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Global Environmental Change, Culture and Development: Rethinking the Ethics of Conservation

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Abstract: Expected changes in climate and hydrology in Latin American drylands are likely to affect drinking and irrigation water availability, threatening productive systems and the subsistence of some rural dwellers. Research on the vulnerability of rural communities in watershed basins of Argentina, Bolivia and Chile have shown that drought and diminishing river flows would compromise the wellbeing of the smallest producers of these socio-ecological systems, who are already affected by other stressors, such as globalization, restricted fiscal policies and long established situations of poverty and inequity. Thus, it seems that global environmental change threatens the survival of specific agricultural development models, not those that are more integrated to the agribusiness processes but rather the subordinated, traditional models based on small-scale production and tightly connected to natural cycles. Along with their decline, traditional testimonies and practices related to these models would be lost, including their interpretative schemes and rationales based on values and worldviews different from the prevailing development model. The paper argues that these social and cultural capital losses would entail a drawback in the achievement of development goals—especially for those locally inspired—and that subordinate development models constitute, in themselves, a heritage worth to be preserved. In addition to linking global environmental change to culture loss and to the development processes, the paper suggests the necessity of rethinking the ethics of conservation to promote a new multiculturality paradigm that values small scale productive and lifestyles and understands its connections with nature.

Keywords: Vulnerability, Drylands, Development Models, Social Capital, Conservation

Introduction

THE SCIENTIFIC LITERATURE dealing with the biophysical impacts of Global Environmental Change (GEC) is prolific, which is not the case for the literature focused on its impacts on human activities. Even within the latter literature most of the efforts have been directed to the impacts on economic productive activities and socially vulnerable sectors, but very few of them deal with the effects of GEC on natural and cultural heritages.

This topic, however, is not a novelty. The IPCC has acknowledged the impacts of climate change on heritage and cultural goods. The climate impacts related to migration patterns, health, animals and plants are recognized as necessary for the livelihood and cultural identity of indigenous groups depend (IPCC, 2007: 82). The loss of unique cultures in small island nations is presented as an example of irreversible climate impacts (IPCC, 2007: 786).

On the other hand, the Convention for the Safeguarding of Intangible Cultural Heritage (UNESCO 2003), makes explicit the links between the material and intangible heritages and the need to safeguard cultural diversity, as well as the need to adopt a comprehensive approach

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to environmental and sustainability problems. Subsequent documents from UNESCO (2006, 2007a and b, 2008a and b, 2009) discuss the impacts of GEC on natural and cultural heritage, with a special concern about those archeological sites, monuments, and cities considered as part of the world heritage. These documents recognize not only the effect of biophysical changes on these forms of heritage, but also their social and cultural consequences, especially in relation to what is considered a living and dynamic heritage. Phenomena such as sea level rise and floods may force communities to migrate from their territories, with the consequent loss of traditional knowledge and practices that are essential to conserve material and symbolic goods and to reproduce the meanings and values that are fundamental to productive processes.

This paper is a reflection that emerges from the results of a group of studies on vulnerabilities of rural communities that have taken place in three dryland watersheds: the Mendoza basin in central western Argentina, the Pucara (Tiraque-Punata) basin in Cochabamba, central Bolivia; and the Elqui basin in northern Chile[1] The Argentinean and Chilean basins are characterized by a diversified group of agricultural producers, from large export producers specialized in the production of wine (Argentina) or fresh fruit (Chile), to small agricultural producers and goat ranchers, who predominate in the dryland areas of the basins. The Bolivian case, on the other side, is characterized by the predominance of small producers, with relatively diversified production oriented to both markets and the subsistence of the household. The process of social differentiation that characterizes the Argentinean and Chilean basins and the predominance of a traditional agriculture in the Bolivian case have led us to a reflection on vulnerability and adaptation from the perspective of culture and development styles (for a detailed discussion of the results of these projects see Diaz et al., forthcoming; Diaz. Hadarits, and Barret-Deibert, 2009; Montana, forthcoming).

In this perspective this article discusses the centrality of development models as a fundamental component of territorial heritages, discussing the potential impacts that GEC could have on the development models and their associated lifestyles, already vulnerable to the expansion of the globalized economy. In the context of the new climate change scenarios, the paper identifies the need for different types of adaptive processes directed to the conservation of natural and cultural heritages.

Our argument is that any effort to conserve natural and cultural heritages will fail without an emphasis on the protection of specific territorial heritage systems (Junta de Andalucía, 2006). These systems are strongly dependent on development models, which should be the focus of a dynamic protection able to facilitate their evolution and significance.

Finally, the paper suggests the necessity of rethinking the ethics of conservation to promote a new multicultural paradigm that values small-scale production and their lifestyles and promotes its connections with nature.

[1] Three projects have informed this paper: the "Institutional Adaptations to Climate Change" Project supported by the Major Collaborative Research Initiatives (MCRI) program of the Social Sciences and Humanities Research Council of Canada (SSHRC) (2004-2008); the project "Coming Down the Mountain: Understanding the Vulnerability of Andean Communities to hydroclimatologic variability and Global Environmental Change" supported by the InterAmerican Institute for Global Change (IAI CRN II SGP-HD #004, 2009-2012); and the project "Scenarios of Global Environmental Change, Scenarios of Rural Poverty. A Territorial Approach", supported by Social Sciences Latin American Council (CLACSO)-Comparative Research Programme on Poverty (CROP) Senior Research Grant (2010-2012).

Andean Rural Communities and the GEC

There is mounting evidence that the impacts of global warming will increase, producing variations in local weather patterns and water supplies, disturbing ecosystems and soil landscapes and impacting on economic production and social conditions. The last report of the Intergovernmental Panel on Climate Change (IPCC, 2007) indicates that climate change will impact large areas of Latin America. Important changes in rainfall patterns, increases in temperatures and the intensity and severity of extreme climate events have already been observed, with negative impacts for people's livelihoods (WGCCD, 2006).

Based on various climate scenarios, the IPCC estimates that by the year 2100, mean regional temperatures in Latin America will rise by between 2° and 6° Celsius. Projected impacts of these increases in temperature involve the displacement of forests, reduction of the extent and volume of glaciers, loss of agricultural soil, biological imbalances and increasing pest intensity, sea-level rise, further changes in precipitation, salinisation and desertification, and water scarcities. The IPCC expects that by 2020, several million people in Latin America will experience water stress due to climate change, facing critical problems with drinking water supply and sanitation (Magrin et al., 2007; WGCCD, 2006). However, it will disproportionately affect the livelihoods of rural people given their dependency on natural resources and the extent to which they are already exposed to other stressors, such as globalization and restricted fiscal policies.

Climate and hydrology expected changes in Latin American drylands are likely to affect drinking and irrigation water availability, threatening productive systems and the subsistence of many rural dwellers. Research on vulnerability of rural communities in watershed basins of Argentina, Bolivia and Chile have shown that drought and diminishing river flows already compromise the wellbeing of the smallest producers of these socioecological systems, who are already affected by prolonged situations of poverty and inequity (Diaz et al, forthcoming).

Water Conflicts: Winners and Losers

Longer and more intense droughts could bring a significant increase of water conflicts in the Andean communities of the three countries. These conflicts could be classified into three groups.

The first group is constituted by conflicts between human interests and the integrity of the local ecosystems. In the Mendoza case, a reduction of the river flows in the future and an increase of water consumption in the agricultural oasis–the irrigated area located in the piedmont—will impose serious water scarcities in the lowest areas of the basin. The past growth of the irrigated oasis has already impacted the fish population. Now, the impacts of GEC are increasing the aridity of the Guanacache wetlands[2] beyond their limits of resilience. In the Elqui basin of Chile the combination of droughts and the contamination of the water by the mining companies has seriously affected the hydrological system and the variety of existing ecosystems. In the Pucara basin serious threats to the ecosystems have not been observed, but several projects for inter-basin water transfers could become a serious menace to these systems.

[2] RAMSAR site

A second group of conflicts are produced by the multiplicity of interests that characterize the different rural actors of the basins. In Mendoza conflict exist between the agricultural producers of the agricultural oasis–in the high areas of the basins—and the goat ranchers in the plains of northeast Mendoza, downriver. In the same vein, there are conflicts between the mining companies and other water users in the Elqui River. Many conflicts in this basin have already been resolved in support of the mining companies. The large producers of the Elqui valley complain about a reduction on water availability due to the mining activities (not without some degree of resignation given that they do not criticize the water market or the free competition), while the small goat livestock ranchers have already lost access to water. Consequently, these small ranchers have lost the possibility of developing their livestock, using small vegetable gardens, avoiding the negative impact of migration on their families' unity, and losing some degree of control upon the production of their own food. The final result is that their traditional lifestyles have been drastically changed, losing their identity as goat ranchers and living within precarious limits by selling a few cheeses to the mining companies. If the present is the mirror of the future there is no doubt that goat livestock ranchers will disappear in the coming years. But the disappearance of this group of producers is not of significant concern to a society that values the survival of "the most efficient". In the perspective of a productivist, modern paradigm, goat ranchers do not represent the modern values of agricultural production or the efficiency of larger producers and, accordingly, their disappearance is irrelevant. There are government programs oriented to foster goat livestock, but they have their own limitations. They are focused only on the productive aspects of the activity and ignore both the contributions of goat herders to the biodiversity and the sustainability of water resources and, no less important, the cultural diversity represented by this group of people. If poverty is a situation where a diversity of rights is lost, this group has reached almost their endpoint as producers. Extinction is, then, the outmost limit of poverty.

In the same category of conflicts are those that take place within the limits of agriculture. A good example is found in Mendoza, with the conflicts between the new viticulture in the upper sections of the basin and the traditional small producers who live and produce downriver. Given their small margins of profit, these small producers are increasingly limited to a passive adaptation: they irrigate less or irrigate only the most rentable crops. We found here what has been called "double exposure", the less you irrigate the more reduced is your profit and, as a consequence, the possibilities to make more efficient the use of water resources. In the case of the Elqui basin this type of conflict is also present, but it has been already resolved on the side of large producers as a result of the increasing disappearance of peasant producers in the fertile lands of the valley. As a result of the success of export agriculture, large producers have concentrated the property of the land and the access to water, while small producers have been displaced to towns or to marginal lands. In Argentina and Chile, the expected droughts will increase this tendency. In the Pucara basin conflicts emerge among irrigators for the control of water sources, especially during droughts. However, in this case conflicts are negotiated and resolved at the local level, and not always following formal institutional arrangements. This is possible due to the degree of homogeneity among the producers, where resources–and the power associated with them—are more or less equally distributed.

Finally, conflicts are also found between the different worldviews of the regional actors (Rojas et al., 2006). These conflicts are mainly between hegemonic development strategies

supported by agribusiness and large mining companies and the more traditional views of development found among small producers and First Nations. These alternative worldviews assign different values and functions to existing resources, emphasizing priorities in their access and control.

Food Safety at Risk, but also Cultural Capital

The research findings show that GEC threatens the survival of specific agricultural development models. The threat is not to those that are more integrated into the agribusiness processes, and for which increasing profits is the rationale; but rather to those subordinated, traditional models, which are based on small-scale production and where the goal is an emphasis on the wellbeing of the household.

Producing wine or fresh fruit for the international markets, having access to modern technology, being successfully integrated into large productive networks, and being localized on the best lands of the basin, are all resources that facilitate the process of adapting to GEC. Thus, productive systems integrated to agribusiness are less sensitive to the GEC and more viable in the context of rapid global change.

On the other side, the vulnerability of the traditional agricultural production systems and their associated lifestyles is high and increasingly exposed to risks in the context of the new climatic conditions. In the three basins, as well as in other peripheral regions of the world, the traditional productive systems and their local communities, with little access to capital and technology, are highly dependent on the dynamics of climate and, accordingly, are vulnerable to hydrological and climate changes.

It is expected that the GEC will impact these traditional agricultural systems affecting their territorial resources. In principle, it will affect access to potable water and irrigation and, as a consequence, family income and food security. But the impacts of GEC will also have more profound consequences on other dimensions of these systems and their people: higher unemployment and underemployment, migratory movements towards other areas, and loss of traditional lifestyles and local knowledge. In other words, increasing marginalization and exclusion.

The most recent definitions of cultural heritage include the territorial resources mentioned above, providing a central role to the natural and cultural, tangible and intangible factors used by actors to build their territory, and they link this heritage to the style of development represented by the actors (Gómez Orea 2002; Antrop 2005; Pastor 2008). From this perspective, the use (or misuse, as some would argue) that these local economies make of water resources, their social organization of production, the cultural resources they display and use, and their options toward the future, constitute the signs of styles of development that have been marginalized by globalization and that are currently threatened by the GEC.

Cultural Capital for Adaptation

The studies show that the GEC increases the impacts of globalization, fostering productive transformations towards less diversified and more market-oriented units of production, transformations that increase the vulnerabilities of peasant households. In this context, food security (and food sovereignty) became threatened by the consumption of non-local food.

But also, a cultural heritage of traditional testimonies and practices related to the subordinate models is being threatened, including its interpretative schemes and rationales based on values and worldviews different from the prevailing development model. But if the vulnerability of these communities is increasing, their cultural capital accumulated around traditional knowledge, around identities and social practices, and especially around their flexibility and predisposition to change, constitute a heritage that could be used in the development of adaptive strategies to the GEC.

The case of Pucara exemplifies a tradition of adaptation based on years of practice in climate management, in a basin that shows significant variations in terms of its orography, climate, and agro-ecological conditions. The experience of dealing with extreme climate events has also contributed to this learning process, both at the organizational and individual level. Adapting the productive activities and the styles of life to what is offered by the *Pachamam*a[3] is essential to this style of development. This adaptive capacity integrates traditional knowledge with knowledge based on the engineering tradition; but its strength is based on the large working capacity of local people and their strong communitarian networks. In Bolivia, the social processes, including responses to problems, emerge from communitarian decision-making processes; thus, there is an adaptive capacity closer to communitarian interests than to market dynamics. In spite of the fact that local traditional styles of life are interpreted as poor and lacking institutional capacity, the communities demonstrate a significant potential for adaptation to the GEC that seems to be missing in the cases of Chile and Argentina, where the adaptive capacity seems to be less flexible and responsive to change, as well as more individualist and less predisposed to the common good.

Conclusions: Conservation of Natural and Cultural Heritages

The definition and practices of conservation of cultural heritage have evolved from a valuation of the object and the material towards an appreciation of the territorial heritage systems and their symbolic dimensions.

Natural resource conservation has evolved following its own rhythms, but in a direction similar to the one followed by the conservation of cultural goods. As the social movements of the 50s and 60s, concerned with world peace, nuclear disarmament, and civil rights, the environmentalist movement of these last decades has reexamined the values of modern society. The lack of constraints for urbanization processes and industrial development brought the environmental question at the center of the discussion on the sustainability of the capitalist system. More recently, the GEC and its associated risks have renewed these concerns. The risky scenarios of GEC have contributed to a redefinition of natural resources, which are now conceptualized as natural goods from a perspective that is less "productivist" and more concerned with resources as a common good.

It is at this historical moment, characterized by the presence of the GEC, when it is necessary, more than ever, to emphasis the links between the conservation of the natural and cultural heritages. There are different reasons for this.

First, not only cultural goods are at risk of degradation or disappearance. The natural spaces (those where natural elements predominate, independent of the degree of modification) are becoming scarce (a more serious case is constituted by those truly natural spaces: those

[3] The term used by the Aymaras for Mother Earth

without an anthropogenic intervention). Thus, the "natural", as an attribute, is a function of the "singular" that defines the good as heritage. In other terms, the GEC has contributed to redefining nature as a form of heritage.

Second, to conserve and access natural goods, such as the hydrological resources (glaciers, rivers, and others) or agricultural soil, it is a necessary condition to secure the existence of traditional communities and their cultural capitals. These could evolve and redefine themselves following the global transformations, but no limits should be imposed on their rights to follow their own styles of life.

In addition, these communities contribute to the conservation of natural goods with their "good practices", such as when they practice fallow or when they conserve multiple varieties of potatoes, to adapt to different soil, climate, and water conditions. Moreover, these practices contribute to maintain the biodiversity, making local people more resilient to the impacts of climate and water.

Adopting strategies that foster the conservation of only some isolated elements, as a modern version of Noah's Ark, ignores the fact that cultural and natural heritages are heritage territorial systems that could only be maintained if they have the economic and political spaces to continue with their own styles of development. Thus, to maintain the existence of the Bolivian *awayos*[4], so admired by the white tourists, we need the Andean grasslands to feed the llamas, which are a central resource of the peasant households that produce this work of art, we need to have the plants that will provide the natural colors, and the artisan able to bring together all these elements.

All these natural and cultural aspects, including social practices, are part of the territorial heritage linked to a subordinated style of development, which should be protected to ensure its evolution.

In these terms, we need to develop an ethic of conservation of the cultural and natural heritages from the perspective of a multicultural economic system able to value alternative styles of development, providing the ground for the sustainability of the Andean communities and their complex links with their territory.

[4] *Awayo* is the colorful rug loom made with the wool llamas, vicunas, or sheep and colored with natural colors. They are normally used by Quechua and Aymará women to transport young children.

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