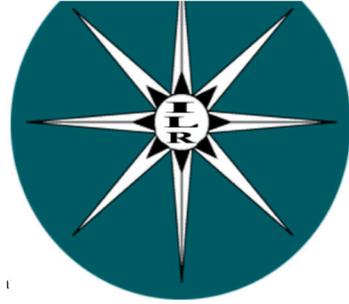


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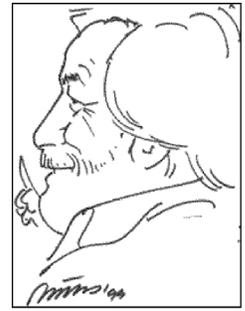


## Transdisciplinarity Learning in Graduate Programs in Mexico and Brazil

Russ Volckmann and Sue McGregor



Transdisciplinarity is being approached in a wide variety of ways in institutions of higher education, some more ambitious than others. These ways range from setting up parallel transdisciplinary research institutes as at Arizona State University, degree programs as at Stellenbosch in South Africa, and transdisciplinary educational efforts such as those presented in this installment of the transdisciplinarity and higher education series.



In this installment we look at three programs, two in Mexico and one in Brazil. The first and second programs are located on opposite coasts in Mexico—Puerto Vallarta and Vera Cruz. Puerto Vallarta has a population of about 200,000 and is on the Pacific Coast. Vera Cruz has about half a million people and is on the Gulf of Mexico. The third program is in São Paulo, Brazil. It is the largest city in Brazil with more than eleven million people and is located on a plateau about forty miles from the Atlantic Ocean.

### Mexico – Universidad Arkos



On Col. Emiliano Zapata in Puerto Vallarta, south of the Cuale River, surrounded by coastal hills on three sides and just a few blocks from the tourist laden beaches of Banderas Bay, sits a three story building. This is University Center Arkos (the Universidad Arkos). It is a small institution, with 400-500 students, and 50 faculty members. It began as an idea for a college in the late 1980s and was founded as a private college about twenty years ago, since no public institution was open to the community by the government. A group of individuals who had been involved in public education started the college. To this day, it is an institution with a social and humanistic view and the fees that the students pay are very low. One of the ways they serve the community is by offering free or low cost services; for example, the law school offers free legal advice to people who can't afford a lawyer.

Having a college community already steeped in a humanistic and social worldview set the stage for moving toward transdisciplinarity. In 2005, Ana Cecilia Espinosa Martinez, and others at the college, began the

process with a series of dialogues focused on the possible creation of transdisciplinary approaches at the college. She had been involved in transdisciplinary studies since 1996 and has attended some international conferences on the subject. She contacted one of the rare researchers doing something practical with transdisciplinarity, who advised her.

Ana worked on building a theoretical model of what a transdisciplinary college would be like. She presented this to the authorities of the school and they agree to move forward. She contacted Pascal Galvani, one of the rare researchers doing something practical with transdisciplinarity, who advised her. She and others helped to organize a series of seminars that involved people from all domains of the college: faculty, staff, students and members of the community. Each had their own set of questions to consider.

This resulted in a project to examine how to transition the college from disciplinary to transdisciplinary approaches. The project involved people from all domains of the college, faculty, students and administrators. Each had their own set of questions to consider. These were facilitated by a series of workshops on research-action that produced several strategies. This resulted in “crossing savoir”: engaging practical knowledge, theoretical knowledge, artistic knowledge, popular knowledge and experiential knowledge. Initially there was resistance. In the beginning of the process people felt resistant. “It is not so easy to stay in front of someone that is opposing your ideas and so a lot of processes of understanding, opening to opening, and developing an attitude of tolerance came on as we were working on the research,” reported Ana.

She continued, “The workshops were very important. They came to learn and understand that resistance is a normal process for people who are challenged with a new way of thinking and a new way of understanding knowledge. In addition to engaging issues of how we deal with complexity—a process in which each of us were learning a lot about ourselves—all were working on problems and issues that were very important to them.”

After a year of these seminars and explorations, they invited people to participate in transdisciplinary research-action projects. This invitation generated about twenty people committed to developing a transdisciplinary approach at the college, including faculty, students and administration, all looking at new ways to approach teaching, learning, and doing research.

They then began another series of research-action workshops on approaches to research that would include practical knowledge, artistic knowledge, popular knowledge and experiential knowledge. They continued to use the term “crossing savoir,” creating knowledge from a variety of approaches and perspectives. These workshops were the foundation for building research strategies.

Another strategy was aimed at reaching everyone in the college: transdisciplinary round tables. They used small groups to dialogue around local and global (social, human, environmental) complex problematics and to generate ideas around research projects. Then they realized that they needed to include the community. They brought people in from many domains: “We had people coming from everywhere. I mean you could see people from different civic organizations. You could see some Huichol indigenous people coming. We had just everyday people that live here. Also we had artists, because the school is very near to a little island that is assumed as a little community place.”

The result was that the program was set up so that students would do theses—all students in the college, individually or in groups. These theses would be transdisciplinary in their approach. Most theses involved going into the community and working with community members on a research project in which people were involved. One student from the indigenous community of Chacala worked with his community. A recent

change in the Mexican population made it possible for indigenous peoples to sell their land to others. Prior to this policy change, everything involved the community. Now, the choices individuals are making have the potential to be at odds with the community's interests. Respecting this new dynamic, he led a project to look at the impact on the environment and on the community of being able to sell land.

Previous to adopting this transdisciplinary approach, the faculty 'did research,' while the students in the college 'learned.' The transdisciplinary approach has changed those traditions; it has breached the traditional roles of students and faculty.

Now, the university hopes to begin post-graduate programs to extend their work. And, they are reaching out to other countries to share their work. For example, Ana has been to Brazil and Costa Rica.

Ana offers insights into what she and others have been learning in developing and implementing a transdisciplinary approach to undergraduate education:

“Transdisciplinary programs challenge the way people think. They challenge the way people act and they challenge people to do something different. This is why some people get worried or decide to stop after they try to go a little deep. Just one course will not make the change; it will take a while to happen. I would say that the process to go into Transdisciplinarity is not an evolutionary process in the sense of a linear accumulative line that goes up. It is a process that is discontinuous. This discontinuous process involves resistance, opening, tolerance, change, and so on. It's not that we have resistance at the beginning and will not have it anymore. No, the people have moments of resistance at several times during the process, but most of all we see changes in people's thinking processes and attitudes toward a more integral and complex view of reality of human praxis in the world and on what a university's purpose is. With this experience we observe that a transdisciplinary and complex approach tends to ecologize savoir and the sense of university education.”

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## Mexico - Universidad Veracruzana



On the opposite, eastern, coast of Mexico is the Gulf of Mexico. That's right, where the huge oil spill is/was. How fitting that a transdisciplinary masters' program in sustainability should be located at one of the 14 campuses of the [Universidad Veracruzana](#). The campus of Xalapa where the master's program has its place is just in the mountain range climbing up from the Gulf of Mexico.

Here, at the Vera Cruz campus of the Universidad Veracruzana, we find a master's program in sustainability (to be discussed shortly). How appropriate in such a setting. Cristina Nunez Madrazo came to the university to teach in the Sociology Department. She is an anthropologist who, despite an intense involvement with transdisciplinarity, sustainability and an abiding interest in knowledge creation and sharing, continues to see herself as an anthropologist. She explains,

Transdisciplinarity is a paradox because it is not really a contradiction from disciplinary work. In this sense I have to say that from my origins in academic work, in my professional work, in my professional being, I'm in touch with transdisciplinarity because I'm an anthropologist interested in political economy and knowledge creation. Transdisciplinarity is an exploration of how knowledge is going on in people, in communities, in societies.

Her interest in transdisciplinarity grew out of her recognition that it is not a new paradigm, but a methodology. It requires a dialogical approach. This means it is not so much about contradiction, but about interaction in knowledge creation. The problems we face in the world, whether related to health, ecology or others, cannot be effectively attended to by disciplinary approaches. They are complex problems and the more we fragment the reality of them, the less the chance we will be able to work with them effectively. She stated, “For me transdisciplinarity is like a lens—like a lens that makes you aware about what you are doing when you are creating knowledge, when you are interacting with reality.”

Regarding the masters degree in sustainability, several years ago, she and a group of individuals from biology, drama and dance began meeting and dialoguing about how knowledge is embodied in ourselves. Cristina said, “We work the soil and our bodies. In this way we are practicing our self knowledge in ourselves and in community through interaction with others. When we work the soil, we are trying to understand the life cycles. We are trying to connect with nature, to reconnect with nature, to re-enchant our relationship with nature, to re-enchant our lives. In this way we began to transcend the fragmentation of subject-object of knowledge.”

In 2004, they began working with, what they called, an *ecopoetical workshop* for personal and community transformation. These workshops were conducted within the academic community and they focused on complexity thinking. Edgar Morin was a major influence on their thinking, for reasons explained below

Alfonso Montouri, a Professor at California Institute of Integral Studies, wrote a [Foreword to Edgar Morin's On Complexity \(2008\)](#). He stated, “We need a kind of thinking that reconnects that which is disjointed and compartmentalized, that respects diversity as it recognizes unity, and that tries to discern interdependencies. We need a radical thinking (which gets to the root of problems), a multidimensional thinking, and an organizational or systemic thinking...” (p.2).

As [Myron] Kofman states in his volume on Morin for the Pluto Press series on Modern European Thinkers, Morin's approach is in harmony with a new culture of uncertainty as instanced in the literary and philosophic writings of Derrida, Levinas, or Deleuze. But unlike his fellow travelers Morin has been alone in daring to attempt a method which connects sciences and philosophy through complexity (Montouri, p.2).

Cristina and her colleagues explored how they might help to generate a more transdisciplinary program at the University. The setting seemed right. The complexity of the challenges facing Mexico, Vera Cruz and other local communities, including the Gulf, called for something different: a transdisciplinary approach. There was a vacuum of the sciences at the University; academic sciences were weak and there was certain openness to the idea of transdisciplinarity. Edgar Morin received in 2004 the Honoris Causa Recognition within the University and the Unesco Cátedra of Morin was very active between some Professors in the University. This enabled the group to move very quickly in proposing a transdisciplinary program. The fact that they were embedded within the Mexican culture helped, in that it is a culture that supports negotiation. They were able to get support from many within the University. The administration authorities of the University were emphatic with the innovative way of seeing science and with the search of new ways for creating sustainable futures.

They took a proposal to the administration of their independent, public university (the state of Vera Cruz) and found support for the innovation. As a result, they created the Center of Dialogue and EcoLiteracy. There they have a master's program in sustainability that is now in its second year with small groups of a dozen students each year. At the university's website, there is mention of a [Maestría en Estudios Transdisciplinarios para la Sostenibilidad](#)

(Transdisciplinary Studies MA in Sustainability). They have students in many disciplines: biology, psychology, communication, sociology, criminology, fine arts and more.

Roughly translated (using the Google translation function), the website clarifies that the main purpose of the transdisciplinary graduate program is to train researchers and professionals to be capable of generating practices, strategies and experiences aimed at creating cross-disciplinary processes of self-organization in social systems (individuals, communities and organizations) and to encourage the generation of alternative development through bonding with Alternative Social Creativity emerging in response to global social crisis. From a new vision of knowledge, the program aims to create knowledge and practice processes arising at the boundaries and disciplinary boundaries to generate a creative dialogue that enriches the performance of researchers and professionals.

There are two stages in the program. The first stage is two semesters, one year, centered in what they call *transdisciplinary re-learning*. As explained at the website, students benefit from experiencing re-learning spaces focused on the experience of paradox, the life of knowledge, playful processes, processes of self, transdisciplinarity and complexity, to name some. They re-learn through action research, deep dialogue workshops, fieldwork and optional supplemental learning experiences.

Cristina continues, “We work in the process of embodied knowledge. We work with all of the issues of Francisco Verela and Humberto Maturana [who created the concept of autopoiesis], knowledge of knowledge, process knowledge, biology of knowledge, biology of life, of law, but, we work with an eco-pedagogical perspective. That means that we work always very near with what our thinking, feeling process is. Thinking is not separated from feeling and feeling is not separated from thinking. Everything is close to nature, to the soil, to Mother Earth.”

In the first stage of the degree program learners work on self-knowledge, as well, drawing on the body practices of Moshe Feldenkrais and George Gurdjieff’s approach to self-knowledge – self-development through body-mind learning. In addition, they work with the students in deep ecology. From a referenced article at Wikipedia, titled *Deep Ecology*, [http://en.wikipedia.org/wiki/Deep\\_ecology](http://en.wikipedia.org/wiki/Deep_ecology),

**Deep ecology** is a contemporary ecological philosophy that claims to recognize the inherent worth of other beings aside from their utility. The philosophy emphasizes the interdependent nature of human and non-human life as well as the importance of the ecosystem and natural processes. It provides a foundation for the environmental, ecology and green movements and has fostered a new system of environmental ethics.

Deep ecology’s core principle is the belief that, like humanity, the living environment as a whole has the same right to live and flourish. Deep ecology describes itself as “deep” because it persists in asking deeper questions concerning “why” and “how” and thus is concerned with the fundamental philosophical questions about the impacts of human life as one part of the ecosphere, rather than with a narrow view of ecology as a branch of biological science, and aims to avoid merely anthropocentric environmentalism, which is concerned with conservation of the environment only for exploitation by and for humans purposes, which excludes the fundamental philosophy of deep ecology. Deep ecology seeks a more holistic view of the world we live in and seeks to apply to life the understanding that separate parts of the ecosystem (including humans) function as a whole.

It is from this philosophical and theoretical foundation that students begin working with action research in

the field, the second stage of their degree. They work with systemic intervention perspectives and with cooperative enquiry with its methodological perspective of the research process with people. In the process of doing research, they first develop their thinking about how they create knowledge within the university and then how they do this in their societies to support sustainability. This process involves reaching out and including stakeholders. The students design their research projects in the first year of the program and conduct their research in the second year. Usually, these are individual projects, but some are collaborative. In either case, instructors expect individual results in order to maintain a rigorous academic process.

Currently, students are working on projects in villages located within the bio-regional Vera Cruz territory. Projects focus on education, health, gender issues and the like. Community members are included in the research process through the use of dialogue and ongoing communication. Students work only in villages where they are welcomed.

The response of the administration of the University to the program has been very positive and supportive. Its continued future prospects are positive.

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### **Brazil - Fundação Getúlio Vargas (FGV)**



We now turn to Brazil. Maria F de Mello is a consultant working on the development of a transdisciplinary Program, *Formação Integrada para a Sustentabilidade* (FIS), coordinated by Mario Monzoni, PhD, and Erica Gallucci. FIS is being implemented at Fundação Getúlio Vargas, São Paulo (FGV-SP) a business school that offers programs in economics, public and private administration, law, social sciences and information technology management. FGV is well known for its academic research. They offer graduate and post-graduate programs at campuses in Rio de Janeiro and São Paulo.



Since February 2010, FIS has been developing an original formative educational model that aims to articulate disciplinary, multi-, inter-, and transdisciplinary approaches and to bring together the concern of companies, researchers and local communities.

FIS is a new elective discipline at FGV-AESP, initiated at the Institution in February 2010, with the intention of exploring epistemic, experiential and imaginative resources and methodologies that could enhance the academic experience in the area of sustainability. It is expected to develop and deliver a service to the school, to enterprises and to society in general as it relates auto-hetero-ecoformative means to foster innovation in education. In this respect, FIS sees itself as a think tank to current management issues that require new configurations and that might help shape the changes demanded in leadership, strategy and sustainability.

Their immediate goal is to create the conditions to undergo a formative integrated process, and not only provide knowledge in capsules. To reach this goal FIS is organized around three axes: 1) “Referência” Project—a project proposed by the client-partners of FIS to respond to a real problem of their enterprise; 2) “Si mesmo” Project—a guided self-reflexive process carried by each student individually and shared collectively in the group; and 3) Field work—a ten day full time immersion, outside the city of São Paulo, where all the students, accompanied by senior coaches, have the most favorable time space conditions to explore both projects in depth.

The ultimate challenge of FIS is to articulate the three proposed axes. For the most part, they are not restricted to providing management knowledge, disciplinary competence and professional success. It is their intent to go beyond these to develop much needed competencies. They do not see their students only as human capital to improve performance—this would be to reduce the scope of integrated education for sustainability. So FIS demands, simultaneously, the articulation of multi-, inter- and transdisciplinarity; conscious recognition and changes of habits that can benefit oneself and one's "ring of power" and range and level of influence; auto-organization; awareness of the cycle of perception-action; and the desire to make a contribution to the emergence of new frontiers of knowledge and practices in doing business.

Presently, FIS is being funded by two banks and a major cosmetics firm in Brazil. They obtained their funding by focusing their research in Amazonia, more specifically in one state, Pará, where Belomonte, the 3<sup>rd</sup> largest hydroelectric power plant in the world, will be built. This is also where agro-forest natural oil extraction has become a central force for economic development and protection of local biodiversity.

Each semester FIS works with a new group of twenty students who come from different courses offered by FGV. Given the complexity of the program, faculty members, presenters from banks, enterprises and the artists meet with the students in order to explore issues of specific domains of interest. For example, one presenter, an anthropologist from Rio de Janeiro, had lived and researched with Indian communities in the Amazonia for twelve years.

The FIS program involves and requires field work. Last semester, "FISers" worked closely with residents in communities that will be impacted by the dam project. For ten days they visited and interviewed 28 stakeholders, in order to collect data for the report to be presented to the Credit Committee of the banks sponsoring FIS. Because the formative educational process of FIS in the first semester achieved excellent results, the program coordinators were asked by Maria Theresa Fleury, PhD, president of FGV, and by Francisco Aranha, PhD, to extend FIS to the first and second semester. This present semester FISers went to the north and northeast of Amazonia to get direct contact with forest extracting communities, companies, associations and cooperatives, connected with the exploration of vegetable oils.

Perhaps one of the most striking facts about the program is that it supports and promotes student experimentation on and in the field. Here are some roughly translated samples.

*On the field work my only wish was to be truly present, to go and see if I could find a space, ideas, things that made sense to me... I decided I would be present with the whole of my self, my qualities, defects, fears, BUT deprived of my preconceptions. This was far from easy. I did not have the FIS program to support me there.*

*Things were different. I was calmer. I stopped worrying about myself. I perceived the problems occupying my time, thinking and planning things would not occur. I stopped assuming, imagining, trying to foresee, suffering in anticipation. It is a difficult exercise, impossible to achieve all the time, but I recommend trying it.*

Another sample:

*I felt great difficulty answering questions such as: How was it like in the forest? What did you do there? Did you like it? What about the Indians? And the plants? Actually it was the*

*most significant experience in my life, and at the same time, I feel it difficult to share everything with words. I do not know how to translate this experience through words.*

Another sample, more specifically on the project:

*Why do some entrepreneurs and the federal government insist on a project that may not be economically viable? Why is the government so keen about it and clashes against from Public Ministry to even the federal constitution? What is there exactly underneath that ground? Very rich ore? How big is the environmental damage hidden in the EIA document (a report that should clarify facts)? What will the size of the socioeconomic loss be for the region and how to structure this area in order to cope with the immensity of the enterprise?*

*A discussion regarding this issue should not deal with 'yes' or 'no', but with 'how' and 'why'. What I know is that nobody stands against energy and the economic growth of the country. I also know that hydroelectric power is a clean source of energy, and Brazil has very favorable conditions for this type of energy resources. But I also know that the project is very aggressive and has a questionable hydroelectric potential. I also know that the Xingu River is a source of income for people in the area and has three times more fish species than the whole Europe. I know a lot of land and part of a city will be flooded. I know it will strongly affect the local economy, generating a high inflow of immigrants and a rapid rising bubble-like cost of living in the existing precarious city structured in a region largely forgotten by government authorities.*

These project has great significance for the people in the areas where they are being developed. This may be one of the key arguments in favor for of the application of transdisciplinary approaches in undergraduate as well as graduate education. It does make a difference. It bridges the gap between sophisticated institutions like colleges, universities. businesses and communities that otherwise might not have the resources to achieve what is planned in these projects.

By doing so, these projects aim at leveling the playing field. They are no panacea. And they continue to draw on the strengths of disciplines in the universities and the society. But they do it with a difference: they articulate and integrate the perspectives and thinking of involved stakeholders using transdisciplinary approaches. This is what is missing in current approaches.

Attention to self and context demonstrates a direct link to integral and integrative approaches to higher education. There is great potential for that relationship to be strengthened further as we develop the capacities to attend not only to individual and collective domains, but to questions of individual and cultural development and differentiations made on the basis of differing streams of development. The successful development of programs such as those described here shows that the systems and institutions of higher education can be leveraged for more holistic and integrated approaches to learning and research. These programs create fields in which science, social sciences, arts and engineering can come together to create deeper and more robust knowledge at the same time.

These transdisciplinary learning projects, then, help to level the playing field. They are no panacea. And, they continue to draw on the strengths of disciplines in the universities and the society. But they do it *with a transdisciplinary difference*: they integrate the perspectives and thinking of stakeholders who are involved with actors from higher education and the private sectors. This is what is missing in more traditional approaches to research, reinforcing the call for transdisciplinary research and scholarship to address the problems of the

world. Programs like these, and others we are identifying in this series provide strong evidence that in many regions of the world the time is ripe for transdisciplinary, full-scale research and learning to inform and guide action in addressing the challenges we have faced in all societies historically and currently. Transdisciplinarity offers a path to full-scale thinking, learning and developing the relationships, structures, technologies and processes for a generative future.

### **University Program Information:**

Universidad Arkos

<http://www.ceuarkos.com/>

<http://www.ceuarkos.com/antologia.html>

Universidad Veracruzana

<http://www.uv.mx/>

<http://www.uv.mx/mets/plantilla/index.html>

<http://www.uv.mx/mets/plan/index.html#p6>

Fundação Getúlio Vargas (FGV)

<http://www.eletivafis.com.br/>

### **About the Authors**

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