



14

Sociocybernetics
Innovation and
Social Conflicts

INTERNATIONAL CONFERENCE OF SOCIOCYBERNETICS

Medellín, Colombia June 20 - 23, 2017

Conference Booklet

v1d

An event of



Research Committee 51
on Sociocybernetics

ISA International Sociological Association



International
Sociological
Association

Local Organizer



Universidad
Pontificia
Bolivariana



Vigilada Mineducación

Welcome from the ISA Research Committee on Sociocybernetics

The ISA Research Committee 51 on Sociocybernetics (RC51) is an international group that aims to promote the development of sociocybernetic theory and research within the social sciences. Sociocybernetics is broadly defined here as applications within the social sciences of first- and second order cybernetics, general systems theory and the various combinations and variations of these that can be subsumed under the term “the emerging science of complexity”. Members of the group study all aspects of social dynamics and social interaction with particular attention to the observer dependence of knowledge and the reflective, self-referential and self-organizing capacities of social systems and social networks.

A Conference of Sociocybernetics is a unique and ideal academic forum for discussing on innovation and social conflicts, one that goes beyond the boundaries of traditional disciplines. The Conference has no parallel sessions, thus we encourage all participants to contribute to and profit from the full stream of discussions during it, which, as a developing conversation, usually embraces all the presentations, systemically and over-archingly. The goal of the 2017 Conference at Universidad Pontificia Bolivariana (UPB) in Medellín, Colombia, is therefore, bring researchers from different disciplines together to explore, within a sociocybernetics approach, the challenges and opportunities related to the complex relationships between innovation and social conflicts. Topics to discuss innovation and social conflicts from a sociocybernetics perspective include:

- Conflict resolution
- Culture clash and systemic change
- Cybercultura@ and knowledge communities
- Innovation systems
- Innovation vs. Tradition
- Media, protests and political action
- New forms of social organization
- News production, circulation and consumption
- Privacy, control and surveillance
- Simulation and computational social science
- Sustainable Development
- Other topics: conceptual, methodological, practical or reporting the empirical findings of research studies that apply sociocybernetics.

RC51 Board 2014-2018

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Important dates

June 20-22	Participation Fees Payment deadline.
June 20-23	14th International Conference of Sociocybernetics
June 30	Participation Certificates available (Digital format. We will provide a link for download)
September 10	Full Paper Submission deadline. Please follow Journal of Sociocybernetics Author Guidelines

Full paper publication

Selected papers will be published in the Journal of Sociocybernetics (<https://papiro.unizar.es/ojs/index.php/rc51-ijos/index>)

Useful information

Conference website <https://sociocybernetics.wordpress.com/conferences>

Travel and Stay Guide Please find it at “Program and Guides” section of the Conference website. We recommend reading it.

University Entrance To enter the UPB it is necessary to present at the Entrance an original identity document such as Passport, identity card, etc.
To enter in vehicle to the UPB you must do it, ONLY, over the vehicular entry of Circular 1 with Avenida Nutibara (Note that Fees apply).

**Front desk
Business center
Coffee breaks** Bloque 12-210 – Next to the main Conference place

Conference place Bloque 12-209 - Auditorio Guillermo Jaramillo Barrientos

WiFi UPBWiFi (Free - no password) / EDUROAM (Free - Your personal user/password)

Lunch and Dinner In and around the University there are several cafes and restaurants. There is also the UNICENTRO Shopping Center in front of one of the main entrances of the University. Please see MAP in this Booklet for suggestions.

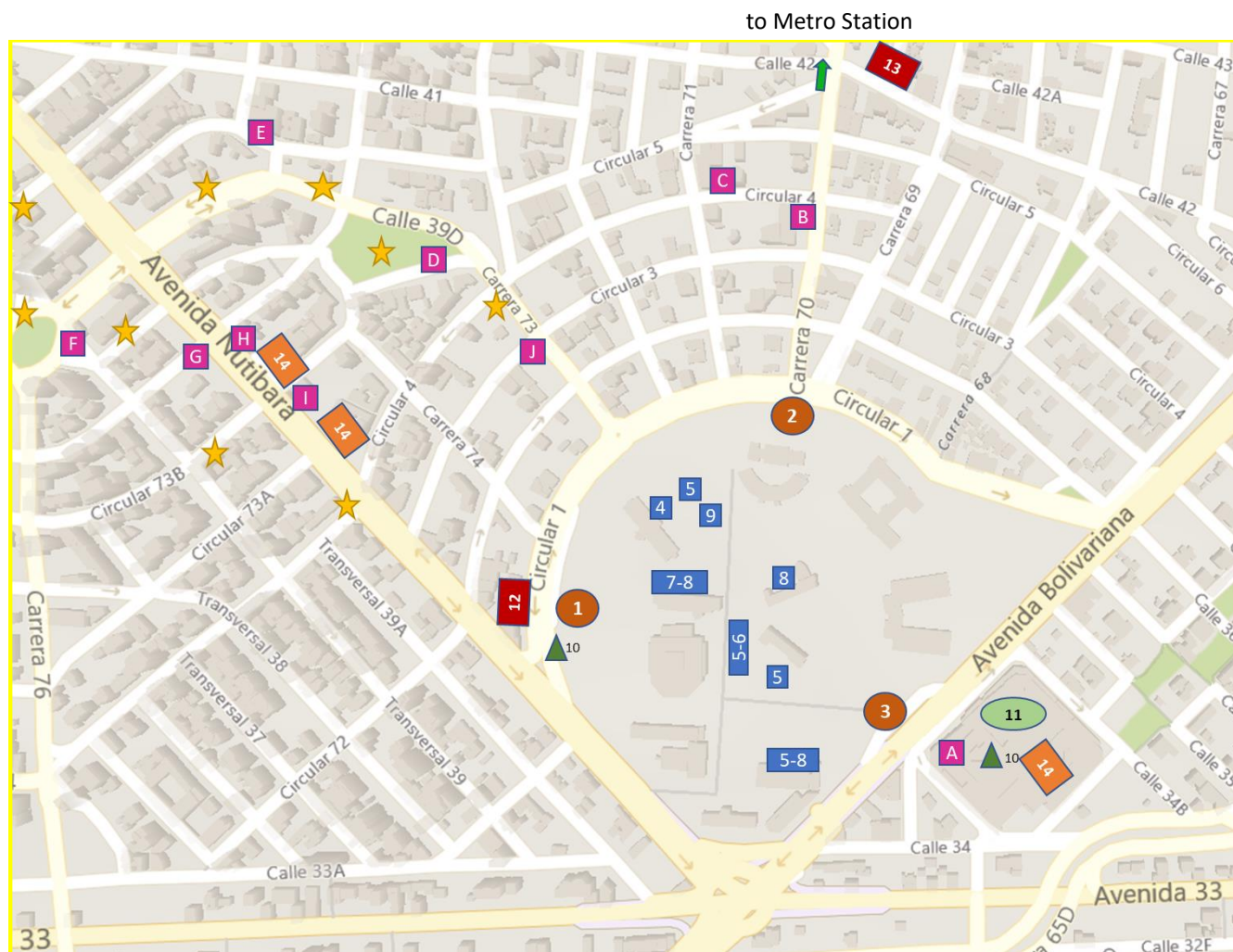
RC51 Dinner Please register at the Front desk. Dinner is not included in the Conference fee. Dinner will be at Hato Viejo Typical Colombian Restaurant, located in Las Palmas Avenue. There will be free transport UPB-Restaurant-UPB. Departure from the UPB at 18:45 and return to the UPB at 11:00 p.m. In due time, the place of Departure from the UPB will be informed.

Touristic Information Will be provided at the Front desk where you can check the prices and Register.

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Map



	Campus		Restaurants
1	Pedestrian entrance - Circular 1	A	Unicentro Mall (Many options)
2	Pedestrian entrance - Carrera 70	B	Saludpan (Vegetarian)
3	Pedestrian entrance - Avenida Bolivariana	C	Mondongos (Typical Colombian food)
4	Bloque 12-209 - Auditorio Guillermo Jaramillo Barrientos Conference Bloque 12-210 Front desk, Registration, Payment, Business Center, Help	D	Il Forno (Italian)
5	Cafes and restaurants	E	La Pampa (Argentine)
6	Student Boulevard – Fast food	F	Puerto Inca (Peruvian)
7	Library	G	El Corral (Gourmet fast food)
8	Stationery – Copy Machine	H	Crepes & Waffles (International)
9	Bookstore	I	Fenicia (Lebanese)
10	ATM	★	Zone of restaurants and cafes
11	Unicentro: Shopping / ATM / Money Exchange		
12	Hotel Bolivariana Plaza		
13	Hotel Portón de San Joaquín		
14	Supermarket - Pharmacy		

Conference Program

Time	June 20 Tuesday	June 21 Wednesday	June 22 Thursday	June 23 Friday
08:00	Registration	Registration	Registration	Registration
08:30			Oral Presentations	Oral Presentations
09:00	Opening RC51 First 20 years Invited Conferece	Oral Presentations		
09:30				
10:00	Break	Break	Break	Break
10:30	Oral Presentations	Oral Presentations	Oral Presentations	Oral Presentations
11:00				
11:30				
12:00				
12:30	Lunch	Lunch	Lunch	Lunch
13:00				
13:30				
14:00				
14:30	Oral Presentations	Oral Presentations	Oral Presentations	Forum / Debate
15:00				
15:30	Break	Break	Break	Break
16:00	Oral Presentations	Oral Presentations	Oral Presentations	Oral Presentations
16:30				Walter Buckley Award
17:00	Board Meeting	Business Meeting		RC51 2018 - Toronto Closing
17:30				
18:00				
18:30				
19:00			RC51 Dinner	
19:30				
20:00				
20:30				
21:00				
21:30				
22:00				
22:30				

DAY 1 - Tuesday June 20

Time	Activity
08:00	Registration
09:00	<p>Opening (B12-209)</p> <p>Coro Polifónico UPB</p> <p>Chaime MARCUELLO SERVÓS, President - RC51 Roberto C. HINCAPIÉ, Dean – UPB School of Engineering Luciano GALLÓN, Chair - Local Organizing Committee</p>
09:30	<p>Opening keynote speech (B12-209)</p> <p>Explaining the complexity of innovation and social systems with the help of non-classical logics Carlos MALDONADO</p>
10:30	Break
11:00	<p>Oral Presentations (B12-209) - Moderator Fabio GIGLIETTO</p> <p>A sociocybernetic approach to social conflict resolution Felipe LARA-ROSANO</p> <p>Sociocybernetic understandings of consciousness Bernard SCOTT</p>
12:30	Lunch
14:30	<p>Oral Presentations (B12-209) - Moderator Michael PAETAU</p> <p>Speeches and Uses of the Citizen Participation Policy in Colombia: A Communication and Complex Causality Approach Joaquín G. TOVAR BARRETO y Juan D. GÓMEZ-QUINTERO</p> <p>Manizales City: Smart City? Laura M. ARIAS-VALENCIA y Luz A. RAMÍREZ-CASTAÑEDA</p>
16:00	Break
16:30	<p>Oral Presentations (B12-209) - Moderator Michael PAETAU</p> <p>Cybernetics, Planning, Politics James ROBERTS</p> <p>Trump and the programmatic field of entertaining: An approximation from Critical Sociocybernetics Juan C. BARRÓN PASTOR</p>
18:00	Board Meeting (B12-210)

DAY 2 - Wednesday June 21

Time	Activity
08:00	Registration
09:00	<p>Oral Presentations (B12-209) - Moderator Juan C. BARRÓN PASTOR</p> <p>Fake News is the Invention of a Liar: A New Taxonomy for the Study of Misleading Information Within Hybrid Media System Fabio GIGLIETTO</p> <p>Public issues on Twitter as a computational social science problem Ana M. MIRALLES</p>
10:30	Break
11:00	<p>Oral Presentations (B12-209) - Moderator Juan C. BARRÓN PASTOR</p> <p>International Cooperation Programs as Complex Systems Pedro J. ESCRICHE</p> <p>Discovering Invisible Colleges through Networks of Meaning Gabriel VÉLEZ-CUARTAS, Edinson BRAND, Ana M. OSORIO, Sara MONTOYA, Laura ECHEVERRY, Beatriz CARDONA y Sandra RODRÍGUEZ</p>
12:30	Lunch
14:30	<p>Oral Presentations (B12-209) - Moderator Bernd R. HORNUNG</p> <p>The impact of open innovation and crowdsourcing on the Smart City Laura C. ARICAPA-MONTOYA y Luz A. RAMÍREZ-CASTAÑEDA</p> <p>Exploring Innovation's Valley of Death: a sociocybernetics perspective Rene YEPES-CALLEJAS y Luciano GALLÓN</p>
16:00	Break
16:30	<p>Oral Presentations (B12-209) - Moderator Bernd R. HORNUNG</p> <p>Observing Intolerant Society: A Lesson from Japan's Experience Saburo AKAHORI</p> <p>«Even the arbitrariness of the beginning loses its arbitrariness»? Rethinking the Premises of Niklas Luhmann's Paradigmatic Social Systems Theory Jorge CARDIEL HERRERA</p>
18:00	<p>Business Meeting (B12-209)</p> <p>All RC51 Members in good standing are welcome</p>

DAY 3 - Thursday June 22

Time	Activity
08:00	Registration
09:00	<p>Oral Presentations (B12-209) - Moderator Saburo AKAHORI</p> <p>SOCIOCYBERNETIC MANAGEMENT INNOVATION BASED ON COVEY - Pulling Social Forces from Behind our Backs up Front Bernd R. HORNUNG</p> <p>Participatory Action Research: Systemic Analysis for Social Transformation Patricia E. ALMAGUER KALIXTO</p>
10:30	Break
11:00	<p>Oral Presentations (B12-209) - Moderator Saburo AKAHORI</p> <p>Toward a complex system of personal and group characteristics for ICT appropriation Daniel MONTES-AGUDELO, Jheimer J. SEPÚLVEDA-LÓPEZ y Luz A. RAMÍREZ-CASTAÑEDA</p> <p>Uses of ICT and Sustainable Development Goals. A correlation based on sociocybernetics Ana L. ESCOBAR y Luciano GALLÓN</p>
12:30	Lunch
14:30	<p>Oral Presentations (B12-209) - Moderator Patricia E. ALMAGUER KALIXTO</p> <p>Truth, Trust and Trump: From Facebook to fake-news Chaime MARCUELLO SERVÓS</p> <p>Building the meanings of Death. An approach from complex systems to news stories of death David KARMINSKI KATZ</p>
16:00	Break
16:30	<p>Oral Presentations (B12-209) - Moderator Patricia E. ALMAGUER KALIXTO</p> <p>Ecosystem to implement the Smart University: National University of Colombia, Manizales campus Marcela A. VARGAS-ROMERO y Luz A. RAMÍREZ-CASTAÑEDA</p> <p>Research at UPB for social and human transformation Beatriz E. MARÍN OCHOA, José R. ÁLVAREZ MÚNERA y Luciano GALLÓN</p>
18:00	Free
19:00	<p>RC51 Dinner (Hato Viejo Restaurant)</p> <p>Please see Booklet <i>Useful information</i> section</p>

DAY 4 - Friday June 23

Time	Activity
08:00	Registration
09:00	<p>Oral Presentations (B12-209) - Moderator Felipe LARA-ROSANO</p> <p>Anticipation in systemic social processes José AMOZURRUTIA</p> <p>System Dynamics based Sociocybernetics Luciano GALLÓN</p>
10:30	Break
11:00	<p>Oral Presentations (B12-209) - Moderator Felipe LARA-ROSANO</p> <p>Poverty, loneliness and sickness? Systemic vision to plan an old age with health and quality of life. New form of social organization Margarita MAASS</p> <p>Critical Sociocybernetics: Testing the Functioning of the Concept of Dispositif Juan C. BARRÓN PASTOR y Jorge CARDIEL HERRERA</p>
12:30	Lunch
14:30	<p>Oral Presentations (B12-209) - Moderator Luciano GALLÓN</p> <p>Post-Conflict in Colombia: A sociocybernetic observation on complexity of the world's longest war Michael PAETAU</p> <p>Forum / Debate (B12-209)</p>
16:00	Break
16:30	<p>Closing (B12-209)</p> <p>Walter Buckley Award Patricia E. ALMAGUER-CALIXTO</p> <p>XIX ISA World Congress of Sociology / Toronto, Canada / July 18-21, 2018 Chaime MARCUELLO-SERVÓS</p>

Opening keynote speech

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Explaining the complexity of innovation and social systems with the help of non-classical logics

Non-classical logics (NCL) are a large and suggestive landscape that has rarely been taken into account when understanding and explaining social systems. This paper argues that there is no need to depart in research from formal classical logic, no matter what (unless the interest is historical). Social systems and innovation can be understood and explained via a number of (NCL). Therefore, it becomes compulsory to present the panorama and some of the main characteristics of (NCL). A look at some of the most salient features of (NCL) shows how suitable they are to understand and explain social systems, which are characterized by change, unpredictability, instability, fluctuations, non-linearity, and perturbations, among other traits. Yet, vis-à-vis innovation, (NCL) offer a wide spectrum, namely non-monotonicity. Non-monotonic logics learn, and therefore allow for adaptation to new information or to a changing environment. (NCL) are, indeed, one of the sciences of complexity, and complexity science is all about innovation, change, and evolution.

Ph.D. in Philosophy from the KULeuven (Belgium), Visiting Positions as Visiting Scholar at the University of Pittsburgh (U.S.A.); as Visiting Research Professor at the Catholic University of America (Washington, D.C.), Academic Visitor, School of Philosophy, University of Cambridge (England). Full Professor, School of Political Science and International Relations, Universidad del Rosario. He has been awarded the "Distinction to the Merit", by the Universidad Nacional Mayor de San Marcos, Lima, Peru, for his contributions to philosophy and complexity (2008). "Portafolio Price", Mention of Honor, Category "Best Professor" (2008). "Distinguished Professor, awarded by the Universidad del Rosario (2009). Senior Researcher (Colciencias). SENIOR MEMBER – IEEE. He holds an honorary doctorate (Honoris causa), University of Timisoara (Romania), 2015. H-index: 21

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Observing Intolerant Society: A Lesson from Japan's Experience

Japan as a whole seems to have gained a reputation as a safe and secure place. However, at the same time a tendency of increasing intolerance has been regarded as problematic in Japan. Recently such tendency has begun to be called under the expression "intolerant society". "Intolerant society" can be applied not only to Japan but also to the rest of the world. However, remarkably in Japan's case both people's kindness and intolerance are observed at the same time. It seems to be paradoxical. The aim of this paper is to explore a better "general" framework to understand these paradoxical features of modernization and/or civilization through a case study of Japan. For this purpose, we use the theory of "observing systems" as a clue. From this viewpoint, we submit some findings summarized as follows. Firstly, sociologists had better distinguish between society itself and a society's description of itself. What we have to focus on is the latter. Then we can understand that the intolerance of society is observed through using the distinction between tolerance and intolerance. Behind the distinction, an idea is hidden, that is: civilized society should be tolerant. Secondly, from a sociological viewpoint, we should rather understand the rise of intolerance inside society as a consequence of the civilizing process itself. Lastly, we can find the mechanism of this paradoxical consequence, such as how the pursuit of civilization tends to produce the reverse consequence. It relates to the description of society. For example, Japan is not so safe or secure because it is so well-civilized that irritations or frustrations are intensively concentrated in certain places, such as classrooms, workplaces, local communities and families, as a result of the encouragement of self-restraint. We conclude that both a favorable and unfavorable description of society is not adequate as a sociological framework to observe society because it brings paradoxical images of society. Furthermore, unfavorable consequence would be amplified because of the positive feedback mechanism of societal self-description.

Keywords: intolerance, civilizing process, self-description

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Participatory Action Research: Systemic Analysis for Social Transformation

Participatory Action-Research is an interdisciplinary methodology used in research projects that seek social transformation. It includes construction of theory and observation as part of research practice (Friedman and Rogers 2009). It involves collective learning and active participation of the groups involved to stimulate transformative practice in social change. Since its origin, this methodology has been characterized by a systemic approach that includes collective context analysis, categorization of priorities and a process evaluation. However only few authors have oriented their efforts on conceptualising the "systemic" and "complex" aspects of the methodology (Burns 2006, 2007). We consider the framework of sociocybernetics (Geyer, 1995, Geyer y Van der Zouwen, 2006), can enrich the methodology with use of concepts such as second order cybernetics, the notions of adapting systems, structural coupling of self-referentiality, operational closure, feedback and feedforward, just to mention some of the sociocybernetics key concepts. Papers which use sociocybernetics theoretical concepts to explore participatory action research (PAR) methodology are invited. The interest of this paper is to present theoretical discussion and some empirical research examples to contribute to the strength of Participatory Action Research from a systemic, second order observation and/or sociocybernetics perspective.

Keywords: participatory action research, sociocybernetics, systemic analysis.

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Anticipation in systemic social processes

Complex social problems are linked to ethics driven by the human behaviors; Cognitive processes in Piaget's Genetic Epistemology demand an ethics model not only for people but for institutions conducted by them. The cognitive process has confirmation and anticipation functions that confirm the assimilated and accommodated processes associated related with the Piaget's abstraction and generalization operations. Anticipation is possible if there is an explicitly ethic purpose to be fulfilled in future activities, and by the same epistemology, confirmation is linked to anticipating functions, making the possible future worlds of complex systems. The functional operations in cognitive processes demand to be associated with the functions of

verification or anticipation. The latter pertain to confirm the development –the genealogy- of concepts assimilated and accommodated within the evidence of abstraction and generalization operations. Anticipation is possible if there is a desirable ethic in the performance of assimilation and accommodated functions. The possibility of anticipating the activities of the system, its attitudes and promoted activities rely on the consistence of the real system. In this study, I present a model to propose an imitation of the anticipation process. This model should permit to simulate the knowledge creation process inside the system's epistemology and it depends only on its environment to give way to more authentic possible futures.

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Luz A. RAMÍREZ-CASTAÑEDA | Colombia | Universidad Nacional de Colombia

Manizales City: Smart City?

The use of Information and Communication Technologies (ICT) in cities has gained momentum due to an increase in political and economic control which has favored their development. This new type of city (system) has different denominations: Digital City, Intelligent City and Smart City. The Smart City is, additionally, a sustainable city if in the most innovative technological dimension, sustainable development aspects are included. The Smart City applies ICT with the objective of providing infrastructure which guarantees sustainable development, an increase in inhabitants' quality of life, increased efficiency in the use of available resources, and active participation on the part of citizens. With the previously mentioned characteristics, measurements of the intelligence level in the Smart City have been defined and applied, however, existing measurement models cannot be considered a definitive model for all smart cities. Although these cities are systems which share general aspects (elements, relationships and objectives, for example), the quantity, quality and reach of these differs, depending on a city's particularities. Manizales was classified in 2016 as the city of Colombia with the lowest rate of ICT use in the different components of urban intelligence. With this information, and within the framework of the Master's in Information System Management (National University of Colombia, Manizales Campus), an evaluation model for Manizales' – Smart City -- intelligence index is prepared. This model is a tool for planning and decision-making, regarding a system which is of interest for areas of ICT management and sociocybernetics.

Keywords: Smart City, intelligence index, Manizales

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Luz A. RAMÍREZ-CASTAÑEDA | Colombia | Universidad Nacional de Colombia

The impact of open innovation and crowdsourcing on the Smart City

The Smart City has adopted different names and definitions: digital, knowledge, semantic, ubiquitous, intelligent, or smart. They all express the use of information and communication technology products (ICT) in the city's various activities. The principal objective in the use of ICT is to procure improvement in inhabitants' quality of life, as the activities carried out in the city transform. There is a relationship between the Smart City and innovation when good situations emerge during the transformation process, and crowdsourcing is applied when the Smart City increases collaboration between a city and external actors with the purpose of innovate. The joint use of open innovation and crowdsourcing for the consolidation of the Smart City is exemplified in a number of investigations and technological applications in collaborative contexts in the city. This study revises case studies found in the academic literature in order to identify positive and/or negative impacts of the use of open innovation and crowdsourcing on the Smart City. The revision is performed, keeping in mind that the city is a physical and social system whose transformation into a Smart City is based on ICT use, and that this change also considers the reduction of conflicts which affect quality of life conditions.

Keywords: Smart City; open innovation; crowdsourcing

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Critical Sociocybernetics: Testing the Functioning of the Concept of Dispositif

This article proposes the development of a critical sociocybernetical concept of «dispositif», as used by Michel Foucault and broadened by Giorgio Agamben in his 2006 essay *Che cos'è un dispositivo?* —published in English in 2009 as *What is an Apparatus?*—. The main thesis is that both theoretical fields —critical theory and sociocybernetics— can profit from the interaction between the concept of dispositif and other classical sociocybernetical concepts like system and network. The article proposes the use of this widened concept of dispositif for the analysis of social phenomena, and shows how it works by examining how particular dispositifs can grow its steering power and exercise it in relation to other social and psychic formations. Some system theories observe these events as problems of differentiation. Critical sociocybernetics observes this not as systemical de-differentiation, but as an emergence of psychosocial formations called «dispositifs» that exercise power, as Foucault also recognizes. We propose an understanding of the dispositif as a second-order formation that relies on other existing formations like institutions, media and social movements. The dispositif doesn't directly steers humans or other social formations, but intervenes strategically at the level of structural couplings between systems.

Keywords: dispositif, critical theory, sociocybernetics.

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Trump and the programmatic field of entertaining: An approximation from Critical Sociocybernetics

This presentation continues exploring the argument exposed the previous years in ISA and RC51 conferences, building the emergence of “Critical Sociocybernetics”. This incipient field intends to study social systems considering power inequalities and seeking the critique and transformation of those systems for society's viability and adaptation. As in previous presentations, I continue to explore mass-media as adaptive social system, and particularly in this occasion I intend to go into the programmatic field of entertaining. Donald Trump's style of communication has become a contentious complex problem to his country and the world. This, in part due to his polemic, aggressive and dangerous assertions, and the speed of Twitter to enhance his harsh remarks. This innovation in the usage of media tools worked well for Trump's aims of reaching the presidency of the United States, yet igniting social conflicts. Many political analysts have failed in anticipating the effective results of his sensationalizing and cunning language, paradoxically disguised of an alleged honesty. In this presentation, I will display how the inheritor mogul, might be using strategies developed for the programmatic field of entertaining, such as those used for American wrestling and reality shows; instead of the traditional media language used for politics, commonly attached to informative strategies.

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«Even the arbitrariness of the beginning loses its arbitrariness»? Rethinking the Premises of Niklas Luhmann's Paradigmatic Social Systems Theory

In *Social Systems*, Niklas Luhmann claims the following: «Even the arbitrariness of the beginning loses its arbitrariness (like in Hegel's system) as the construction of the theory proceeds. Thus a self-supporting construction arise». It is clear that Luhmann's building supports itself. His sociological system-theory-system has made another theoretical beginning possible, has the required complexity to function as a mirror of the world, and, as Michael Paetau recognizes, his theory can be considered inscribed within sociocybernetics (Paetau, 2013). Though, what remains an open question is whether Luhmann's individual theoretical, ontological and methodological decisions are or are not properly justified. The arbitrariness of the beginning does not equal randomness. The intention of this paper is to rethink Luhmann's most important decisions not as he claims —written by the theory itself (Luhmann 1995: IV)—, but as the products of an author, a designer and a sociologist. Some of these starting decisions become crucial premises in his full-grown theory. My thesis is that Luhmann's own assumptions and presuppositions become distinctive for his theorizing style —one can concede that they are self-supporting— but that doesn't mean they are justified, taking into account empirical sociological research and considering the development of Luhmann's own theoretical building. I will address seven Luhmann's premises, in order to show how —even though they make another theoretical beginning possible— these premises become self-restricting for: 1) understanding social realities,

2) recognizing the position of the author, theory–designer and sociologist Luhmann, and 3) reassembling the theory of social systems in a wider critical sociocybernetical approach. The fixation of the Luhmannian premises as theory dogmas lead to tautology, blindness for the intricacies of political fields and a deficit of self–reflection. On the contrary, much can be gained by addressing these premises critically as the variables of a human–designed sociological system. The subjects I will deal with in this paper are: the existence of systems, the tautological definition of communication, the society without a center, the system’s radical autonomy, the system’s unifunctionality, the psyche as a system and the non–technological character of social systems.

Keywords: Niklas Luhmann, social systems theory, sociocybernetics.

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Uses of ICT and Sustainable Development Goals. A correlation based on sociocybernetics

The study of Information and Communication Technologies (ICT) in relation to how it is possible to think of a concept of planetary sustainability globally is interesting and at the same time ambitious. On this occasion, we are interested in presenting an analysis that correlates the use of ICT and the goals set by the United Nations since 2015 in the 17 Sustainable Development Goals (SDG). The purpose of such analysis is to identify the specific uses of ICT that are needed for the implementation of actions aimed at complying with the SDG and what type of actors subscribe to each one. This analysis has been generated for the city of Medellín, thinking that it is useful to build a framework of methodological understanding of observation and monitoring for the identification and characterization of ICT uses in the city. Therefore, we appeal to the concept of second-order cybernetics where the system collects information about its own functioning. With this, we propose to resolve the question: What are the uses of ICT to track the state of SDG in Medellin?

Keywords: Sociocybernetics, Sustainable Development Goals, Use of ICT.

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International Cooperation Programs as Complex Systems

We can define “Development Cooperation Program” as a group of related projects or services directed toward the attainment of general and specific objectives of development in the framework of international cooperation. Since the successful or unsuccessful application of development programs and projects is usually the consequence of an accurate or inaccurate identification of actors, relations and elements of very complex social systems, we aim to discuss the usefulness of a sociocybernetic approach addressing methodological proposals, comparative studies, and analysing the consequences of using or not using a systemic approach. Finally, this paper tries to determine how a Sociocybernetic perspective can be useful to propose more successful cooperation programs and projects. As a consequence, we will analyse theoretical studies of the application of a Sociocybernetic perspective to cooperation programs and projects, empirical studies that allow a Sociocybernetic perspective to this issue, examples of practical implementations of this perspective and the use of specific sociocybernetic concepts such as second order observation, reflexivity, autopoietic and adaptive systems.

Keywords: Cooperation, Development, Sociocybernetics.

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System Dynamics based Sociocybernetics

This work proposes a reflection on the possibilities, alternatives, barriers and potentials of making System Dynamics based Sociocybernetics. For this purpose several analyses are presented as: A review, as a critical theoretical comparison, between the fundamental elements and scales of observables and observers from the System Dynamics and the Sociocybernetics, as well as the origins and fundamental elements that make up each of these knowledge fields; An account of the works presented by the author in the International Conference of Sociocybernetics since 2007, and an account of the works developed by the

students of the course System Dynamics 1, in charge of the author since 2014 at the Universidad Pontificia Bolivariana (UPB) in Medellín, Colombia. With these analyses the work explores new answers to the questions: How is it possible to observe reality systemically? What are the minimum elements necessary to capture reality systemically? What can be observed systemically, what was achieved to observe and what is intervened? What new meanings of reality are found through simulation? The work ends discussing and concluding around best practices that allow to do System Dynamics based Sociocybernetics.

Keywords: System Dynamics, Sociocybernetics, Simulation

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Fake News is the Invention of a Liar: A New Taxonomy for the Study of Misleading Information Within Hybrid Media System

Fueled by a highly contentious US Presidential campaign, the debate on so called “fake news” prominently surfaced on newspaper’s front pages, television news and in the conversations of scholars and practitioners. Despite its magnitude, this public discussion largely failed to advance our understanding of the issue or to establish effective strategy to address it. Originated around catchy but fuzzy tags, the debate reflected the general lack of conceptual coherence already pointed out by literature on misleading information. Leveraging on four strands of research in the existing scholarship, the paper aims to address the limits of the current debate by introducing a radically new model framed in second-order cybernetics and aimed at describing the process through which misleading information spreads within the hybrid media system. The paper discusses the contribution and implication of the model in tackling the issue of misleading information on a theoretical, empirical, and practical level.

Keywords: fake news, second order cybernetics, social media

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SOCIOCYBERNETIC MANAGEMENT INNOVATION BASED ON COVEY - Pulling Social Forces from Behind our Backs up Front -

Society is man-made, but when we are born into it and start acting, it is a given. Social processes are going on in structures given at that moment, often behind our backs, moving society in unwanted directions. Attempts at controlling and steering such social forces turned out quite ineffective, and organizational actors, which are supposed to do so (like governments), are quite helpless. "Social forces" does not refer to some global conspiracy group, but to the mechanisms and processes built into society at a given moment. To change this situation, Raven insists that first of all such processes behind our backs need to be understood. Also there need to be actors who take decisions and act in a way likely to move social processes towards a more desirable state. As the concrete shape society should take in the end can hardly be envisaged, it seems promising to look for a suitable method of management which should be of help to promote the necessary innovation and changes for moving in a desirable direction. The management method proposed by the late Stephen Covey, a renowned researcher, consultant, and coach in management and leadership, corresponds to a sociocybernetic approach. It promises suitable to meet the requirements of guiding action towards learning systems, a key concept of Raven, and constitutes a coherent and scientifically grounded humanistic approach. It can be seen as an innovation of management and leadership methods which in turn can be used to produce the innovations necessary to move society or a particular social system ahead in a desirable direction. Education and sharing information freely and involving all relevant stakeholders, as proposed by Covey, will contribute to revealing processes behind our backs and pulling them up in front. Once visible, points of intervention can be sought.

Keywords: management, innovation, knowledge society

Building the meanings of Death

An approach from complex systems to news stories of death

Assassinations, accidents, suicides and deaths of all kinds flood the media spaces daily throughout the day. Images about death feed news and reports with photographs and videos. This condition hasn't been unnoted by the field of social sciences, generating a prolific research production developed mainly in two lines. The first one, studies that establish a correlation between the constant expositions to death, through mass media, and behaviors or beliefs developed by certain audiences – increase of existential anxiety, violent behaviors, moral indifference, etc- The second one, investigations that use the analysis of forms and frequencies in which diverse media products represent some deaths and forms of dying over others, making power relations evident, and with them, social asymmetries between: economical, ethnic, racial or gender groups. The present work, looking for a far-reaching observation, asks from an interdisciplinary approach how the horizon of meaning of death is configured through news and reports. From this perspective, the production and consumption of these narratives is addressed as part of complex relations (Garcia, 2008). For this study in progress, it is fundamental to consider simultaneously the operations and distinctions proper of the mass media system (Luhmann, 2000), the construction of emotional schemas in social relations (Hochschild, 2003), and the cognitive implications of distinguishing death. This study aims to analyze a few cases from a selection of Mexican news media. The results show how death is represented within different programmatic selectors and scripts. The presentation seeks to gain feedback about the “contravening/reinforcing morale” coding, in order to see how psycho-emotional expectations could be understood under a sociocybernetic perspective.

Keywords: Death, Mass Media, News, Complex Systems

A sociocybernetic approach to social conflict resolution

The present work arose in response to the need to have a conceptual sociocybernetic model of a methodological type that would facilitate the analysis of social conflicts of different natures. In fact, the lack of a methodological type of sociocybernetic thread in the political analysis often overlook events that are key to political explanation, while at other times the emphasis on certain aspects of the conflict is exaggerated, and the vision of the totality is lost. To structure this guideline, we reviewed some case studies, as well as the available literature on methodology of political analysis, and from that point on, we selected and defined theoretical categories that allowed the construction of a conceptual sociocybernetic model of political conflict decisional process. This conceptual sociocybernetic model is presented here, hoping to contribute with a useful instrument in political studies. To clarify the meaning of the systemic categories used, in the first part of the paper we define these fundamental concepts. Based on these, the conceptual sociocybernetic model developed will be presented and discussed in the rest of the article. The conflict resolution process is divided into five phases: I) Demands and discouraging measures; II) The power demonstrations, III) Repressive tactical transactions IV) War measures and V) Final outcomes in which, depending from the game winner, the bureaucratic structure dissolves the demands, leaving the public unattended or the public get their demands solved from the bureaucratic structure through a collective mutual learning process. Each one of these stages may contain several transactions and some of the tactics applied in the process are discussed in detail.

Poverty, loneliness and sickness? Systemic vision to plan an old age with health and quality of life. New form of social organization

62% of Mexicans are in the lowest savings levels for retirement (Amafore, 2014). This situation happens because in Mexico, there is no culture of saving, but also, there is no culture of health and prevention. We know that chronic-degenerative diseases are one of the main causes of death in our country and are generally associated with factors such as overweight and obesity (Universia, 2014). In addition, 80% live in conditions of poverty and 16% of them suffer the degree of abandonment and mistreatment (Pérez Cárdenas, 2016). These elements lead to loneliness and poverty sharpen depression in older adults and violate their self-esteem and physical health. Although the social tendency is not to consider older adults as vulnerable groups that can also be productive, they cannot tolerate old age with these levels of poverty, neglect and disease. How to plan an aging

with health and well-being, so as not to reach old age in poverty, loneliness and disease? We conducted a study with adults, over 30 and fewer than 55, middle class in Mexico, who are at a productive stage and living life to the full. Many of them are parents and their concerns revolve around their children, their partner, their work and their leisure time. They see their distant old age. They rarely think at this stage of life, because it is not something they are worried about right now, that is why they do not plan it. Few of them occupy some of their time in imagining and planning a long life with a healthy aging process, with well-being and quality of life. The first results of the study allow us to present a first systemic proposal so that all of us can plan the process of aging and the stage of old age with health and well-being. This is a new social way of organizing ourselves to gain degrees of social, physical, mental and emotional health. With this integral system, we will all gain more awareness, both in government and in society. The challenge is greater, since it would have to respond to new lifestyles and new ways of aging and to be part of the group of older adults. If we are not aware of this new reality, we will not be able to address the systemic problems (health, nutrition, housing, pensions, diseases, care, poverty, vulnerability) of the elderly population. The proposal offers a multifactorial and systemic vision, to plan a biopsychosocial old age, which implies a series of interrelated elements to work from socio-cybernetics, as a complex social system, so that we do not reach this stage with levels of poverty, loneliness and disease.

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Truth, Trust and Trump: From Facebook to fake-news

Donald J. Trump is changing visible American way of doing politics. His triumph is a paradox in Western democracies. Many intellectual and 'clever people' were shocked with his no political correctness and the final results considering the electoral campaign. Social scientists, in general, and sociologists, in particular, have a challenge to analysis the process, the circumstances and the future. We are living in digital societies with more information than ever, but it seems that alienation, misinformation and disinformation are drawing a new horizon. What has been the role of social media and social networks? Is this a consequence of big data? If Heinz von Foerster was right: «The Truth is the Invention of a Liar». What happens now? What does post-truth politics mean? This paper proposes an interdisciplinary, systemic and sociocybernetical approach to deal with the recent events and to anticipate social answers to this systemic challenge. Maybe «“The problem is not truth,” [...], “The problem is trust.” (HvF)». The paper is divided in five parts including the introduction and conclusions. Firstly, it will describe the recent election and discourses of Donald Trump. Secondly, it approaches the notions of truth and trust in this world of big data and social media. Thirdly, it proposes a sociocybernetical reflection on global consequences of this type of public policies and government in a massive distribution of information, including fake-news.

Keywords: Truth, Trust, Facebook, Fake-news

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Research at UPB for social and human transformation

The National Science and Technology System in Colombia is highly criticized for its wrongful decisions by the scientific community, and despite the bet of the country for better education quality standards, research development and strict measurement protocols, the resources are scarce and in recent Calls for Research Proposals the results were poor with a decline in budgets and opportunities, which puts the Colombian scientific community in an inconvenient situation. Despite this, the Universities, and most of all, their researchers, strive for having the best positions for their Research Groups at the measurement processes and strive to meet the conditions that will allow them to have access to Call for Research Proposals projects, travelling aids and scholarships. So, the question is if these research efforts and production, as an answer to the logic that prevails within the academic environment, contributes or not with new knowledge and how much do they contribute to solve complex problems in a post peace agreement country as Colombia, that requires profound human and social transformations. Is in this way the Urban Communication, Territory and Innovation and Technology Management research groups at Universidad Pontificia Bolivariana (UPB) decided to make a joint research project that allows them, based on sociocybernetics ideas, observe, map and analyze the sixteen best qualified Research Groups of the UPB, by knowledge area, research agendas, authors, methodologies, products, new knowledge production, human resource training and social appropriation of knowledge, for a better approach for establishing its real contribution to Colombian Society.

Keywords: Research Management, Scientific production, Social transformation

Public issues on Twitter as a computational social science problem

This paper proposes a framework in which public issues are conceived as a semantic object and not as a normative one, like traditional Social Sciences usually does. In order to propose it, it presents two types of investigative antecedents: those based on the theory of the public sphere and those based on the connective dynamics of the platform. On the first approach critically points out its limitations because it does not allow understand the public issues in the context of big data and the shared public word. The second body of research reviews and classifies the advances made in methodologies deployed by the computational sciences to observe collective behaviors in platforms like Twitter, although it also identifies a lack of elaboration of the meaning of the proposed phenomena. From what is considered a deficit in this double way of approaching the public, the work poses a generative form of knowledge based on the synthesis between the social and the computational, which allows to formulate matters of public interest in the manner of semantic networks of public utterances that emerge from a complex adaptive system (Twitter). The paper intends to demonstrate that Computational Social Science (Cioffi-Revilla, 2014; Chang, Kauffman, & Kwon, 2014) allows to conceive the public and the subjects of public interest to the way of data intelligence generated in socio-technical processes from which semantic networks emerge and that these networks are treatable as a complex subject. Moving this path from social science to computational social science and proposing a new framework of the public based on Twitter, is what this paper is about.

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Toward a complex system of personal and group characteristics for ICT appropriation

This investigation addresses the phenomenon of digital inclusion, which is understood as a social development which has expanded, thanks to information and communications technology (ICT) growth. It merits mentioning that the so-called "ICT growth" has not been distributed equally, as there is a difference in both technology access and use among people and groups. Although governments, organizations and institutions related to ICT recognize the social character of digital inclusion, and the need to involve people and communities in the management process of those programs and/or associated projects, said people and communities are ultimately not considered. Similarly, although in the review of literature, the need for quantitative and qualitative approximations is clear, a repeated numerical focus on the phenomenon is evident. Additionally, different personal and social characteristics, which guide the appropriation of ICT tools, and their use to achieve goals and improve participation conditions regarding civic duties. Digital inclusion is a situation which involves various aspects: cultural, technical, social, financial, normative, moral, and even ecological. When approaching this topic quantitatively, the aforementioned aspects appear to be independent. However, in the bibliographic analysis, their interrelationship becomes clear, as does their inseparability. In other words, the elements which compose the phenomenon of digital inclusion are not only heterogeneous, but also interdefinable. The previous affirmation justifies the analysis of the digital inclusion phenomenon as a complex system, which incorporates proposals from systems as well as from the field of complexity. When discussing ICT appropriation, there are assorted proposals for the personal and social variables which condition said process. A consensus has not yet been reached regarding these variables, a proposal undertaken in the present study.

Keywords: Digital inclusion; ICT appropriation; complex system

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Post-Conflict in Colombia: A sociocybernetic observation on complexity of the world's longest war

For a foreign observer, it is not always easy to understand what happens in Colombia today. On one side, this has to do with the fact of a remarkable incomplete and patchy reporting by the international press associations, but on the other side also with the enormous variety, the foreigner is faced with, relating to social, economic, political, cultural but also geographical aspects.

After the “NO” as the result of the plebiscite of 2nd October 2016, the international public was quite helpless. And still today one is surprised how polarized the Colombian society is in this matter of peace or war. How is it possible that a nation, who is suffering more than 60 years under a terrible violent conflict votes majoritarian to continue this war? How can be the enmity and the hate so deep that the majority is not willing to terminate the conflict? How is it possible that in a predominantly catholic country the requirement for retaliation (retribution) is higher than for forgiveness? How can be the fear of societal change so heavy than violence will be seen as a suitable means to prevent it? All these questions arose during the last month not only for foreigners, also Colombians are thinking about that. William Ospina, a well-known Colombian writer said in a column of the Newspaper El Espectador: “*Nunca se había visto una situación más incomprensible: la guerrilla quiere dejar de hacer la guerra, y los dueños del país no se ponen de acuerdo para aceptarlo.*” (“One has never seen a situation more incomprehensible: The Guerilla wants to stop the war, and the owner of the country are not willing to accept it.”). In my paper, I try to give a contribution to understand a little bit more this situation. And this I want to do – of course – from the viewpoint of a foreigner. The question, which is so difficult to understand, is: why the Colombian society does not decide consentaneous and with no ifs or buts for peace? Why it is so difficult to end the world’s longest war? This I want to analyze on the basic principles of a sociocybernetic approach. Sociocybernetics in this context does mean particularly the consideration of complexity, namely in respect to three different aspects: First in relation to the variety and multiplicity of the conflict itself. Second in respect to the contents of the agreement between the government and the FARC-Guerilla. And, third with regard to the implementation of the contracted transformation procedure, the steps to terminate the armed conflict and to establish a “post-conflict society”.

keywords: Colombia, post-conflict, Special Justice

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Cybernetics, Planning, Politics

Economic planning combines political subjects and the embodiment of their past labour in processing systems. These systems act as an extension of memory, perception, and analytical capacity, increasing both the speed and accuracy of decisions. Today however, technical questions are reduced to speculative generalisation and politics is reduced to administration. Technology, which ‘is neither good; nor bad, nor neutral’ has been employed by the economic status quo, namely capitalist production, to increase surplus value. The field variably referred to as cybernetics and its adoption in economic systems has changed the production and circulation dynamics of contemporary capitalism. New intensities of automation, managerialism, computerisation, networking, integration, and logistics have made new forms of capital accumulation possible and made old forms more lucrative. A Janus-faced neo-liberal capitalism hides unprecedented planning and control systems behind laissez faire myth. It is on these contradictory pinnacles however that new forms of political organisation and economic planning should intervene and build. This paper returns to the economic calculation problem debate, strictly demarcated from the vulgar computation problem, to expose the necessity of an appropriation of capitalist technology for social change. Through this return, it is argued that a dynamic rather than static solution to the problem can and must be implemented and that the presuppositions of both equilibrium and equivalence must be reconsidered. These theoretical and political moves attest to the economic viability of a new multidisciplinary cybernetic project.

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Sociocybernetic understandings of consciousness

The aim of this paper is to show how sociocybernetics can usefully combine biological, psychological and sociological concepts to provide conceptual clarification and insightful understandings of human consciousness. There is a brief discussion and critique of how the term “consciousness” is used in contemporary cognitive science It is suggested that the term should be used as proposed by the cyberneticians Warren McCulloch, Heinz von Foerster and Gordon Pask to refer to “knowing with” (L. conscire), where the knowing can be with another or with oneself. This usage distinguishes consciousness as a primarily human phenomenon from the more general phenomenon of “awareness” observed in living systems. Awareness is characterised in cybernetic terms as the dynamics of a self-organising, autopoietic system in which there is an active, adaptive responding to environmental perturbations which gives rise to the ongoing generation and reduction of uncertainty. An account is given of the ontogeny of consciousness as a consequence of interactions between living systems that give rise to the distinction between selves and others. It is argued that in order to characterise the emergence of consciousness it is necessary to make a distinction between bio-mechanical systemic unities and psychosocial systemic unities. Reflexively, this gives rise to a second-order cybernetics in which the observer is explaining herself to herself in a never-ending hermeneutic narrative and conversational circularity, a spiral of storytelling, agreements, disagreements, understandings and misunderstandings. Finally, there is a

discussion of how these sociocybernetics understandings of consciousness can give ethical guidance for how to characterise, create and sustain communities in which good will prevail.

Keywords: consciousness, awareness, sociocybernetics

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Speeches and Uses of the Citizen Participation Policy in Colombia: A Communication and Complex Causality Approach

Colombian State has historically lived a deep structural failure in its political institutionalism. Citizens' participation has evidenced a significant unbalance between what it is indeed and what it pretends to be. This can clearly be seen in the various regional contexts (in this case, will be focused on two departments: Cauca and Valle del Cauca). Alliances and political pacts, beyond involving the generation of strategies of setting the public agenda, have as well full significance when actors try to find in the State the answers that will meet their requirements, please their interests and solve their problems. This social phenomenon has been interpreted from different disciplines, making use of explanations and different interpretations. It is, indeed, a complex reality that requires being studied from others perspectives of analysis. This paper proposes an analytical look from the sociocybernetic. The aims of this paper are to identify the actors, mechanisms and strategies used in the exercise of the citizen participation right in the construction of public sphere. The sociocybernetic outlook will be an observation that incorporates different dichotomous axes intersecting: formal and real, institutional and alternative, active and passive. The results suggest that indigenous and workers were the most mobilized actors, who most of the times, address to the non-institutional ways of citizen participation to expose their claims. The frequency and recurrence to the non-institutional ways of participation are supported in the combination of several factors. Building a substantial and effective democracy in Colombia requires recognizing and remedying the structural failure of the politic institution; to constructively incorporate political and civic opposition, as well as the recognition, respect and acceptance of non-institutional ways of resistance and opposition to power.

Keywords: citizen participation, complex causality, non-institutional strategies.

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Ecosystem to implement the Smart University: National University of Colombia, Manizales campus

Smart cities are complex systems with multiple and varied elements which use Information and Communication Technology (ICT), with the objective of bettering quality of life conditions, specifically, aspects such as the environment, mobility, security, education, and health. With this in mind, in different parts of the world laboratories have been created to examine city projects. Some have been developed as governmental projects, and others as initiatives within universities (the latter method is known as Smart University). The pertinence of a university as the scenario for Smart City experimentation is justified by various authors, who identify similar characteristics in universities and cities (a complex system on a smaller scale). These convert universities in the "perfect model" for this system: a small community in which professors, alumni, and administrative staff spend an important part of their lives, will have similar problems to those of a city, in many ways. This study approaches the proposal for the integration of the Smart City, Smart University, and laboratory concepts. Owing to this, and keeping in mind that it is possible to extrapolate city laboratory experiences in other universities the design of an ecosystem to implement a test lab for the Smart City in the National University of Colombia, Manizales campus, is proposed. As such, the ecosystem designed will be a tool for the creation and implementation of a Smart City laboratory, an instrument which strengthens collaboration between academia and government: in this, solutions to the city's obstacles can be reviewed and tested. Additionally, it allows participation on the part of citizens (observers), who can interact with tests for different city initiatives (observed system).

Keywords: Smart City; Smart University; ecosystem

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Discovering Invisible Colleges through Networks of Meaning

In this paper, we present a different approach to Invisible Colleges detection. Usually, invisible Colleges are representations of scientific communities. Those scientific communities have some features: (1) they are constituted by written papers that share common references (or bibliography); (2) those papers discuss common issues and built concepts that integrate a common corpus or body of knowledge; (3) these groups have a structure where it can be find some leaders with a great volume of citations and productions and researches following those papers through citations. This last one statement is crucial and introduce the concept of prestige. Prestige is one of the most important issues in defining the engine of scientific knowledge production (Merton 1988; De Solla Price, 1961). Invisible Colleges has been an important concept to develop theories related to social studies of science and let introduce network analysis to description of science evolution. Some procedures have been developed as algorithmic historiography (Garfield, 2003), Multidimensional Scaling using algorithmic historiography (Leydesdorff 2005), Lucio & Leydesdorff 2007), Main Path Analysis (Hummon & Doreian, 1989). Frequently, small fields of knowledge are mapped in specific issues. Those methodological procedures allow to detect main researchers on those areas, but frequently an important portion of knowledge are excluded. Most of the time main paths are showed and minor information but important as remainder knowledge or emergent disappear of these analyses (Vélez, 2013). We present a different procedure oriented by network analysis that allows to map trajectories of meaning. We emphasize in shared literature and not in prestige features. We analyze 1.000.000 of papers downloaded from Web of Science data base in 52 different research issues. We apply a procedure to find communities through bibliographic coupling and using Louvain algorithm of network modularity (Blondel et al 2008). Most relevant Invisible Colleges were mapped and both emergent and main stream issues were depicted. We present this methodology that we described as networks of meaning.

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Exploring Innovation's Valley of Death: a sociocybernetics perspective

Innovation and R&D literature use Valley of Death as a metaphor to describe systemic restrictions to the launch of new innovative products. Beard et al. (2009) depict a funding gap between R&D and new product commercialization stages. Diverse explanations can be found for the gap, including: investment resources scarcity (Heller y Peterson, 2005; Auerswald & Branscomb, 2003), technologies failure to fill market requirements (Frank et al., 1996), institutional gaps (Zeckhauser, 1996) limiting system capability to steer the innovation to final pre-market stages, and non-economic investments along the idea-to-market cycle (Beard et al, 2009). Such variety of depictions point out a complex issue where managers have to steer project to market along a hostile environment. Addressing such issue from sociocybernetics perspective could help to understand agents and factors involved in the Valley of Death, their interactions and behaviors, and would provide a framework to simulate decisions and system behavior intending to cross the Valley and carry innovations to market. There are options to achieve this task. Systems Dynamics paradigm offer methods and tools capable to describe the whole system behavior, while Agents Based Modeling paradigm results of interest to depict agents' interactions and behaviors. A third option consists in combining both paradigms, in order to build a hybrid model. Which of these three options is the best strategy? Even, can be found criteria to define which paradigm is suitable? These questions open opportunities to discuss, from the sociocybernetics view, which of the strategies are better to approach R&D and innovation system depiction, to make explicit the relevant relations, to make simulations and to understand policies and managers behaviors capable to steer innovations projects to the market, and away of the Valley of Death.

Keywords: Innovation Funding Gaps; Innovation systems simulation; Simulation paradigms

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