 years later. In the meantime, several development plans have been launched. But these figures stay roughly unchanged. Today, nevertheless the general economic depression, the Walloon dynamic looks improving: the growth rate, the creation of jobs are better than... in Flanders (one of the leading regions of Europe in economic development). Some signs of recovery appear.

How to manage the development of complex organizations... and beyond

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The article starts with a synthesis of traditional Theory of organization. This vision of the organization is inspired by the classical view of world, and we use to summarized this theory the "metaphor of the machine". As gears of a machine, people are treated as systems of skills, which can be analyzed and used to achieve organizational goals. This vision is too primitive due to the fact that it is impossible to design procedures that prescribe all behaviors and measure in an absolute manner the ability of each person. People have an undeniable autonomy that make them create a so called informal organization which autonomously evolves. "To Manage" does not mean to make an organization function. Instead it means to manage the evolution process it-self. We have developed a methodology to govern the self-evolution processes of informal organizations. We present a specific case history in one of the major Italian metallurgical companies, to increase the level of safety and improve management of the human factors.

A systemic approach of the vulnerability in the post-industrial society: the case of the bee colonies collapse disorder

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The decline of pollinators' populations – and domestic bee in particular – going up for the last two decades is the subject of an extensive literature. The scale as well as the number of countries affected by this phenomenon is a cause for serious concern. The researches completed so far at the international level were not able to highlight all the threats to which bees are confronted and the precise causes of the bee colonies collapse disorder remain unexplained but the phenomenon is now attributed to multifactorial causes which interact with each other. A work undertaken in the arable crop areas of the Gers region (France) questioned the outlook of farmers and bee-keepers about their interaction with bees, melliferous resources related to the wooded landscape as well as the evolution of the agricultural and apiarian practices and knowledge. Based on these data and involving a systemic approach the present paper proposes to draw a parallel between the evolution of the honeybee colonies and that of the rural post-industrial society. A mechanism of mirror effect displays various paradoxes of the society and its expectations.

The development in West and East: between model and modelling

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Current Western dominance of the world is a result of some factors, the virtues of this Western civilization has for a long time, inspired several revolutionary trends throughout the world. Individual freedom and democracy, as a cornerstone of community values, have gradually become universal claims especially in underdeveloped countries where the tendency of these countries to 'copy', 'transpose' this model without respect "psychological equation" of these societies and the socio-cultural context in which will be based this civilization.

Organizational resilience a new paradigm for the knowledge society

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Our organizations operate in an environment of turbulence and crises. Loss of marks and sense constitutes part of everyday life for our organizations. Furthermore, it should be noted that in recent decades social security systems covering many areas have been established. Currently uncertainty becomes a certainty. How to bounce back in such circumstances? What happens to the paradigms that underlie the functioning of organizations? Which functions do they play? Which paradigms are mediated by resilience? What is the added value of resilience? Which perspectives for the future?

The ternary approach: a modeling tool and a method to handle complex perceived reality

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In this paper, we propose a journey whose departure is a legitimate need to define the context and at the same time the system and its boundaries. We suggest that this process is both common and intentional apart from the systemic practice. It helps to make sense of observation. Unusually it is suggested here in this work we cannot build on solid foundations and determined but on the fundamental lack linked to the observation process itself. On a first step, we develop the theme of the limit, without confusing it with the border. We explain the concept of Limit through the following three constants: incompleteness, indeterminacy and self-reference. We show that these three expressions are both singular and coextensive. In their overlapping antagonistic relationships occur. Based on the interplay between these concepts, we develop a method of understanding of the perceived complexity. Then we will briefly present a rigorous and practical heuristic tool implementation. This is a development of knowledge that takes its source in the heart of unknowability. Like Hubble has shown that there is no center to the universe, we propose to place the unknowability at the center of the process of observation. That means we place the observer at the heart of a world to understand and to act, rather than man at the center of a universe to explain and demonstrate.

Posturology: history, concepts and perspectives for health

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Posturology is the science that studies the upright postural control system and the stabilization strategies. It provides a better understanding of functional disorders such as chronic pain syndroms and also cognitive disorders like dyslexia. It gives a common language and a cross- disciplinary exchange. It provides guidance to the patient with the most appropriate therapist: medical doctor, ophthalmologist, dentist, physiotherapist, osteopath, or podiatrist. This science is not static, it is constantly enriched by the exchange of knowledge from various medical corpora. A real clinical expertise is emerging whereby therapists establish a "dialogue" with the patient's body. It gives way to an appropriate treatment for each patient. Moreover, this approach helps us to understand that the body and its postural system is not linear. For example, an adherent scar on the foot can lead to disorders such as neck pain, back pain, digestive disorders, ... In this article, we first provide a brief history of posturology, then we define and explain the concept of Upright Postural System and Postural Deficiency Syndrom. We finally draw up an inventory of current knowledge on the benefits of postural treatment. In the end of the lecture, we hope to feed reflection about the prospects for the future in the field of health, and why not, possible implications for other fields.

The complex system of knowledge economy and the quest of governance for stakeholders' networks

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Modern firms are adapting to the dynamic and knowledge intensive conditions of globalised markets employing different organizational elements. The role of stakeholders and networks are shaping the boundaries of enterprises, and managerial literature is analyzing these changes trough the tools provided by transaction costs economics and resource-based theory (Morroni, 2011; Aoki, 2010; Pitelis and Teece, 2009; Williamson, 1995). These approaches are considered particularly suitable for a context of complex knowledge interactions in conditions of uncertainty, because they allow for bargaining and contractual hazards. However, the radical changes of the last decades have not involved only the models of organization of the enterprises, but the entire production structure and the relation between firms and economic environment (Verbeke and Tung, 2012; Rullani, 2009; Rajan and Zingales, 2000; Nahapiet and Goshal, 1997). Managerial literature is then developing an original analysis of the architecture of modern enterprises, looking at new key variables for a successful competition in the market (Crilly and Sloan, 2012; Harrison et al., 2010). In this research we try to use concepts and tools from complexity theory, systems dynamics and evolutionary economics for drawing a model of the knowledge network that constitutes the "social capital" of the firm, looking not at the quantity of connections (network's dimension) but at their quality (network's value) and dynamic development. In particular, we will investigate how (and when) firms collect and utilize information about a stakeholder's utility function to create new sources of value, that takes to analyse also which kind of knowledge can be useful for each firm and what are the costs. Our analysis is aimed to evaluate the complex dynamics of firms' interactions in an uncertain environment. We will attempt to outline, also by means of a formal approach, a model to assess the evolution of firms' social capital toward value creation. In this paper we draw a "schema" to help understanding some complex strategic settings, analyzing if and how some network ties can create value or chaos, producing or dissipating resources.

Growth and Development: a possible systemic understanding

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Approaches for representing quantitative processes of growth for single systems are considered focussing especially upon logistic growth processes. Attention is then extended to processes of growth for complex systems such as Multiple Systems comprising components belonging to more than one system. Complex system populations of growth processes are considered in an attempt to gain an understanding of their growth. We consider in this regard various possible approaches for understanding development and its being an emergent property. We present some possible ways of understanding emergent development which can not be suitably considered as being reducible to the properties of sequences of processes of growth.

An essay of a systemic reading that can support a paradigm shift

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The observation of the functioning of an organization is a complex act. Observation without evaluation of a single fact, except being in a solipsistic approach, can be seen as a relatively simple operation that allows a median intersubjective agreement. By cons, when the mission is to report on the operation of a phenomenon that should lead to an assessment, we are in the presence of tensions. This evaluation will implement abstractions needed for representation of the operation of a phenomenon. These abstractions make use of concepts whose meaning can only be understood in relation to its opposite: cold - hot, open - closed, operating - non-operating. Common sense tells us that the assessment is not a matter of choice between one of the words but need a gradation. Based on this observation many times repeated by others before us, we are led to revisit our systems approach. It appears obvious to us that the approach to the identification of entities that are connected subsequently to form a coherent whole is not sufficient. We must adopt an approach whose foundation may account for the processes, movements and tensions. Our study focused under the light of the field theory. This brings us in the heart of a paradox: continuous-discrete. The same paradox has stimulated research in quantum field using particle and wave relation.

Business Strategies of the Companies listed on the FTSE MIB index of Borsa Italiana Stock Exchange

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The aim of the research is to provide a gross evaluation of the entrepreneurial system's ability to create new industries. The research focuses on the most important Italian firms: the companies listed on the FTSE MIB index of Borsa Italiana. The way to comprehend the entrepreneurial system's capability to create new industries, is by understanding the innovation level they are able to generate by the strategic planning activity. The model used for this research is the "Value Life Cycle Model" developed by Mr Francesco Zanotti. The overall result shows that the FTSE MIB Companies don't have a strategic goal of creating new industries. The innovation level inside the business strategies designed by the FTSE MIB companies is generally very low.

Government Intelligence, Efficacy and Adaptability in Changing Environments

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Societies change through external pressures from a changing environment, or immanently from the internal cultural dynamic that naturally occurs within social agencies. As a result these political, security, social, economic and other changes are needed that present challenges to public administration. Consequently, public administration must adapt and identify the development of new policies and functions. Of critical importance to the state are the preeminent public institutions that are part of the development process. The outcomes are the result of both public policy and government efficacy. Organizational adaptability involves the anticipation of the future, where adaptation is an internal process that is prompted by environmental change and self-production. The capacity of an agency to adapt is affected by efficacy which conditions it to be effective and efficient. Efficacy is therefore a precondition for successful adaptability and the ability to adapt is a consequence of efficacy. Inefficacy, through its bounding effect on an agency's intelligences, sets limits to its capability of achieving high levels of performance in organizations. Efficacy can be examined in terms of a cybernetic model of a cognitive social agency, allowing distinctions to be made between public policy objectives and the resulting outputs, this thus enabling proposed measurement of efficacy.

Has audiovisual storytelling altered my perception of time, of space, of the world I live in, and of the way I view my own life?

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In the history of our civilization, audiovisual storytelling is a young concept. It started to emerge in 1896, less than 5 generations ago. Only 118 years separate us from the moment when "les frères Lumière" organized the first ever projection of a piece of recorded film material. Today, I use audiovisual communication at any moment of my day. Technology allows me to download and upload any audiovisual product that I want. I can "see hear" in "live" what happens in China, or Brazil, or Australia. With the expansion of the world-wide-web, audiovisual storytelling continues to develop itself and to spin its own net around the planet. In our western civilization we are all confronted with this form of expression, probably every day. This in fact means that I am confronted with a new way of telling stories, with new rules, with new ways to send out information, with new ways to receive this information, with new ways to punctuate the messages I send out (and receive), with new referents for my beliefs. Can it be that all this has an influence on the way I live my life? And if yes, on what aspects of my life does audiovisual storytelling have an impact?

Access to quality resources and environment and health issues

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Gaining access to air quality, to safe drinking water, to uncontaminated soil and crop, to a roof, is not warranted to everyone. This paper will present some historical or current environment and health issues that are rooted in the development of the industrialising society and the global economy. These examples question the links between contaminants impacts on ecosystems and on humans beings and modes of production that are responsible for unsustainability. Also, they provide an overview of the capability of our ecosystemic approach to address Environment and Health problems both in an integrated and a contextual way.

Agency Mindset Theory

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A culturally based socio-cognitive agency generic model is developed. The agency has a normative personality with an values/beliefs indicated by its formative traits. These can take bi-polar epistemic values ("enantiomers"). These may be combined together, giving 8 different cognitive types that are personality type mind-sets. These types are influenced by the culture and the social environment that the agency is bound to. The traits can be used to explain the what, why and how of dynamic agency behaviour in complex situations.

"Quantum Governance of Development": prolegomena for a general theory and the case of an enterprise

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Starting form a profound commitment to social responsibility, first of all, I illustrate the first draft of a theory of self-evolution of a Human System. The main resource, used by the actor (entrepreneur) who starts the self-evolution process of a human system, is his (or her) cognitive system. The scope of entrepreneur's cognitive system conditions the scope of the human system. The self-evolution process is a process of "impoverishment" of the cognitive system. The case of the enterprise is emblematic. I called the process of impoverishment of an enterprise: Value Life Cycle. To overcome this impoverishment (that is to govern a human system) it is necessary to improve the cognitive system of the entrepreneur. I illustrate two ways to improve the cognitive system of an entrepreneur. At the end I will try to generalize the discourse about enterprises to all kinds of human systems.