

Community Capacity and Resilience in Latin America

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4

BIOCULTURALITY AND TRANSDISCIPLINARITY

Two Paths for Reaching Sustainability Through Community Capacity Building in Mexico

Enrique Hipólito Romero and José-María Ramos-Prado

The place is a space where people live, which also links them to the breath of life. . .
(Bermúdez, Mayorga, Jacanomijoy, Seygundiva, & Fajardo, 2005, p. 30)

As I recall my collected experiences on resource management for rural community development in the Mexican south-southeast, I reflect on the fact that, for decades, I have witnessed the strong and increasing impact of a new resource management approach on tropical ecosystems.¹ In these south-southeast communities, the technical and social alternatives that we put into practice through several community projects as part of the Tropical Forest Action Program (Programa de Acción Forestal Tropical, Asociación Civil or PROAFT AC), drove us from multi- to interdisciplinary, the first steps toward transdisciplinarity without our initial awareness of this shift.

Part One: Facts, Concepts and Preceding Proposals

A first sign, and in turn, a tool for achieving sustainable diversified systems with a transdisciplinary approach—was the design and publishing of a resource management biocultural model (Amo del, Vergara, Ramos, & Porter, 2010) based on reports from the Maya and Totonac. It consists of a conservation-production model to be used outside protected areas. The model assimilates management, preservation and cultural aspects, integrating community participation and promoting local culture. This model of in situ community preservation was represented through concentric circles. The local population is at the center. The second circle is occupied by intensely managed production systems, which would today be referred to as agro-ecological and agroforestry systems, and the third surrounding circle contains less intervened and transformed systems to allow for well-preserved natural ecosystems.

This model assumes that biodiversity preservation also involves the preservation of cultural diversity. Our biocultural model stems from three principles that have been systematically ignored by rural development interventions: 1) communities and the environment must play the lead roles in environmental preservation; 2) it is necessary to retrieve humanism² along with ethics and human values; and 3) people and communities must preserve their identities, traditions and beliefs.

A second step was proposing a tool: productive ecological restoration, or ethno-restoration³ (Amo del, Ramos, & Vergara, 2010), through agroforestry systems, defined by the authors as a slow process that involves the reduction of anthropogenic disruption, the elimination of exotic species, the recovery of soil and water resources, water and soil pollution remediation and the reintroduction of native species. The authors define these species as those that have significance for local populations and refer to them as biocultural species (Amo del, Ramos et al., 2010). Restoration ecology is considered a 21st-century science, just as conservation was considered a 20th-century science. Hence, it is this new scientific orientation that requires an interdisciplinary approach when attempting to understand and apply a holistic process (Covington, Niering, Starkey, & Walker, 1998; Choi, 2007). This proposal of elevating cultural aspects to high priority is necessary in a transdisciplinary approach (Amo del, 2015).

When I started working as a researcher at the University of Veracruz (México) in 2003, the creation of a new working group meant conducting community participatory action-research development programs. The big challenge was to achieve a knowledge dialogue⁴—trying to understand the other: the peasants, their beliefs, their world vision and ways to do things—to share points of view, understand and reflect on the environment and also to share a mutual and hybrid ecoliteracy to construct new knowledge. Our research aims at reintegrating and rooting the human aspect into the biological one. That requires understanding humans as complex natural (both physical and biological) and sociocultural beings (spiritual).

In this chapter, we present the naturally occurring relations among three concepts—bioculturality, transdisciplinarity and sustainability—and their practical counterparts. These concepts are analyzed as three approaches that complement each other in research, as well as in the knowledge construction process. We also present setting up alternatives and solutions to real and complex community problems of natural resource management. From a scientific perspective, these three concepts comprise an integrative research framework (Mittelstrass, 2011) and, from a transdisciplinary perspective, they comprise a body of knowledge that transcends disciplines (Nicolescu, 1996).

Bioculturality as a field of study offers an opportunity for teamwork among peers in at least two knowledge systems under the umbrella of participatory action: scientific and practical knowledge. Bioculturality itself is a field of study contained within a community collectivity, whose actors play a fundamental role and operate on different knowledge, reality and perception levels (Nicolescu, 1996), such as the diverse and interrelated reality levels, the different epistemological bases of disciplinary knowledge, the many interests at stake represented by local scientific and social

actors and the relations between the scales of time and space that interact regardless of hierarchical structures. Transdisciplinarity, in its integrative sense, addresses sets of problems instead of epistemologically demarcated knowledge realms, hence the need of a traditional-knowledge integrative approach that works in a systematic manner (Aronson, 2003). Bioculturality is a dynamic process that is constantly restarted, re-creating itself at every turn for every individual and each society. It owes its survival to this attribute and explains why indigenous peoples have stood the test of time and preserved much of their traditional knowledge. This phenomenon appears most clearly through the presence of what Amo del (2011) has called living cultural nuclei (the grandfathers and grandmothers) and has been experienced through endogenous alternative projects, carried out by communities that act as independent information interchange and dissemination cells. The biocultural approach makes way for advancement in the sense of recognizing other kinds of knowledge, realities, perceptions and, most importantly, other natural resource management and organization logics.

The following four figures bring together four elements describing the process of disintegration of the social fabric in communities and a possible reconstruction process proposed by Amo del (2011). Figure 4.1 shows the current disintegration process of communities in a very practical and schematic form. It shows how, in spite of the siege they have been subject to, small living groups represented by the elders of the communities have preserved traditional management practices, traditions and customs through resistance. In the context of a new rurality, and as a consequence of the disintegration of communities, new fabrics are created with non-community objectives.

In Figure 4.2, we propose the development of new endogenous development projects in small groups that stem from the living nuclei, which are information interchange and dissemination cells. This diagram underscores the role of time in the development of traditional management practices, which are represented by a

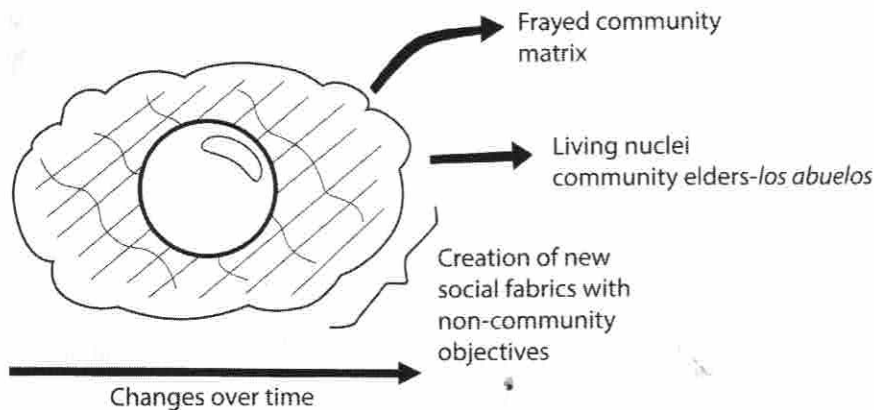


FIGURE 4.1 Current Situation of Communities

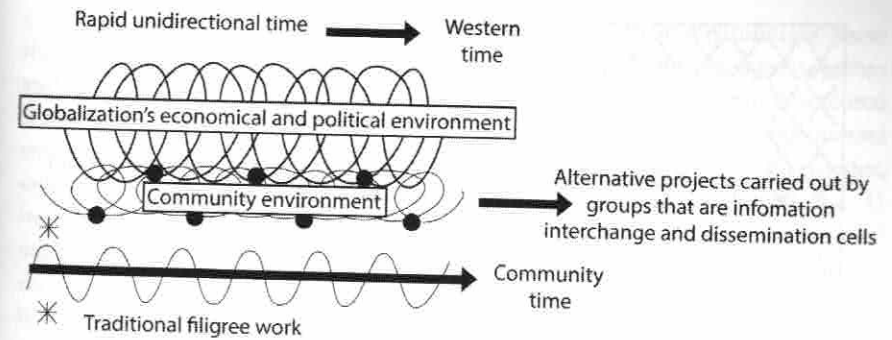


FIGURE 4.2 Development of Alternative Endogenous Projects

Development of self-management and control of social processes capabilities

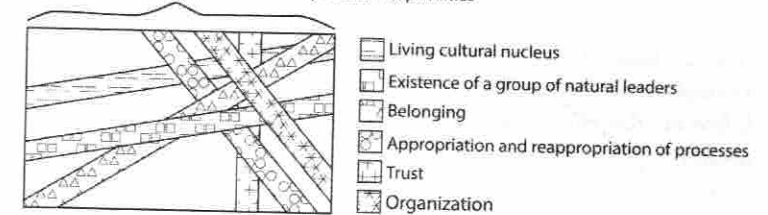


FIGURE 4.3 Diagram Showing Reconstruction of Social Fabric

filigree pattern. These practices advance riding a horse between two worlds: the globalized one and the local environment.

Figure 4.3 represents the reconstruction of the warp. These small groups of elders are experts in weaving social fabric, just as they weave their fascinating traditional handcrafts. In this case, the threads that represent a sense of belonging and confidence provide support and act as binders.

Once the social fabric is reconstructed, the last link of this chain is represented in Figure 4.4. In this diagram, the reconstruction of knowledge and dialogue is embedded in a matrix resulting from altered and overexploited areas, which can be saved through a dialogic attitude of mutual re-valuation and recognition.

Transdisciplinarity represents an aspiration for as comprehensive knowledge as possible within a space for reflection, allowing for dialogue among the diversity of human traditional knowledge (Amo del, 2015). Bioculturality turns out to be, at the same time, a field of study or scenario and prime material for developing transdisciplinary theory and practice, considering also, as Nicolescu (1996) points out, that interdisciplinarity, pluridisciplinarity and transdisciplinarity are all cut from the same cloth, so that in the wider field of bioculturality, all of them should be present for full understanding. As far as biocultural resources are concerned, transdisciplinarity is a fundamental element for the restoration and conservation of natural resources. Transdisciplinarity focused bioculturality offers a chance to construct or

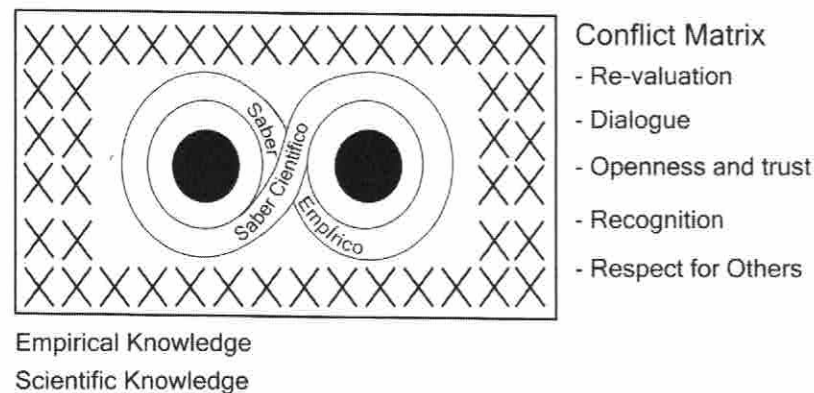


FIGURE 4.4 Relationship Between Empirical (Local) and Scientific Knowledge and Dialogue

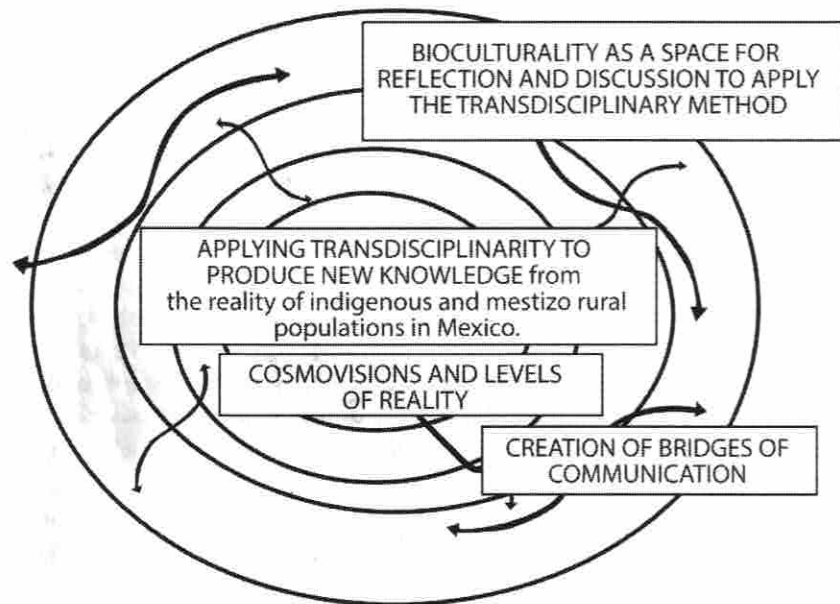


FIGURE 4.5 Diagram Showing Relationship Between Bioculturality and the Transdisciplinary Method

retrieve many sets of elements that, in turn, allow us to set down the basis for sustainability (see Figure 4.5).

In Figure 4.5, we observe the bioculturality and transdisciplinarity relationship and the way in which bridges can be built to facilitate this relationship, with bioculturality being an area for reflection or an arena for discussion and transdisciplinarity being the approach to co-produce knowledge emerging from the reality of indigenous and mestizo rural populations in Mexico. In other words, the why's and how's.

The strong links between indigenous peoples and their environment show that biological and cultural resources must be preserved and managed together and simultaneously. In this sense, indigenous peoples recognize these biocultural resources as interdependent displays of Earth's life diversity, and the fundamental reasons to understand "bioculturality" emanate from their traditional knowledge, customs and practices. Among other considerations, we should highlight that: 1) indigenous peoples acknowledge bioculturality as a unit; 2) indigenous peoples' value systems are collective, based on a sense of guardianship instead of ownership (Bermúdez et al., 2005; Argumedo, 2000); 3) bioculturality fosters a dialogue between nature and culture that makes possible a coevolution process and thus reconciles both ways to see the world—the non-indigenous and the indigenous-peasant perspectives; and 4) biocultural assets make up another aspect of sustainability. Bioculturality understands spirituality as an expression of the relationship between human beings and nature and as an awareness of the need to safeguard and reciprocate this relationship (Amo del, 2015).

Bioculturality involves a new/ancient way to conceive reality, to understand the interdependence between humans and nature through the eyes of the other (i.e., indigenous groups). A constant epistemological knowledge is derived from bioculturality as well as transdisciplinarity. Mexican ethnic groups hold a persistent notion of complex knowledge, which comprehends a sacred notion of reality and vision of life (Toledo, 2003).

Figure 4.6 indicates the position or attitude required to learn from the other in order to collaboratively develop or co-create new knowledge. There is an ethical code based on rigor, tolerance and openness, the three principles of transdisciplinarity (Nicolescu, 1996), to which the three premises of the indigenous cosmivision

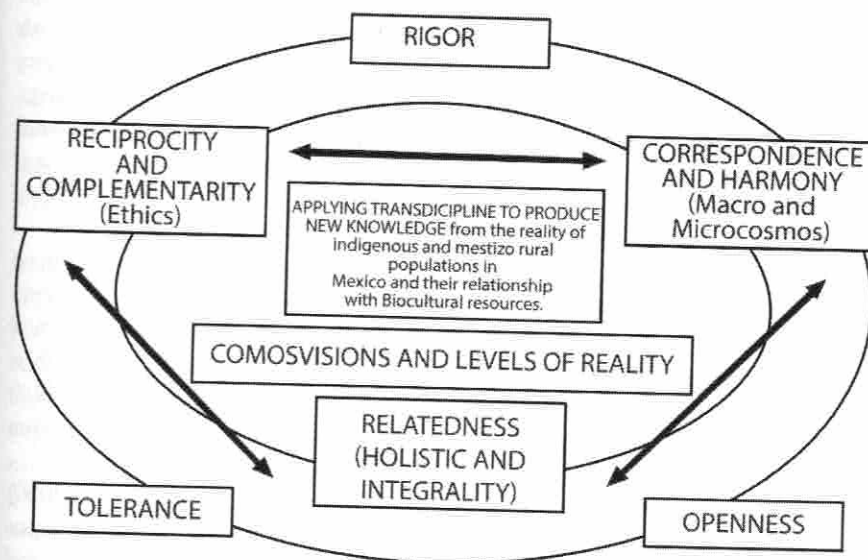


FIGURE 4.6 Three Principles of Transdisciplinarity and Relationship With Indigenous Cosmivision

proposed by Bermúdez et al. (2005) apply as lines of action (i.e., complementarity and reciprocity, correspondence and harmony between the macro- and the micro-universe and a relatedness to the holistic and comprehensive approach). This implies recognizing different levels of reality.

Quiroga (2003), an economist who builds on Constanza (1991), elaborates on sustainability, acknowledging the ecological limits for economic growth by bringing culture and the social dimension to the discussion table. He asserts that it is necessary to construct transdisciplinarity based on a socioecological economy. His proposal is very simple: if we are to achieve sustainability, the human economy must only use the renewable quota of natural resources in order for this heritage to be preserved as a source of wealth for future generations. If we start from the concept of resilience, as the ecosystem's capacity (in a concrete time and space) to absorb waste (from human economic activity) and replace the consumables taken (by human economy), we can construct a concept of sustainability in accord with the conceptual framework of a socioecological economy.

Cultural capital refers to the factors that provide societies with the means and adaptations necessary to adjust to the natural environment and actively modify it: how people see the world or the universe, or cosmology, according to Skolimowski (1981); environmental philosophy and ethics, including religion (Leopold, 1949; Naess, 1989); traditional ecological knowledge (Johannes, 1989); and social and political institutions (Ostrom, 1990)—all of these factors are taken from Gadgil, Berkes, and Folke (1993). In this context, cultural capital includes the wide range of ways in which societies interact with their environment, including cultural diversity (Gadgil, 1987).

A vast amount of information about traditional ecological knowledge has been obtained in recent years from sundry groups. Some examples are the Native American subarctic hunters, the fishermen of the Pacific Islands, Scandinavian shepherds and Amazonian horticulturists, whose adaptations and knowledge go back many generations and have helped several groups to survive in the long term. These adaptations constitute a reservoir of human knowledge which could guide us toward a sustainable society. Gadgil (1987) observed that human cultural diversity and biological diversity go hand in hand in terms of the requirements for long-term sustainability.

Another sustainability-related topic is the effect of globalization. From a social point of view, globalization is the other side of job security and the forced acceptance of new trends of labor flexibility and diversification. From an environmental perspective, globalization intensifies the expansionist drive of economy, which is entirely sustained by ecosystems. Moreover, in Latin American countries—which are primary goods exporters—extraction activities as an economic growth engine are escalating.

Globalization has also been a factor closely related to crisis. Quiroga (2000) defines it as the international megatrend where most countries turn over major decisions to international economic actors in commerce, services, finance and infrastructure investment. This model had its boom for two or three decades and

then started crumbling after the wearing out of the Latin American import substitution development model and the Keynesian welfare state in developed countries, mainly due to the decline in oil prices in the 1980s. We now face another crisis due to the volatility of oil prices, with consequences yet unseen.

In order to face a new situation marked by the increasing degree of social and ecological deterioration, we need to start thinking differently and begin to understand, adopt and adapt new, optimal practice principles to different environments and various cultural and social scenarios—but not to economic ones. In other words, when facing multiple problems, we must diversify our actions (Amo del, 2012). At the core of this perspective, which entails sustainable policies and lifestyles, is that we human beings need to learn how to live off what is produced by our natural heritage—which is comparable to a great biosphere bank—in order for us to assure a permanent support for economic production.

The Loss of Paradise

Policies of productivity and homogeneity have caused, not only a decrease in the number of harvested species and the loss of agrodiversity but also an over-exploitation and the underutilization of available and potential wild resources, thus decreasing biodiversity. In the first case, species with different roles in the structure and functioning of agroforestry systems are excluded from diversified production practices. Agroforestry systems as production units are left without resilient management practices, and the best native plants and creole varieties are not selected. Due to the decrease of plant life caused by deforestation, the chances for restoration and productive preservation in these systems have been eliminated, along with future alternatives and potentials. Good examples of this lost paradise are two biocultural species par excellence: cocoa and vanilla. They both share the same history of splendor and misery: they were offered by Mesoamerica to the joy of the world and today, instead of helping peoples and communities to thrive, they are matters of sorrow and poverty. One of the reasons for this misfortune is the loss of ancient cultures way of cultivation, along with their customs, traditions and myths.

Since the late 20th century there have been voices worldwide within traditional cultures positing what technological progress has not provided (Toledo, 2001; Gómez-Pompa, 1991; Gómez-Pompa & Kaus, 1992; Berkes, Colding, and Folke (2000). These studies of ecological culture (Granados, 2010; Stora, 1994) and sacred ecology (Berkes et al., 2000; Toledo, 2003) are examples of published works about the necessity of relating social and ecological systems as landscapes of the best expression of the nature-society relationship. In the present scenario of social and ecological deterioration, these landscapes can be useful for recovering historical memory as an indicator of change, pointing out, for example erroneous government policies. At the same time, these landscapes are an essential element for recovering Mesoamerican indigenous wisdom and as the basis for ecological restoration through this bioculture binomial.

Hypothesis for Construction

Humans have always learned through imitation—hence the process of community-learning by imitation and participatory action-research we detail here. The involved actors must pay attention and learn by doing from ancestral indigenous peoples and their descendants, making use of their symbols and experiences in a process of continuous experimentation. This is a fundamental tool for researchers or technicians to become co-learners and in this case co-apprentices of local participants. This is the way to commence social and biological processes, which may lead us toward diverse local sustainable societies (Quiroga, 2003).

Two of the great challenges faced are ecological restoration and cultural and social restoration. We are in serious need of a renaissance, a rebirth of wisdom, which must be understood as existential insight. Now that is absent, just as the adoption of certain ancient practices related to nature is lacking in both rural and urban societies.

The Instruments: The Relationship Between Landscape and Memory

Landscapes are a product of human intervention. From a descriptive point of view, landscapes portray the myriad relationships between individuals and society and the defined topographic space whose appearance is the result of natural and human factors and the relationships between such factors over time. These human interventions implicitly speak to us of the cultural aspects of resource management and the reproduction practices of these aspects. Consequently, these activities draw and define for us the relationships between humans and nature that characterize rural areas and the long history of government policies on the landscape.

The cultural landscape constitutes the historical memory of peoples: the cultural landscape they used to have, the one they are destroying and the one they yearn for. Today, this landscape is fundamental for the task of reconstruction, ecological restoration, the recovery of customs and traditions, and for the recovery of humanity, sociability and solidarity among human groups and between them and nature. The memory of the landscapes is the highest expression and an effective tool to rethink the past, re-acknowledge the present and try to plan the future—and to evaluate the morale of a community, which is a cornerstone for taking on an alternative path (old/new way) that leads us toward sustainability, social and ecological resilience, the recovery of culture and the construction (i.e., understanding) of local capacities (Amo del, 2011).

Participatory action-research (Merçon, Alatorre, García, & Núñez, 2014) and knowledge dialogue (Bermúdez et al., 2005) are key instruments in this understanding. Figure 4.7 synthesizes how we produce new knowledge using three tools—knowledge dialogue, participatory action research and eco-literacy—in the co-design of the productive ecological restoration. All this promotes new value systems that root human beings in nature. Initially this rooting involves the use of

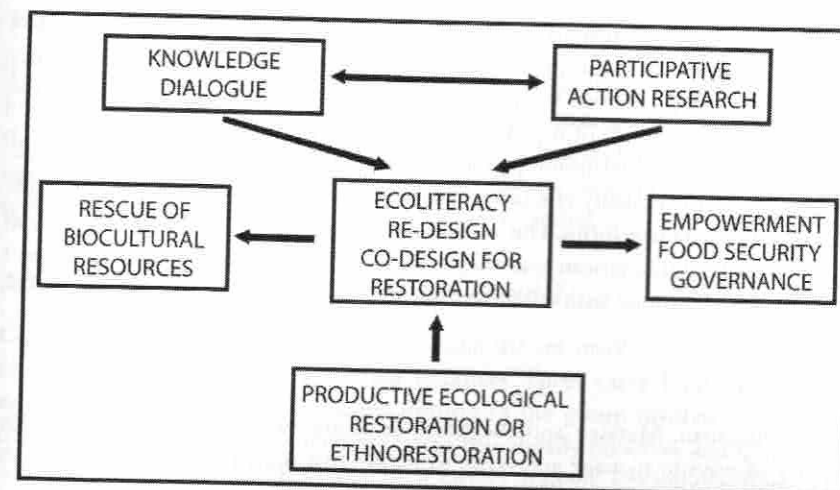


FIGURE 4.7 Bioculturality as a Space for Reflection and Production of New Knowledge

biocultural resources and then empowers local groups through food security and functional governance.

Part Two: A Biocultural Resources Perspective

I have chosen to represent the remainder of this paper through a theatrical play titled, “Is bioculturality the ideal space to do transdisciplinary actions and achieve sustainability? A biocultural resources perspective.” Due to its symbolic nature, the play lines up with indigenous groups’ representations of life as an attempt to understand the other and the various indigenous realities (Bermúdez et al., 2005), as well as transdisciplinarity reality levels (Nicolescu, 1996). These are not conceptual representations but symbolic ones. This play is the representation of a ritual. Each Act is a way to teach us what is to be achieved. Such teachings stem from this ritual and at the end of the play there is a celebration with two endings. At the same time, it is an experiential expression because indigenous folk do not think reality but rather feel it (Bermúdez et al., 2005). The play is thus made up of 12 Acts, or 12 ways to approach the problem, 12 lessons accompanied by some examples that synthesize the play’s scenes.

Act 1: Multiculturality and Pluri-ethnicity

The Mexican philosopher, Luis Villoro Toranzo (1922–2014), maps out the path from another perspective. His legacy consists of a series of reminders which we should unhesitatingly translate into everyday practice: 1) cultural differences are capable of transforming the tyrannical reality of our country; 2) it is essential to take

on a disruptive attitude toward the oppressive power; 3) reflexive and deliberative processes are crucial for the recovery, reorder and restoration of man and nature and the relationship between them; and 4) the multiplicity of cultures matches the multiplicity of livelihoods of human groups.

In the interest of this relationship proposal, bioculturality, transdisciplinarity and sustainability entail the plurality of relationships with nature that, in turn, generate a multiplicity of management forms. This is expressed throughout the Mexican territory as well as in other Latin American countries by different ways of using natural resources—for example, in harmony with natural resources to avoid their overexploitation.

The Lesson

The Totonacapan, Mazatec and the Maya areas are two living examples of this diversity of ways to manage and relate to nature that must be revived if we are to consider a possible future.

Act 2: Re-connecting With Nature

In our play, we deem biocultural resources as the essential elements to reorder the territories embedded within the new rural context. This is followed by an ethno-restoration or productive ecological restoration that roots the human to the earth. This promising activity will lead to a flourishing—which is not further explored in this paper—of what Villoro (1996) called indigenous communitarianism.

Humans, as described by Edgar Morín (Solana Ruiz, 1995) in his study on complexity, are biocultural beings because both the biological and the cultural elements that constitute them are mutually co-produced and coevolved. The biocultural process is constantly renewing itself, remaking itself at every moment, for every individual and for each society. This co-production has not been used advantageously—in other words, to use as an opportunity to restart and reestablish man's harmonic link to nature.

The Lesson

We need to rethink ourselves as a pluri-ethnic and multicultural country. These two features, which make up bioculturality, are our true heritage, our life insurance and our investment for a possible future.

Act 3: What are Biocultural Resources?

Delving into bioculturality means establishing a practical epistemological, conceptual definition of biocultural resources (Amo del, 2012). These biocultural resources are associated with ethnoecological-restoration, a term coined by Amo del, Ramos et al. (2010) and based on the recovery of native species with ancestral and local value for the populations involved—biocultural species.

The Lesson

The biocultural perspective, due to its local nature, emerges as key for biocultural heritage recovery practices. More specifically, a biocultural perspective emerges through reordering and restoration activities, including making use of agroforestry systems and applying biocultural species as a basic recovery, preservation and protection tool. It is also a feasible path toward sustainability.

Act 4: What Do Biocultural Resources Provide?

Conservation and management of biocultural species involve the implicit recognition of the existence of biocultural resources. These carry local and ancestral significance related to the distinctive features of the group involved, the ecosystems it belongs to and the biocultural being that already preserves and keeps them. This acknowledgement makes biocultural species strategic, not only for integration between man and nature but also to tackle the 21st century's great challenge of ecological restoration (Amo del, 2015).

The Lesson

Achieving biocultural species conservation is based largely on reflecting on the past and visualizing what, for years, we have insisted on hiding. As a culture, we have very little capacity for reflection due to the negative impact of Western culture over the last millennia. As a consequence, we are not very eager to reflect and take on a new perspective of the past.

Act 5: Other More Significant Approaches

Culturally significant biocultural species possess several benefits for deforested and highly fragmented areas. Bringing them to life in the restoration process will allow us to: 1) facilitate the recovery and restoration of the species themselves; 2) gather and represent natural and cultural heritages simultaneously; 3) facilitate the conservation of the land; 4) place them centrally in social fabric recovery; and 5) foster the retrieval of traditional knowledge, as well as resource management practices for wild and cultivated resources (Amo del, Hipólito, & Ramos, 2014).

The Lesson

To facilitate the use of biocultural species (transcending biocultural memory as pure nostalgia), giving them life and a role in the preservation, maintenance, restoration and reconstruction of nature—and into the social fabric, valuing and making room for the many production units that were used and are still used by today's Maya and Totonac—even if only to a small extent—and other indigenous groups. To paraphrase Villoro (1996), it would be to release and to reproduce ancient forms drastically and violently (Amo del et al., 2014).

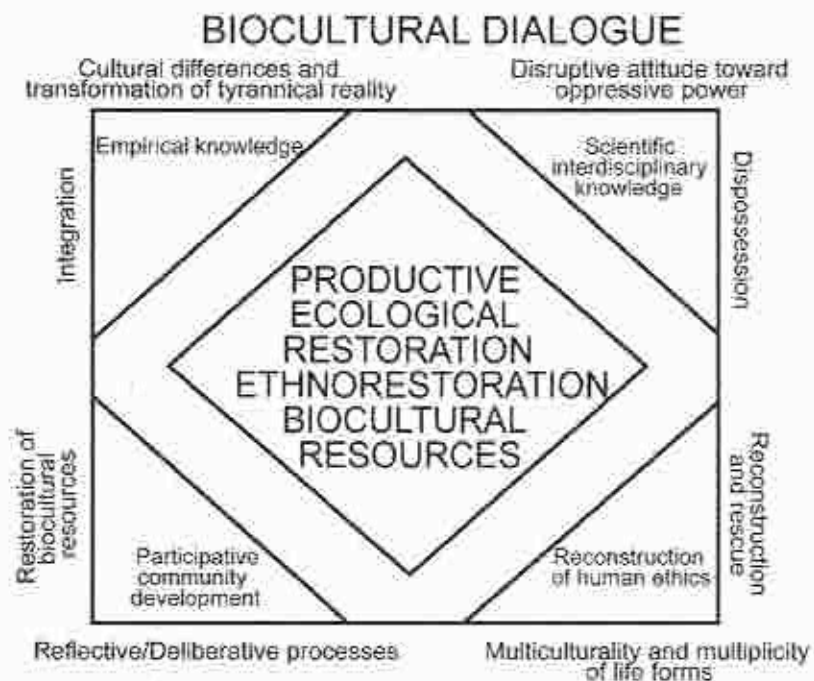


FIGURE 4.8 Diagram Showing the Essential Element for Biocultural Dialogue

Act 6: On the Role of Dialogue

Modernity is characterized by the prevalence of instrumental rationality over dialogic rationality. This is one of the most evident reasons for the paradox of a pluri-ethnic and multicultural country such as Mexico. The great challenge is to achieve dialogue, and from there two questions emerge: 1) How is this dialogue established? and 2) Who are the interlocutors and what is their purpose? Or as Hersch (2011) surmises, the knowledge-dialogue questions are: What is it for? Who is it for?

The Lesson

Defined through Bohm and Nichol (2001), dialogue blends minds to create new meanings that continuously flow and evolve, taking us to deeper levels of comprehension. Hence, creating new kind of minds and learning processes, which increases communitarian intelligence.

Act 7: Traditional Knowledge, Dialogue and Their Contributions

Local traditional knowledge has been understood as shared practical representations, informally produced and rooted in distinct and circumscribed traditions and territories, which have been constructed from the local biocultural diversity. This

traditional knowledge is deeply rooted in realities frequently denied by the dominant epistemological perspective, as there is a great distance between the population sectors that have generated it and the political and economic powers and the hegemonic culture.

Knowledge dialogue aims at surpassing the epistemological exclusion and optimizing the diversities at stake. It does not consist of a mere interculturality exercise devoid of social and political contexts. Since, for Bonfil (1987), eliminating inequality is a condition for diversity to thrive, it is even more fundamental for the development of knowledge dialogue, since, in adequate conditions today, it can also contribute to local processes directed at affecting concrete inequality scenarios.

The Lesson

Traditional resource management systems and knowledge are intrinsically linked to biocultural values within different social groups. Although directed primary to production, they preserve nature dynamics and promote community self-management capabilities ().

Act 8: The Proposed Trilogy and Its Relation to Complexity

Bioculturality, seen as a combination of transdisciplinarity (Nicolescu, 1996) and Morin's biocultural approach (Solana Ruiz, 1995), entails a 100% biological and 100% cultural human being, including self-eco-organization. This is the reason that bioculturality creates fertile ground for working trans-disciplinarily with indigenous peoples in the context of sustainability. Moreover, bioculturality entails a certain degree of complexity as it merges two realities from different origins. In addition, bioculturality entails a different knowledge system; the empirical⁵ one, which has not been validated by traditional science but certainly provides a traditional knowledge and lessons that can be of great use for natural resources management challenges.

At its core, the term transdisciplinarity is defined as a process of knowledge construction through constant, multiple and fertile theoretical-empirical works open to heterogenizing trends that may be contrary to any reality. Complexity emerges through the advancement of scientific knowledge advancement in different research areas, which is made possible by understanding the world as an intertwined system. Entering into the philosophical sphere of discussion, a complex cosmovision explains instability as a property of nature, and the reconstruction of our relationships with it is accentuated, as it happens, for example, in deep ecology. This type of philosophical-cosmovisional elaboration relates scientific studies to everyday life (i.e., with an explanation of the world as a system with complex properties and gives rise to ways of rebuilding our relationships with it).

Sustainability, according to Quiroga (2003), entails a redistribution of natural heritage and the planetary ecological burden, both in regard to matter extraction

and energy production as well as waste production, that are currently disproportionate. It involves reconstructing lifestyles, and thus, development of alternative lifestyles—in other words, we need to learn how to manage sustainably our energetic, material, social and cultural resources.

The Lesson

Approaching bioculturality through the methodology of transdisciplinarity requires assigning (in practice) a fundamental role to biocultural species. This may be beyond memory and allows for local formulas of species assemblages with local value as a way to establish, for example, agroforestry systems as fundamental instruments for productive ecological restoration (Amo del, 2015; Amo del et al., 2014) and, thus, a route to achieve sustainability. Hence, the sustainability of any human activity would be a work hypothesis, determined by the relationship between the dynamics of economic growth (which uses energy and produces waste) and resilience. When economic expansion exceeds the ecosystem's resilience or, alternatively, when the resource extraction and waste production cycle exceed the replenishment rhythm of the ecosystems involved, environmental deterioration follows and the sustainability of the process is jeopardized (Quiroga, 2003).

Act 9: On Bioculturality

This approach to bioculturality emerges from many Latin American countries and differs from Western thought in two fundamental aspects: concepts of common good and property. For indigenous peoples, natural resources are inalienable. Therefore, these people do not possess or own the resources, since knowledge and the appreciation of natural resources (capital or natural heritage) is passed from generation to generation as a collective patrimony that encompasses not only natural resources but also beliefs, values, knowledge and practices. Bioculturality has historical, ethnic, social, territorial and ecological roots. The concept comprises specific relationships with the territory, the landscape and the ways to govern it. In other words, natural resource management strategies are deeply rooted in the nature-society interaction. When I write about management, I am referring to the management of diversity and spaces in a complementary, harmonic and retributive way, as carried out by different ethnic groups around the world (Bermúdez et al., 2005) and not a monospecific production imposed by the West (Amo del, 2015).

Bioculturality requires understanding and appreciating heterogeneous landscapes, as opposed to having a globalized world vision (the Western vision) where landscapes, ecosystems and environments are considered homogeneous and are treated as such. This bioculture binomial is expressed in different ways—depending on the specificity of its context—all of which are valuable, unique, irrepeatable and irreplaceable as they include an amalgam of knowledge, values, traditions, customs and particular ways of thinking inherent to this man-nature relationship.

The Lesson

Bioculturality is emerging as a key element for the future management of resources and landscapes in countries housing collective pluri-ethnic and multicultural societies, like Mexico. Villoro (2011), elaborating on pluriculturality, states that the 21st century has been the scenario of the decomposition of modern thinking, including the perception of the holistic signs of what could be new ways of thinking. Instead of subordinating the plurality of indigenous cultures to a single and primitive manifestation of reason, we must understand that they mean a reason to establish cooperative ways of harnessing the multiplicity of cultures, which has been ignored not only in Mexico but elsewhere in the tropical cultures.

Act 10: On Complexity and Its Method

Complex thought is a new method based on ideas emanating from science in conjunction with humanist, political, social and philosophical thoughts. Complex thought is inclusive for all those interested in developing a complex method of thinking about the human experience, while realizing the mystery that lies behind philosophy, science and religion. This thought encompasses the human enterprise in its open adventure toward our self-discovery and the discovery of limits and potentials.

When we start to understand the physical, biological and cultural world we live in, we discover and rely on ourselves. The world will only move in an ethical direction if we are willing to move it in such direction. It is our responsibility, and our destiny is at stake. Complex thinking is an adventure, but it is also a challenge.

Figure 4.8 shows the complexity involved in this new thinking; namely, the biocultural dialogue that results from a focus on ethnoecology and biocultural species. From left to right, from bottom to top and from the inside to the outside, several positive and negative relationships can be seen. In the four corners, the cultural contributions of Villoro (2011), namely reflexive-deliberative processes, cultural differences and a transformation of the tyrannical reality, a disruptive attitude toward oppressive power and the multiculturalism/multiplication of life forms. Further embedded, we see the four key factors to promote change, including participatory community development, use of empirical knowledge, interdisciplinary scientific knowledge and the reconstruction or rescue of human ethics.

Berkes (2009) talks about the paradox of traditional knowledge, recognizing the discussion lies in the way we return to traditional knowledge, either as content or as a process, and the way we use it as supplementary information in solving problems. Some authors consider the issue of co-production of knowledge (Boegoe, 2008; Haverkort, Vent, & Himestra, 2003; Rist, 2002). A critical step is the selection and study of meanings, contributions and lessons of traditional ecological knowledge. Berkes (2009) notes that actions must be based on traditional knowledge and values, or at least in the revival of these values and related understanding, in order for dialogue to flow.

We now know that the study of any aspect of the human experience must necessarily be multifaceted and, thus, through it we increasingly see how humans cannot exist without family, social interactions and ethnic and racial traditions. There are only minds incarnated in bodies and cultures, and the physical world is always experienced and understood by biological and cultural beings. Paradoxically, as we come to understand this, we can experience limited sectors of knowledge and succumb to the temptation of reductionist thinking, or a discourse of pseudo-complexity understood as ethical neutrality. Complexity involves a certain degree of uncertainty, be it on the fringes of our understanding or embedded in phenomena. Yet, complexity cannot be reduced to uncertainty. Complexity is, thus, bound to a certain mixture of order and disorder—an intimate mixture—as opposed to statistical order/disorder, where order (which is poor and static) prevails in large populations, and disorder (which is poor by sheer indeterminacy) prevails at the elementary unit level.

Solana Ruiz (1995) explains that Morin's contributions are the method. This new method, arising from the world's complexity, emanates from a comprehensive and universal point of view, which comprises science combined with political, social and philosophical thought. Solana Ruiz (1995) further presents Morin's definition of this new method of thought, which serves to understand nature and society, to reorganize human life and to search for solutions to contemporary human crises. The challenge of complexity resides precisely in the recognition of the networks and grids of relationships and the human impossibility to explore each and all of them in a lifetime (Amo del, 2015).

The Lesson

Quiroga (2000, 2003) sets forth the term sustainable societies instead of sustainable development, with the enormous advantage of its respect for natural and cultural diversity, hence its complexity. His argument is very simple and commonsensical. He points out that in order to sustain everything human on our fragile living planet, first it is necessary to love it, and for every individual to be willing to be a channel for vital energies, so that we manage to modify our ways of living to be congruent with a greater awareness toward nature. For Quiroga (2000, 2003), the idea of redistribution shifts radically from redistributing wealth to redistributing natural heritage. Whereas developed countries have looked after their primary production and rural development, even offering support prices to their producers, in Latin American countries this has not happened—instead, international agencies have implemented policies aimed at the disappearance of the producers, thus making countries dependent.

Act 11: On Transdisciplinarity

Transdisciplinarity, by being distinct from disciplinary knowledge, reunites individuals with the knowledge they generate. Up to this point, the way to explain our

world—supposedly orderly and withdrawn from chaos—is fragmented, falling on deaf ears among participants of different disciplines (i.e., indigenous), each one with different methods and languages. It is obvious that the role of disciplines has been to limit and separate. The step toward interdisciplinarity implies an enormous leap to the sharing and transferring of methodologies, but non-scientific knowledge is left out. Transdisciplinarity respects and includes multiple forms of knowledge and seeks dialogue with these forms of knowledge. This inclusion gives way to the linkage between bioculturality, complexity, transdisciplinarity and sustainability (Amo del, 2015).

At the crossroads of bioculturality and transdisciplinarity and their application, we must consider three variations or variables: the cognitive, the collaborative and the educational. Although all variables are important, in the case of bioculturality, collaboration is the most urgent to address. This emphasis leads us to a new connotation within transdisciplinarity: the focus on trans-sectorial problem solving. The emphasis is oriented by the way in which problems and solutions are perceived. Collaboration is related to orientation with certain situations and social problems difficult to address—for instance, the biocultural resource management issue for ecological restoration and the basis for regional sustainability.

The Lesson

Bioculturality not only comprises the union of various concepts but also involves the organic union of two heritages: the natural and the cultural. This binomial is expressed in different ways according to the specificity of its context, which are all valuable, unique, unrepeatable and irreplaceable as they include an amalgam of knowledge, values, traditions, customs and particular ways of thinking inherent to this man-nature relationship within a given space or territory. Bioculturality is emerging as a key element for the future management of resources and landscapes in countries housing collective pluri-ethnic and multicultural societies, such as Mexico.

Act 12: Sustainability

In order to establish a representative definition of sustainability, we propose an investigation of current conditions of the economic aspects of globalization. Berkes and Folke (1994) place social capital next to natural capital in importance to achieve sustainable development through a systemic perspective, giving up the use of terms like “quality of life” and favoring “well-being” or “good living” instead. The study of complexity has also impacted the more direct spheres of human interaction: education, interpretation of society, politics and the understanding of humanity's present times. The issue of complexity has come to be the issue of life and living, the problem of building the future and the search for solutions to contemporary problems.

The Lesson

Historically, the landscapes of the world can be seen as shaped by a dynamic mosaic fabric of co-evolving social and ecological system, with each part of the tapestry co-evolving within processes specific to local culture, knowledge, technology and social organization (Norgaard, 1994). The human subsystems chooses those species that fulfill its needs, and it itself evolves under the selective pressure of the necessity of sustainably using natural capital; we must learn how to carry out sustainable management of our energy and material prospects, which are appropriate for the often frail, biotic cycles.

Final Thoughts on the Philosophical-Political Component: Toward a Different World Order

In Villoro's (2009) remarkable essay "Tres retos de la sociedad porvenir: Justicia, Democracia, Pluralidad" ("Three challenges for the upcoming society: Justice, Democracy, Plurality"), he points out that in order to face the evils of capitalism, we should walk toward a different world order—a plural one which addresses the multiplicity of cultures and landscapes. So too, we must fight against the alienation of unchosen lifestyles and selfish individualism, giving the primacy to the common good and the plurality of lifestyles.

The idea of complementarity from the indigenous' cosmovision and complementarity in transdisciplinarity becomes evident in Nicolescu's (2013, p. 20) work:

If multidisciplinary and interdisciplinarity reinforce the dialogue between the two artificially antagonistic cultures, transdisciplinarity permits us to envisage the reconciliation of the two artificially antagonistic cultures—the scientific culture and the humanist culture—by virtue of their overlapping within the open unity of cosmodern culture.

Novo (2006) also speaks of a new way of seeing that is a fundamental idea to this proposal, and it anticipates a new, open rationality through a new perspective on reality and the notions of "definition" and "objectivity." Excessive formality, rigid definitions and absolute objectivity, which entail the subject's exclusion, lead to impoverishment.

The empirical knowledge of indigenous peoples pays special attention to intuition, imagination, sensibility and the body for knowledge transfer. The biocultural approach and transdisciplinarity converge in ethics is also outlined by Nicolescu's (2013, p. 135) who posits,

In the course of the twentieth century, complexity—frightful, terrifying, obscene, fascinating, and invasive—has established itself everywhere as a challenge not only to our existence itself, but also to its very meaning. Meaning seems to get absorbed as if by the white blood cell of complexity in all areas of knowledge.

Bioculturality implies the equality of native peoples' ancient knowledge and practices and those of non-indigenous societies. This acceptance would construct the practice of interculturality beyond intercultural education. It leads to the practice and conservation of natural resources in order to foster a harmonious coexistence among different cultures, thus strengthening indigenous cultural identities and consequently national identities. What we propose is to apply mixed practices and techniques that bring together tradition with those technological aspects suitable to be applied in order to transcend from a unidimensional, Western and homogenizing society to a multiethnic and pluricultural nation, greatly enriched by traditional knowledge and imagination for resource management and ways of seeing, analyzing and understanding our life on the planet—the flourishing of different identities. It is vital to strengthen, through actions, the different expressions of natural resource management. Organization of collective action instances (Ostrom, 1990), cooperation (Axelrod, 1984) and social learning (Milbrath, 1989) can be some of the paths for organizing and adapting ourselves through sustainability rapidly enough to address self-imposed limitations.

Notes

- 1 This chapter was authored by Dra. Silvia del Amo Rodríguez, *Centro de EcoAlfabetización y Diálogo de Saberes, Universidad Veracruzana México*, and contains her reflections on the topic in her own words. Silvia passed away on October 5, 2016, so this work is likely one of her last scholarly contributions. Additional authors Enrique Hipólito Romero and José María Ramos-Prado were asked to assist with final editing posthumously. These authors and book editors have chosen to provide endnotes for some text providing additional interpretation and explanation. As a sign of respect for her words and as a tribute to her wisdom and insight, we chose to leave the text written in the first person and largely using her prose submitted in Spanish May 8, 2015, and translated by her into English and submitted June 5, 2016.
- 2 We posit that humanism refers to the values and abilities of human beings, individually and collectively, to preference critical thinking and evidence over dogma or superstition.
- 3 Herein termed "ethnorestitution" for the remainder of the text.
- 4 The term "knowledge dialogue" appears throughout the text and we feel it is associated with the examination of what constitutes knowledge based on Bermúdez et al. (2005); specifically, there are multiple references made to the various epistemologies and we can presume to various ontological and axiological perspectives as well. All of this, it appears, constitutes a focus on dialogue about knowledge and more broadly, the nature of reality, the epistemological assumptions of what we define as objective and quantifiable and the role of values (i.e., objectivity is good, and subjectivity is misleading).
- 5 We posit that this reference to the notion of "empirical" and others that follow is not about a positivist approach related to empiricism but rather references the local, indigenous and more visceral connections to experiencing, understanding and relating to the world. See the Endnote describing the term "knowledge dialogue" for a related discussion.

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"Community Capacity and Resilience in Latin America speaks to the power of local communities as agents of change. From local farmers, to university students, to indigenous leaders, to youth, this book describes how communities can collectively build from their own cultural, natural, social and political capital to create a better world."

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"This timely, wise and scholarly book highlights the values of social capital in community development and shows how resilience emerges from processes of engagement and progressive transformation."

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Community Capacity and Resilience in Latin America addresses the role of communities in building their capacity to increase resiliency and carry out rural development strategies in Latin America. Resiliency in a community sense is associated with an ability to address stress and respond to shock while obtaining participatory engagement in community assessment, planning and outcome. Although the political contexts for community development have changed dramatically in a number of Latin American countries in recent years, there are growing opportunities and examples of communities working together to address common problems and improve collective quality of life.

This book links scholarship that highlights community development praxis using new frameworks to understand the potential for community capacity and resiliency. By rejecting old linear models of development, based on technology transfer and diffusion of technology, many communities in Latin America have built capacity of their capital assets to become more resilient and adapt positively to change. This book is an essential resource for academics and practitioners of rural development, demonstrating that there is much we can learn from the skills of self-diagnosis and building on existing assets to enhance community capitals.

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COMMUNITY DEVELOPMENT

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