

A QUALITATIVE TRANSDISCIPLINARY PARTICIPATORY ACTION-RESEARCH APPROACH, TOWARD THE SYSTEMIC TRANSFORMATION OF THE EDUCATIONAL PROCESS

Ignacio Peon-Escalante¹, Isaias Badillo-Piña²

ignaciopeon@gmail.com, ibadillop@gmail.com,

^{1,2}Ingeniería de Sistemas IPN, México, D.F,
IPN Investigation Project SIP 2014414

ABSTRACT

The larger system is the real world. It is the framework, or the reference context for a viable process of open systems intervention. The educative and cultural system is a very complex system for a systemic transformation process. We can use a cybernetic Participative Action Research, PAR process, to change a particular educational process with the use of a critical, and propositive approach. The process of change can be a qualitative small scale application. The form of knowledge for a participatory process of transformation, should be transdisciplinary, to include the different types of knowledge of a relevant and plural group of social actors involved in the educational process.

The systemic process of transformation is a cybernetic Participatory Action-Research, or PAR process (Fals Borda, 1998). Through this process of change we link the *auto*, or internal system, with the *eco* or external system as a creative process or *auto-eco organization* (Morin, 1999). This is a qualitative participative process for the integral transformation of an educational process with the intervention of relevant social actors. It can address in the educational system the critical social and environmental problematic situations.

In this paper we present a brief description of a recent application in an alternative educational network. This qualitative complex organization is organized by an independent network of conscious social actors involved in different levels of the educational process at many public and private educative institutions in Mexico, and in other countries. The name of the mexican network is: Consejo de Transformacion Educativa, CTE, or Education Transformation Council, ETC. It is a qualitative small scale process for the systemic transformation of the mexican educational process, it is an alternative social laboratory of change.

Keywords- Action-research process, auto-eco-organization, plocal cybernetic process, participative grass roots process, transdisciplinary knowledge.

CRITICAL CONTEXT OF THE EDUCATION PROCESS

There has been a limited emphasis on the use of complementary creative education processes and methods, for a better quality of life. Alternative methods are very useful for building emphatic relationships between citizens and education professionals for a more precise social, environmental and economic diagnosis that can reduce the risk of social and environmental collapse.

The fragmentation of knowledge, and the lack of a critical approach, is an obstacle for an integral or systemic approach toward the transformation of the educational process. Specialization is a dominant characteristic of the contemporary forms of knowledge, especially in the educational system. Each specific alternative of the specialized form of knowledge is very solid, but its main limitation is the lack of integration of the different parts, it still is a fragmented and limited form of knowledge, its challenge is the next step of interdisciplinary, and transdisciplinary.

Transdisciplinary knowledge is open to all disciplines to that which they share and to that which lies beyond them as experiences and values. It revalues the role of intuition, feelings, imagination, sensibility and the body in the acquisition, and transmission of knowledge. It is not a new religion, nor a new philosophy, nor a new metaphysics, nor a science of sciences. It has an open attitude towards myths and religions, and also towards those who respect them in a transdisciplinary spirit. It can give a new ethical meaning, to the political, economic, and environmental models and practice. The recognition of the Earth as our home, is one of the imperatives of transdisciplinarity. Every human being is entitled to a nationality, but as an inhabitant of the Earth is also a transnational being (Nicolescu, 1996).

Transdisciplinary knowledge is transcendent, its vision, and attitude goes beyond the field of the exact, and applied sciences. It demands their dialogue and their reconciliation with the humanities and the social sciences, as well as with art, literature, poetry and personal spiritual experience. This form of knowledge transcends all types of reductivism, it uses different types of logics. It is multireferential and multidimensional, it involves multiple disciplines and the space between the disciplines with the possibility of new transcendent perspectives 'beyond' those disciplines

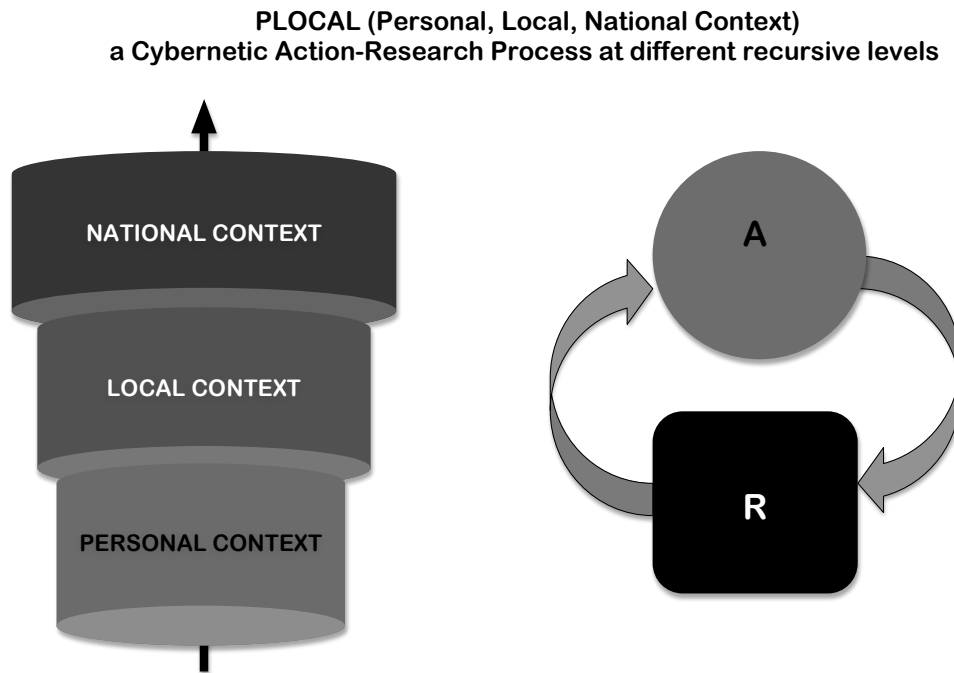
The transdisciplinary attitude is favorable to the participatory convergence of different forms theoretical and practical forms of knowledge; it is open to other cultural points of view under holistic criteria. The transcendence of paradigms implies its study, understanding, and integration in ample schemes (Kim, 1998).

Thus, the paradigm is a component that integrates a set of events in a whole with a unitary approach under each particular context, where each event has a value in relationship with other events of the holos. The transdisciplinary approach to knowledge can be seen as an integration of paradigms, or knowledge processes, that emerge in different forms, events, and contexts with a dynamic criterion. In other words, the holistic approach is used for paradigm integration, as way of understanding a complex reality; at the same time it is used for the understanding of an event, under an open systems approach of the problematic situation.

The principles of total unity, simultaneity, synchronicity of open possibilities, complementarity, and the principle of becoming, are some of the holistic principles for an integral educational model.

PLOCAL CYBERNETIC TRANSFORMATION PROCESS USING A TRANSDISCIPLINARY FORM OF KNOWLEDGE

As shown in Figure 1, a participatory planning-action PLOCAL or cybernetic process takes place within a personal, local and global context.



**Figure 1. PLOCAL cybernetic transformation process as a holos
(Peón, 2014)**

Participatory systemic processes of integral and open transformation involve the use of a transdisciplinary form of knowledge, in order to take into account the various necessities of both internal and external clients at all stages of the lifecycle of each project. These stages consist of: construction, operation, improvement and obsolescence. The goal of the transformation process is the achievement of total permanent quality, or of Integral and Sustainable Quality (ISQ). The qualitative guide of these integral and sustainable quality processes is based on the ecosystemic metaphor. Some relevant elements of this metaphor are used as a guide for the systemic design of an alternative education process, they include:

- Territorial integral differentiation, the autopoietic geocultural identity
- Conscious PLOCAL auto-eco-organization process as a holos
- Process of unity in diversity or synergetic ecosystemic
- Dynamic equilibrium and Integral and Sustainable Quality

Natural ecosystems have a territorial dimension which distinguishes them in every territorial space. A group of nonliving, living and conscious systems of varying magnitude integrate into a specific identity. When different yet complementary systems come together, a synergy is attained, which leads to emergent properties and allows a permanent or sustainable integration of quality.

Integral territorial differentiation with an autopoietic geocultural identity

The transformation process in space or in each territory is integral and differentiated. Important cultural religious or ideological differences exist between the members of each community. Every geocultural space is unique and therefore should not be addressed solely through universal academic knowledge. In each territory, a set of theoretical experts from diverse disciplines and interdisciplines, come together with a number of practical experts with different experiences and skills, and persons with different visions of the world. The set of people who inhabit each territory must become the autonomous agents of their own development, which involves a recognition of the complementary identities of the various social actors.

Conscious PLOCAL auto-eco organization process, in the form of a holos

In the open system approach, it is important to consider the context of every level of each system, that is, personal, local, and global or plocal levels. Every organized system has an internal nucleus or *auto* that stabilizes in the form of a viable system (Beer, 1994) and a external context, or *eco* that generates changes, to which it is necessary to adapt or even to look for a transforming innovation. The equilibrium between *eco* and *auto* creates a dynamic process of organization, at each recursive level of the system being transformed in the form of holos. The process of educational transformation occurs across all fields, and at every level, from the personal to the global, thus transcends the formal system of schooling.

The unity in diversity process, or synergic qualitative ecosystem

The transformation process is one of differentiation and integration towards higher levels of complexity and consciousness (De Chardin, 1963). Organized autonomous groups of organized society are developing an alternative education system quite different from the education model presented in the recent structural reform in Mexico. In a parallel and underground manner, a large number of diverse small initiatives of education transformation are being designed, applied and disseminated by teachers, researchers, and communities across all regions of the country. These grassroots initiatives for change are gradually spreading and becoming linked as a complex qualitative process, in the form of a network of unity in diversity, or ecosystemic social network, of synergic complementarity.

Dynamic social and enviromental equilibrium and Integral Sustainable Quality

In the face of the current dangerous economic, political and educational imbalances, small laboratories of planned change are progressively emerging across Mexico to achieve a personal and communal development, higher in quality and with more balance. These projects share a long term and sustainable integral vision. The integral and sustainable quality model is based in the ecosystemic metaphor.

TOWARD THE DESIGN, AND CONSTRUCTION OF AN ALTERNATIVE EDUCATIONAL MODEL AND PROCESS

Many components of the educational models already exist in a great variety of places and habitats, yet still missing is their recognition, valuation, evaluation and systemic linkage. To harmonize distinct educational experiences, it is necessary to generate a methodological cybernetic process of participatory research-action that

utilizes the transdisciplinary form of knowledge. Through this iterative dynamic of far reaching teaching-learning process, a link may be established between research that develops distinct interdisciplinary models and their application in the real world. Every result obtained through a critical vision analysis, may lead to new advances in the model and in educational practices, making use of the results of each experience of change, under a broad or conscious vision of reality, in time, space and culture.

Knowledge attained through an inclusive participative process of planning and action should lead to a shared understanding based on an absolute respect for the collective and individual (Checkland, 1990) in their specific context. In Checkland's Soft Systems Methodology, SSM, the participatory iterative process of relevant social actors is fundamental. The qualitative selection of practical and theoretical experts, with different types of knowledge and values is adequate for a rich qualitative diagnosis, design, and implementation of systemic solutions in complex and dynamic contexts. A transcultural transdisciplinary approach is essential for a rich participative process.

The education process occurs not only in the formal education system, it is in every moment and in every space where individual and collective social actors learn and interact. Through the educational process individuals and groups should learn how to survive and develop an integral and qualitative process of growth. They need to learn to cope with the challenges and opportunities of their environment to have a better quality of life. They should learn how to be self-sufficient, to work and enjoy with other persons, to develop ethical consciousness to deal with social and environmental problematic situations.

Cultural transdisciplinary knowledge leads to a new type of education, which encompasses all dimensions of the human being. As an integral or systemic educational process, with a broad vision over distinct forms of knowledge, which include learning to *know, do, be convivial, and especially to be*. A person that educates his or herself must be able to establish systemic bridges, intertwining different expertise and knowledge. An education implies a transcultural, trans religious, trans regional, trans political transnational attitude, which will facilitate identification with members of different cultures and backgrounds.

Transdisciplinary education, by its own nature, must take place not only in educational institutes, from preschool to university, but it must also encompass all periods, spaces and times of life. Shared knowledge must lead to a collective, cultural, plural understanding, based on an absolute respect to collectivity, and to cultural diversity, united by our common life in what is now the only habitable planet.

The transformation process may arise from the top or from the base. Elitist processes, in essence, are simple, due to their limited response to small conservative interest groups, whose primary interest is to obtain and keep hold of power, and its immediate benefits. These groups are opposed to processes of in-depth transformation including the achievement of a social and environmental equilibrium.

The conscious processes of transformation from the people and organized groups of society, share a common characteristic consisting of the plural processes of Participatory-Research-Action (PAR), with continuous feedback, are open cybernetic processes of second level. These processes have already been through decades of development; among some of their most relevant authors include the pioneer of qualitative methods of social sciences Kurt Lewin (1951) and the Latin-Americans Orlando Fals Borda (1998) and Paulo Freire (1970)

Fals Borda, postulates a method of research-action, the one who'll later be known as participatory action research (PAR). On this type of method, the scientist becomes involved as an agent of the process under study, given that he or she has

adopted a position favorable to determinate alternative. Learning comes not only from observation, but also from the work itself that is executed in collaboration with the people with shared goals. This work incorporates the grassroots groups as active *subjects*, not to be confused with exploitable objects of the investigation, who contribute information and interpretation on equal footing as the external researchers.

Paolo Freire, relies on the theory of critical pedagogy, which questions formal schooling practices, since the docents are limited to transmitting their knowledge to passive students who not only listen to the professor. In Freire's opinion, they should also respond with their own feedback. This process has been used in the alphabetization of older adults in Latin America.

“For the teacher-student, dialogical, problematic, the programming content of education is not a donation or an imposition – a set of reports that must be deposited on the students -, rather, then organized, systematized and increased return to the members of the population of those elements that the educator presented in a non-structured form”.

For the humanist educator or the authentic revolutionary, the incidence of action is the reality that must be transformed by them, along with other people, for which it is necessary to considers, among others:

- The totality of a region or of an area in local communities, in the community development works of community development, with the communities being studied separately, as elements of a larger totality (area, region, etc.), which, at the same time comprises a part of another totality (the country, as a partial component of the continental entirety).
- Researches must analyze what significant number of people contributes to the what, the how, and the form of the investigation being planned and implemented.
- The more people assume an active posture in the thematic and inter thematic research, the deeper their consciousness becomes around reality and the more they appropriate it.

CASE STUDY: A QUALITATIVE TRANSFORMATION PROCESS OF AN ALTERNATIVE EDUCATIONAL SYSTEM

The alternative education application being presented is that of the network or Education Transformation Council (ETC), which became formal in 2013. That same year, the first international meeting took place, with the involvement of senior managements, professors, researchers, students and federal, education, national and local authorities. Around one thousand professors and students from private and public institutions, from different education levels, comprising a third part of Mexican states and about half a dozen of participants from other countries. This heterogeneous group of participants worked on a large variety of innovative educational processes within the formal and informal education system.

The process of alternative educational process of the ETC, is a propositive social response in response to the decay of the Mexican Education System. This education system has deteriorated significantly, particularly over the past year, due to the imposition of a supposed structural education reform. The education reform was set in motion by a reduced group of political decision-makers who took control over the presidential power, with the support of powerful national and transnational corporate

groups. The education reform imposed by the current federal government with hardly any social consensus is oriented toward the economic model of development and to the political control of society.

Given the current situation, it is necessary to radically redesign the organizations and education processes in Mexico, in order to adequate them to the current conditions of the national context in a globalized world, which at the same time encompasses important regional differences. The form of qualitative conscious transformation will hardly be able to achieve in a copular manner, given the impositive bureaucracy of the Mexican education system. The form of making qualitative changes of substance, requires participation of the population as a whole, as clients of the education system, through participative processes of transformation that function under a transdisciplinary form of integral knowledge.

During the process of integral educational transformation taking place through the ETC, the differences and various geocultural regional identities have been taken into account. The alternative educational reform involves a series of laboratories for change across different regions, educational levels and disciplinary subjects. It is a process of unity in diversity that is identifying a great variety of proposals and is linking them in the form of a qualitative ecosystemic process of unity in diversity, toward an integral and sustainable educational quality.

CONCLUSIONS AND QUESTIONS

1. As inhabitants of this planet, we keep facing disconcerting situations in an increasingly turbulent and complex medium, where our understanding seems to be diminishing. The conditions are complicated and will only get worse, unless we dedicate much more energy and imagination to the transdisciplinary design of an alternative education system as a laboratory of qualitative change. It implies a paradigm shift of our form of knowledge, and also the transformation of change processes, from impositive vertical to democratic horizontal processes.
2. The transdisciplinary systemic form of knowledge involves a paradigm shift of great utility for the integral transformation of the education process at all scales and within all spaces, that links different types of knowledge.
3. The participatory action-research grassroots processes are profoundly critical at incorporating in a single integral process the different social actors. This form of participatory action and research deals with a very rich knowledge base, by incorporating sources of information such as researchers, planners and users, all of whom specialize in different forms of practical and academic forms of knowledge and who bring together different conceptions of the world and radically different life experiences.
4. The following questions remain to be solved: How can we resolve the acquisition of new knowledge for use in the resolution of our communal, social, environmental and educational problematic, How do we organize to ensure an acceptable response to the demands for food, dress, homes and health? Should we become producers, exchangers of goods, buyers, etc.? How should we organize our political and economic relationships, so that we generate a participatory direct democracy, with immediate and long-term benefits?

REFERENCES

- Beer S. 1994. *Viable System Model*. Wiley: NY.
- Chardin PT. 1963. *El fenómeno humano*. Taurus: Madrid.
- Checkland P, Sholes J. 1990. *Soft Systems Methodology in Action*. Wiley: NY.
- Fals-Borda O. 1998. *Peoples participation challenges ahead*. TM: Bogotá.
- Flood, R. L., and Jackson, M. C. (1991a). *Creative Problem Solving: Total Systems Intervention*, John Wiley and Sons, Chichester.
- Freire P. 1970. *Pedagogía del oprimido*, Madrid: Tierra Nueva. Siglo Veintiuno Argentina Editores en coedición con Siglo XXI de España. 15 edición española.
- Lewin K. 1951. *Field Theory in Social Science*. Harper & Row: NY.
- Morgan G. 1997. *Imagin.i.zation*. Berret Koheler: San Francisco.
- Morin E. 1999. *El Método: La naturaleza de la naturaleza*. Cátedra: Madrid.
- Nicolescu B. 1996. *La Transdisciplinarietà, Manifiesto*. Multiversidad Mundo Real Edgar Morin, A.C.
- Peon-Escalante I. Aceves FJ. 2005. *An auto-eco-organizational process, using the ecosystemic approach to address complex, and dynamic environmental disasters*. 49 Annual Meeting of the ISSS Cancun, Mexico.
- Peon IE. 1996. *Calidad Integral y Sustentable: la 4a etapa de la calidad*. pp. 63-73, sis-09, SEPI, ESIME Z, IPN, 1996, México.
- Ulrich W. 1983. *Critical Heuristics Social of Planning*. Hauptt: Bern.
- Yoles M. 2002. *A Cybernetic model for Action-Research. Paper submitted for the 2002 ISSS Meeting in Beijing, China*.
- Retrieved from:
http://www.ipcc.ch/publications_and_data/publications_and_data_reports.shtml
<https://www.oecd.org/els/social/indicators/SAG>