

A COMMUNICATION SYSTEM FOR SOCIO-ECOLOGICAL PROCESSES

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ABSTRACT

This article outlines a unified Communication Theory linking cyber-systemic, and cyber-semiotic perspectives. The objective is explaining communication as an emergent system from the interaction process between socio-ecological systems. The emergent communication system seen from a unified perspective is applied as a participative integral transformation process toward the harmonic relationship between human communities and their dynamic social and natural environment. It includes the description of an evolutionary communication process between social and environmental leaders of organizational networks under real conditions. It describes the evolutionary stages of the communication system between different social and environmental leaders who have been working in social organizational networks of Mexico in the last thirty years. The last stage of this emergent communication process among social organizational networks leaders began in 2009, is called: the Ecosystemic Dialogues, it is communication system with qualitative complexity and critical awareness. It is a social laboratory of change under real conditions, through a participative action-research cybernetic process, for a harmonic and sustainable relationship between human and natural systems, through a complex communication dynamic. It is a process toward the sustainable systemic health of the planet.

Keywords: Communication, cyber-semiotic, qualitative complexity, emergent properties, ecosystemic metaphor

CONTEXT FOR THE DESIGN AND APPLICATION OF A COMMUNICATION SYSTEM TO SOCIO-ECOLOGICAL PROBLEMATIC SITUATIONS

The fast deterioration of social and natural equilibrium in the anthropocentric era, is leading to destructive social and natural disasters toward a possible sixth anthropocentric catastrophe. The size, and complexity of the social and environmental problematic situation require a complex or organized answer. The small elite of corporate economic and political leaders of the world do not have the critical consciousness, the necessary requisite variety to deal with a dynamic process of social and environmental disruption at a great scale. The top down autocratic decision process of an elitist group with great economic and political power, but with a weak social and environmental awareness is not adequate to deal with the complex social and environmental challenges of the planet.

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To design and implement a viable solution, we need to create and apply a unified communication system for the construction of viable open non-linear global network of grass roots organizations, with the adequate requisite variety, and critical consciousness to deal with this huge challenge. The development of a unified communication system is an essential strategy for the organization, and integral transformation of complex organizational social networks at a global level with the necessary requisite variety to deal with social-environmental problematic situations.

INTRODUCTION TO SECOND ORDER CYBER-SYSTEMICS AND CYBER-SEMIOTIC THEORIES

Communication as a Scientific Discipline has been observed with different perspectives, according to Vidales (2012), two of the most important perspectives in the twentieth century are: the systemic one, with mathematics, information theory, first and second order cybernetics with its systemic roots, and the interpretative traditions (semiotics, hermeneutics and phenomenology).

Second Order Cyber-systemics, SOC, and perspective of a communication dynamics

For some of the main systemic experts on first and second order cybernetics (Wiener, Ashby, Von Forester and Beer), cybernetics is the interactive process that links theoretical models and concrete actions through a multi-feedback recursive communication dynamic, through an open participative processes nested in social and environmental systems.

The interaction of each human activities system with its environment generates a dynamic equilibrium and/or disequilibrium dynamic in the system. It is a transformation process toward a higher or lower level of complexity and consciousness. From this interactive communication dynamic original systems with new identities and properties emerge. Also the qualitative synergetic interaction process between complementary subsystems, and their nonlinear relationships produce new systems with permanent identities and properties that can emerge as a result of the evolutionary auto-eco-organizational transformation process.

The new attributes of each emergent system are a result of a homodynamic interactive process, in which the constitutive properties of the subsystems remain, and new synergetic properties emerge in the open co-evolutionary transformation process, it also means, that communication as a whole, is not only an interactive process, but also a complex organizational networking system of systems between physical, biological and conscious systems.

According to the complexity level, unified interactive cyber-semiotic communication process can be applied in technological systems as control and automation processes. It is also present in the homeostatic and morphogenetic or mutation processes of living systems and in conscious organizational systems, and in multidimensional processes of control, adaptation and innovation in complex organized systems (Figure 1).

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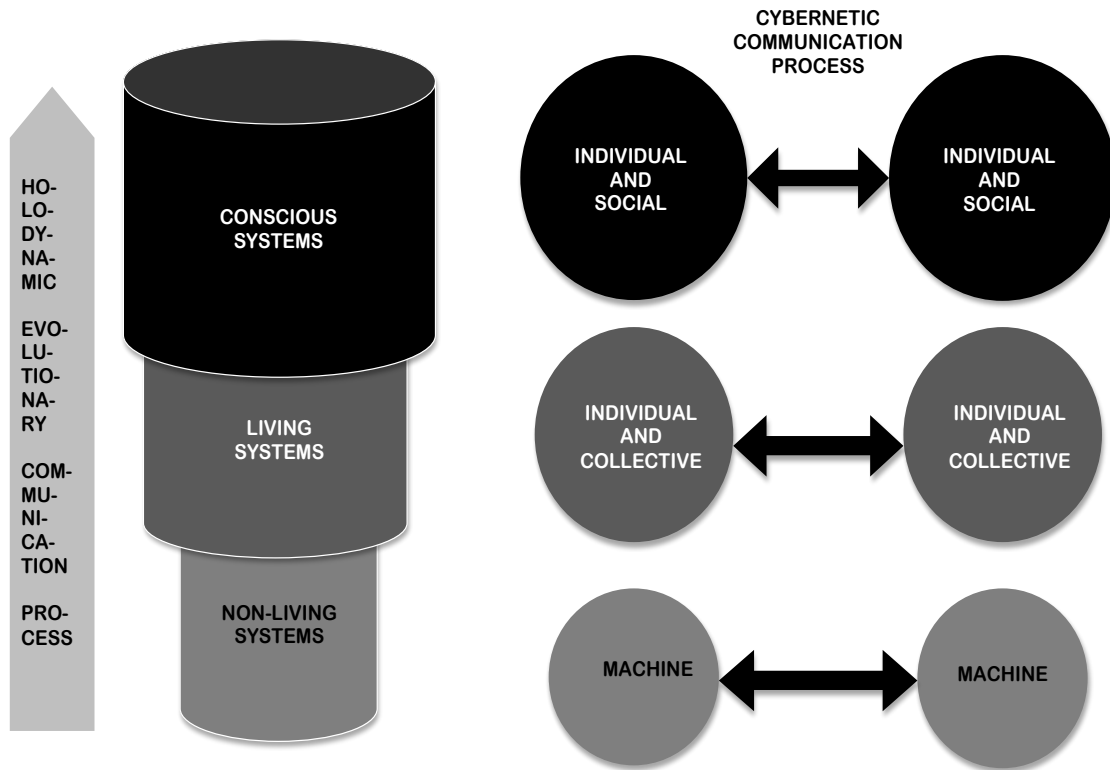


Figure 1.
Holodynamic communication systems (Badillo, 2016)

1. The reality that exists is composed of holos as a evolutionary dynamic or nested holodynamic system.
2. The system has four -dissolution basic capacities: self-preservation, self-adaptation, self-transcendence and self (life cycle) (Wilber, 2005).
3. The system operates from a principle of a recursive function as a complementary synergistic interaction (Watzlawick, 1971) where you can see the different levels of complexity or variety (Ashby, 1958).
4. It has the capability of emergency (morphogenetic equilibrium capacity, or evolutionary mutation toward higher levels of complexity and consciousness in a dynamic environment).

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5. The system has teleological principle (characteristic of conscious systems).

It is a holodynamic interaction and evolutionary process toward systems with a higher degree of organization or complexity; Human communication (consciousness) as a varying degrees of complexity depending on how they interact in real world. The unified cyber-systemic of communication is an approach to the theory (Figure 2), and application of the communication system.

A cyber-semiotic, CS, approach from social sciences for the communication process

However at the beginning of the twenty-first century, the academic project has been related with “the expansion of understanding and observation of the processes of communication, cognition and information in light of recent developments in semiotics, biosemiotics, cybernetics, systems theory and mathematics ”, not only with the synthesis or integration.

An example of such reconstruction from the disciplinary field of Social Sciences is the transdisciplinary proposal named Cyber-semiotics by Søren Brier (1999b). Although Cybernetics (Wiener, 1961) has developed a basis for thinking about the concept of communication, Søren Brier proposes a synthesis with which to observe the differences and similarities between information, cognition, meaning, intelligence, mind and communication and proposing an integral science of information. Each of these concepts is firmly explained in modern science, but it is not common to have a synthesis for the communication phenomenon.

Søren Brier (1999a), outlines its proposal based on the Biosemiotics (using as a basis the Peircean semiotic); second order Cybernetics (SOC) and Information Sciences. The synthesis is explained by Cyber semiotics levels:

1. Firstness level, (continuity, quality and potentiality)
2. Secondness, or causal level of mechanical matter, energy and force
3. Cybernetic and thermodynamic level of information
4. Sign games level
5. Conscious language games (human communication level).

We present fundamentals questions on the characteristics between physical, biological (Schrödinger, 1967) (Maturana, 1980), social and machine, intelligence communication processes, and their relationships. Brier thinking, show an interdisciplinary perspective attempt to define which would be the physical chemical, biological, psychological, and social foundations of communication. The big story that links the evolution of physical, biological, and conscious systems in time, is described by Spier (2010).

Toward a unified cyber-semiotic unified theory for the communication system

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From a synthetic interdisciplinary and transdisciplinary (Nicolescu, 1996) approach to the communication phenomenon, thresholds of knowledge can be identified between living and non-living systems, information and cultural meanings. In this proposal, communication is a system, because is an interconnectedt whit a large number of theroretical and concrete entities.

The holodynamic evolutionary process toward systems with a higher degree of organization or complexity systemic links are established among different kind of systems on those disciplinary domains, and perspectives, and beyond them in real world systems. If reality exists as an interconnected whole is possible to see the interaction between entities that allows the existence of communication. From this point of view, a holos is a nested system with the necessary fundamental principles that allows us to understan their laws, habits, patterns or trends.

The unified cyber-semiotic system of communication is a systemic approach to the theory (Figure 2), and application of the communication system, under the dynamic conditions of each system context, through participative multilevel action-research cybernetic methodologies with multiple feedbacks. It is designed under the guideline of the Ecosystemic Metaphor, toward the sustainability of complex and interactive human-nature systems.

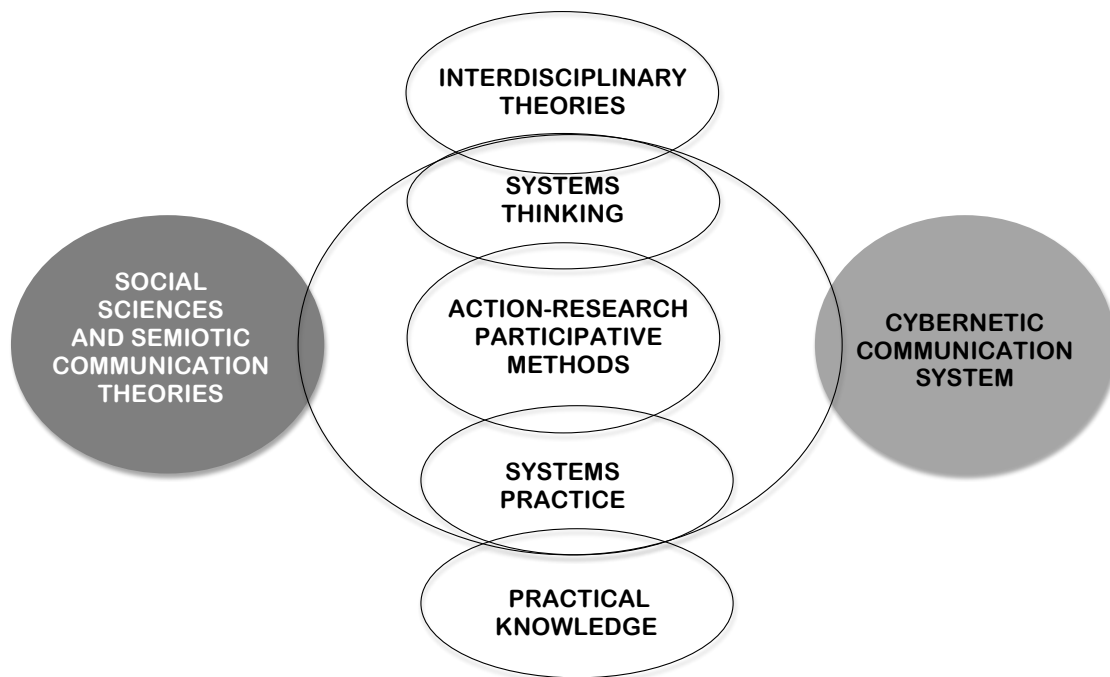


Figure 2.
Unified transdisciplinary cyber-semiotic communication system (Murillo, 2016)

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In the systemic approach to knowledge we can identify the threshold between different areas of science and social science, which aims to describe, in general terms, the physical, and biological dimensions of science related to human beings and their social and cultural sphere (as the differences between communicating and interpretation or meaning). They aim to explain the exchange of information between living things and their ecosystem, the symbiotic relationships, under each context and situation.

All of these conceptual explanations can be verified via a concrete example of conscious communication systems. Under the dynamic conditions of each system context, through participative groups and organizations, through the action-research process of cybernetic methodologies with multiple iterative feedbacks. The participative methodologies use the transdisciplinary form of knowledge that links interdisciplinary theories with the experience of practical experts, under the influence of their cultural contexts.

In this article through a systemic transdisciplinary approach to integrated knowledge we link different interdisciplinary dimensions of the communication system from the physical, biological and social sciences with an emphasis in interpretative semiotics, and with the direct form of knowledge of practical experts through participative action-research in geocultural contexts.

STUDY CASE:

EVOLUTIVE STAGES OF THE EMERGENT COMMUNICATION SYSTEM, AND THE EMERGENCE OF ECOSYSTEMIC ORGANIZATIONAL NETWORKS

In the study case, we describe the evolutive stages of the emergent process of communication, in social organizational networks working on social and environmental problematic situations in Mexico in the last years, since 1980. It is possible to characterize de different evolutionary stages under a dynamic social and cultural context (Kaufman, 1993). It has been a process of integral organizational development, in which each stage of the transformation process is the foundation of the new stage of development toward a higher level of organization or complexity. It is a holodynamic process of change under evolving conditions. We will identify and describe three main stages of organizational development process link with the communication dynamic in each evolutionary stage, and its emergent properties.

Stage 1. Thematic Social Networks Stage at local and national levels (1980-1990)

We identified the main emergent property of the communication system of social organizational networks in this evolutionary stage, a mutation, the evolutionary jump that is

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transforming the authoritarian vertical type of communication, toward a horizontal democratic process. The communication process in social organizations is a participative non-linear open and dynamic complex network process. It is an exchange of transdisciplinary knowledge between practical and theoretical experts with different cultural backgrounds working together in different thematic issues in social and environmental projects.

Leaders of small local organizations began a communication networking process with other regional and national leaders working in similar thematic issues of social and environmental problematic situations. They began a creative alternative transformation processes under real regional conditions in the 1980-1990 decade. They began an open participative action-research process to share their social innovations in organizational thematic networks working on different issues such as alternative education, economic solidarity, environmental projects, human rights, independent political organizations, etc. in many different regions, and at a national level.

Stage 2. Interthematic, and Interorganizational Social Networks at national and international levels (1990-2000)

We identified the main emergent property of the communication dynamics of social organizational networks in this evolutionary stage, as a plural inter and transdisciplinary communication process. One of the social organizational networks that emerged in this stage was called: Spaces of Reflection, Communication, and Action. This interdisciplinary network published in four languages for ten years a paper called the Other Stock Exchange. It was a communication tool for the national and international exchange or communication of experiences, goods, services, and values.

In the 1990-2000 stage, a plural group of world leaders from many economic, and political sectors organized global meetings on social and environmental issues, it was the beginning of a new stage of the a communication process on different issues. One of the main events was the international Rio meeting in 1992 on the environment in Brazil. Leaders of public, private, and social, and multilateral organizations of the different regions of the world participated. It was an important space for communication among many leaders in search of integral solutions for the environmental problematic situations.

As one of many results from the global environmental summit, in Mexico emerged a tripartite project between multilateral international organizations such as the United Nations Program on Development, UNPD, Mexican government agencies working on development such as the Social Secretariat on Social Development, SEDESOL, and 20 social and environmental networks working on different issues, and regions. The name of the project was Ba-Asolay, which means transparency. It was designed as tripartite plural communication process between leaders of multilateral, public, social, NGOs and indigenous groups that began in 1993 and ended in 1998. A hundred and sixty small social and environmental projects on many different issues and regions of Mexico were implemented. The social organizational networks received equipment and training for the use of computers and Internet, a very useful tool for the communication system.

Stage 3. Global World Social Forum, WSF, and Plural Ecosystemic Dialogues (2000-2016)

Thirty years ago, in 1971 in Davos, Switzerland, emerged the World Economic Forum, WEF, it is global organization designed to bring together the corporate leaders of private organizations with the heads of national states, and other important leaders of the

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world every year. It is a vertical corporate space for the main economic and political leaders of the world that share the neoliberal economic development model. In their annual meetings they decide economic policies for the world economy.

Thirty years later, in 2001 at Porto Alegre, Brazil, the World Social Forum, WSF, emerged. It is a global network of networks, at Porto Alegre, Brazil, that every year bring together many leaders of the grass roots organizations of the world, with a critical and proactive approach to the social and environmental problem situations in different regions of the planet.

The social and environmental context of the WSF emergence at the beginning of a new millennium was turbulent. The WSF, emerged almost at the same time as the act of international terrorism in New York City. After that event several international wars began against terrorism, and for the appropriation of natural resources such as petroleum in Middle Eastern countries.

The WEF, and the WSF, are opposite international communication processes. The WEF, is a vertical space of communication of the most powerful economic and political leaders of the world, it is a top-down vertical decision making process. A great part of the economic, social and environmental problem situations is related to the vertical process of communication and decision making between small elites and their economic and political policies. The exploitation of natural resources and social groups is the result of their neoliberal policies. The depredation of natural resources, and economic polarization between countries and peoples of the world brings a dangerous situation of disequilibrium. It can produce a great anthropocentric disaster to all forms of life in the planet. The social leaders of the WSF, are working together on a critical and proactive common approach toward and integral, and sustainable process of transformation, through a great variety of creative small size alternatives, adequate to each regional geocultural context.

Under the influence of the WSF, and organizational experiences in social organizational networks in Mexico, the space of communication of the Ecosystemic Dialogues emerged in 2009. The emergent property of this process of communication between social and environmental leaders working on different issues and regions of Mexico and other countries is a plural organizational model under the guideline of the Ecosystemic Metaphor.

The main difference between the communication process between social leaders in the WSF, and the communication process between leaders in the Ecosystemic Dialogues is the inter and transdisciplinary participative organization of the communication process. In the WSF the main dialogue between social leaders is in each thematic network and in the Ecosystemic Dialogues the communication process is a qualitative interthematic and transdisciplinary.

The main guidelines for the communication process of the Ecosystemic Metaphor toward sustainability (Peon, 2015) are:

- *A **geocultural territorial** approach, to link the issue based solutions with an integral transformation process for the real natural and cultural regional contexts of each problematic situation*
- *A synergetic process of **unity in diversity**, a characteristic of the natural ecosystems, toward qualitative complexity*

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- *An open co-evolutive and creative holodynamic process of **auto-eco-organization** toward emergent systems with a higher degree of complexity, consciousness (Wilber, 1997), and quality. (Morin, 1992) (Peon-Escalante, Aceves, 2005).*
- *The emergence of new systems, with **sustainable identities**, and emergent properties, adequate to their natural and cultural environments*

The second order process of cybernetic communication of the Ecosystemic Dialogues, is designed as a social dynamic of unity in diversity, between open congruent social leaders of small organizations working on different and complementary alternatives on the complex process of integral transformation for each geocultural context. It is a complex communication process, a creative synergetic organizational process toward social and environmental qualitative solutions toward a sustainable natural and social dynamic equilibrium (Figure 3).

In 2015 a complex alternative organizational network of networks, the Council or the Mexican People, emerged as a qualitative organizational process of unity on diversity for the good life. It has a territorial political organization in many regions of Mexico that work on systemic policies. One of its projects is a new Constitutional Model to replace the current constitution in 2017, on the hundredth anniversary of the Mexican Constitution. To develop the new constitutional model the Council of the Mexican People is using a holodynamic transdisciplinary participatory process (Figure 4).

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Figure 3.
Evolutionary stages of a qualitative
social holodynamic communication process (Peón, 2016)

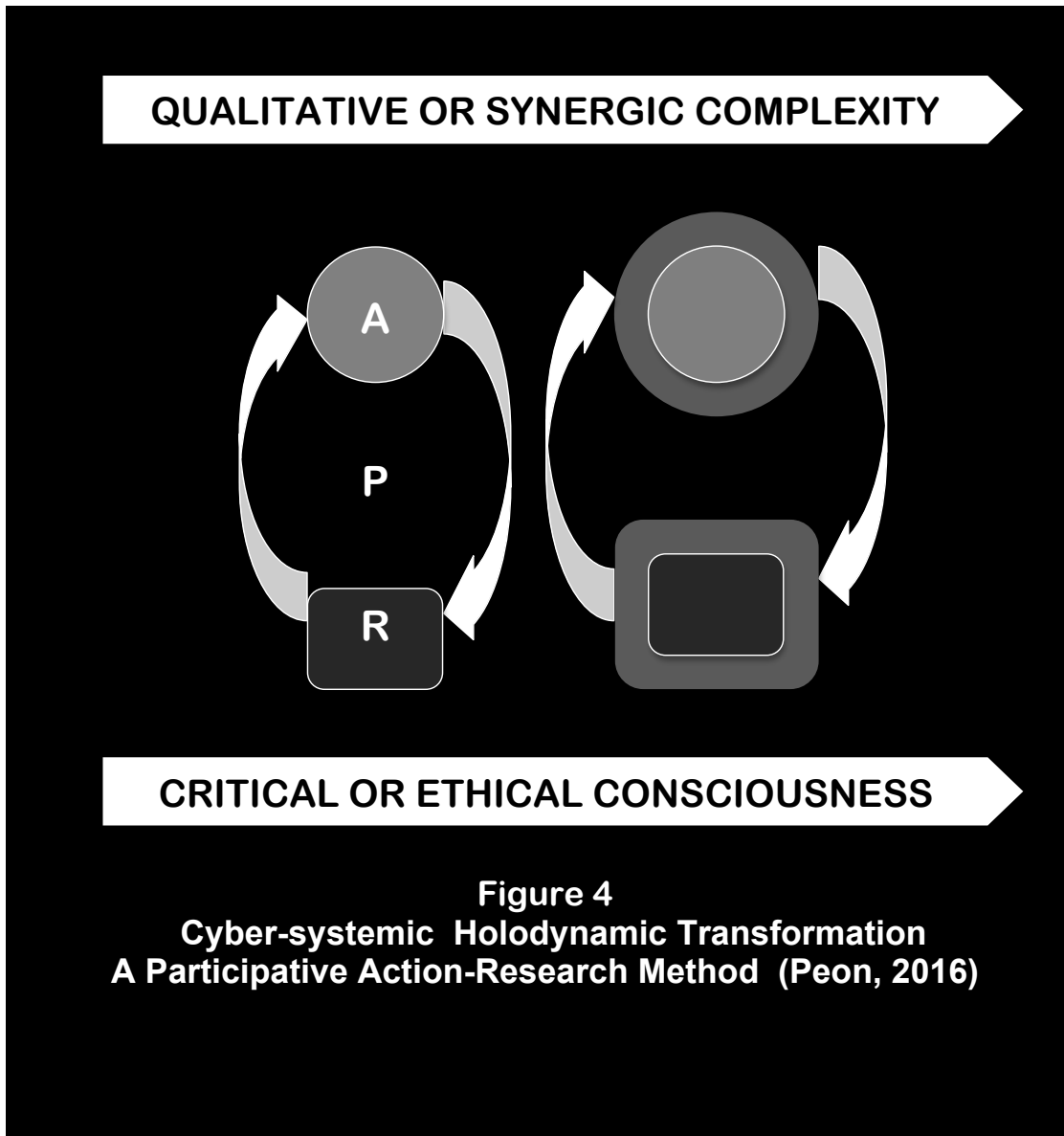


Figure 4
Cyber-systemic Holodynamic Transformation
A Participative Action-Research Method (Peon, 2016)

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CONCLUSIONS

The emergent communication system seen from a unified perspective is presented as a participative integral transformation process toward the harmonic relationship between human communities and their social and natural environment, under a dynamic context. It includes the description of a complex qualitative small-scale experimental participative process under real conditions. It describes the evolutionary stages of the communication process between different social and environmental leaders in Mexico in the last thirty years, and their networking process at larger scales. The last stage of this emergent communication system among social leaders in Mexico that began in 2009 is named: the Ecosystemic Dialogues (Peon, 2015). In this plural organizational network, we applied the unified communication process under the qualitative guideline of the Ecosystemic Metaphor; it is a social laboratory for a unified communication system under real conditions, through a participative action-research process.

1. The dynamic evolutionary approach to the communication process links the physical, biological and cultural domains from simple to complex states of structural unity. It describes a holodynamic process where new systems with emergent identities and properties develop with each new evolutionary jump toward a higher level of complexity and consciousness as a result of the communication dynamic.
2. This article is only a step toward a unified Communication System that links the cyber-semiotic, and cyber-systemic perspectives. The objective is explaining communication as an emergent system from the interaction process between different socio-ecological systems. It also describes its application through a multilevel participative action-research dynamic of a transdisciplinary communication process among diverse social network organization leaders in Mexico.
3. In the study case, we describe the evolutionary stages of the emergent communication system applied in several network organizations working on social and environmental problematic situations in Mexico since the year 1980. It describes the evolutionary stages from a simple to a complex evolutionary communication system.
4. The last stage of the complex of cybernetic communication between the leaders of heterogeneous social networks in Mexico is called the Ecosystemic Dialogues, this qualitative transdisciplinary communication dynamic is designed as a plural process of unity in diversity. Is designed to solve the multidimensional social and environmental problem situations under regional natural and cultural conditions from the grass roots organizations, a bottom-up approach. It is an open co-evolutionary complex communication process, a creative synergetic organizational process for social and environmental qualitative solutions toward a sustainable dynamic equilibrium.
- 5.

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