

Cluster 7 - Thursday, July 10th, 14:00 to 15:45 (not in the program)

Working Group 23 – Territorial Development, Sustainability and Social Dynamics: Experiences from South America. Theme: iii) Productive Dynamics and Territoriality"

Tradition and Change in the Southern Cone of America

Limits and potentialities of Multi-Agent Systems as methodological tools for the study of the social impacts of territorial dynamics¹

Presenter: Hermes Morales Grosskopf

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Abstract

The territorial transformations that have taken place during the last decade in the South American temperate grasslands – the “Pampas” - have been accompanied by dramatic social changes. As large-scale agribusiness replaces extensive livestock production, agricultural investment fund managers –IFM- break as the newest actors of the reshaped landscape. Unable to reproduce their traditional livelihoods under the growing economic and environmental pressures, many family farmers are selling or renting their properties to IFM while migrating to the cities. Uruguay is a privileged laboratory for the study of this coupled socio-territorial dynamics. As in Argentina and Brazil, Uruguayan Pampas’ are being agriculturized² by large-scale soybean monocropping. This process is being accelerated by the emergence of the new markets of

¹ The research summarized in this paper was first conducted in the context of the SMART network (Strategic Monitoring of South-American Regional Transformations) with the support of the following institutions: CIRAD-INRA (Trans Project), IAI SGP-HD (Scenarios Project).

² "Agriculturization" is the permanent substitution of agriculture for the crop-livestock rotation, which was the dominant farming system used in Uruguay until the mid-1970s.

China and India, the two main soybean importers of the Pampean countries. Bounded by tradition and by values that go beyond profit making, some family livestock farmers strive to avoid rural exodus and to adapt to these new scenarios while maintaining their livelihoods, strongly identified with extensive cattle grazing. Small to medium-sized farmers usually choose between two adaptation strategies: i) to continue with cattle grazing through, a) technological innovation and intensification and/or b) cost reduction; or ii) to abandon livestock production and convert to soybean production. Any of these strategies are threatened, however, by the strong increase of land prices, generated not only by soybean mono cropping (dubbed the “white gold” of South America), but also by major forestry and pulp mill developments. This paper will not focus on the environmental impact of soybean mono cropping in the Pampa biome, an issue which is still highly disputed. It will, instead, offer an interdisciplinary, systemic approach to the social consequences of the land competition between modern, large-scale agriculture and traditional, low input livestock production. How do land concentration and large-scale mono cropping affect the social sustainability³ of extensive livestock farming systems operating in usually small production units? Is it possible to model – and simulate – simultaneously the dynamics of physical-biological systems interacting with social systems? This article aims at evaluating the interest, contributions and limits of multiple-agent-based simulations or Multi-Agent Systems (MAS) as a methodology to answer to these questions. The underlying hypothesis is that MAS contribute to improve the understanding of the decision-making processes of family farmers, who must decide between sticking to traditional cattle-breeding or investing in the higher and shorter-term profitability of soybean production. However, MAS models must be enhanced through the inclusion of socio (and even psychological) variables allowing to better understand the complex dynamics of land – use related decision making processes. The article’s structure has five sections: i) brief introduction of MAS, ii) application of MAS simulations (DinamicaParcelaria) to the specific case of territorial transformations resulting from the dialectic monocropping / livestock family farming in the Uruguayan Pampas, iii) application of MAS simulations (Arapey) to a case study in Northern Uruguay, where the traditional extensive livestock production system has not changed in the last two centuries, remaining as the sole production system iv) crosschecking of the above-mentioned preliminary results with the outcomes of participatory meetings with livestock producers in Uruguay.

Key words: multi-agent systems, land use change, South-American grasslands, social sustainability, gaucho culture.

³ “Social Sustainability” can be defined as the capacity of communities or groups of maintaining certain population and a given standard of living for a long time, enduring stress due to external changes in the political, economic and environmental contexts. It addresses social structures and living conditions of human populations, acknowledging the fundamental role that social actors, social capital, organization and institutions. Because of this, this approach to sustainability focuses not only on the relationships between the physical environment and societies, but also on the cultural values, perceptions and interests of the different social groups in relation to the environment. Its study implies to consider a society in its space-time matrix, and to address the mechanisms through which that society remains in place in the long-term (Adamo, 2003).

*Title of Paper: ***Paradoxes of biofuels in Argentina***

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Presenter: Marcelo Champredonde

*Abstract:

In 2007, Argentina started to participate in the global biofuels market, with its first biodiesel exports to Europe, taking advantage of her capacity and her position as largest soybean oil producer in the world. Besides being one of the largest corn exporters and owning large sugarcane processing plants, Argentina also has the potential to reach bioethanol markets.

National legislation imposes a 5% biofuels blend by 2010 and promotes their use for electricity generation too. The consumption of these renewable energy sources would contribute to change the actual energy model -based 90% on fossil fuels- and also to reduce gasoil and natural gas deficits. Moreover, small agricultural producers from different regions of the country would receive benefits from their biofuels production: a share guaranteed for the national market as well as tax exemptions. Paradoxically, producers lack financial assistance for their investments, they cannot compete with low locally fixed fossil fuel prices and face the uncertainty of the price which biofuels would receive from the authorities for local blending. A consequence of this is that actual biodiesel production is concentrated among a few big oil companies located in Rosario and is then exported.

This study is based on recollected information and interviews with different actors of the biofuel sector. This presentation emphasizes the lack of compromise from the State to change not only the Argentine energy model based on hydrocarburates, but also the agro-export productive model, in order to promote real opportunities of development for small producers. It also reports about the impact of this issue on territorial and socioeconomic inequity.

Well-being, work comfort and food security are better than maximizing production in the Amazon

By

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Presenter: Valéria Homem

Abstract

In the Amazon, slash and burn is the most common technique used by American-Indians, small farmers and even big ranches to transform forests into rural landscapes. The basis of food subsistence for diverse populations (rice, corn and bean), slash and burn is also a must for the plantation of cocoa, coffee, palms and pastures. The Amazonian rural landscape is currently dominated by pastures, occupying around 80 % of the deforested surface. Even if the nature of the plantation varies according to location, height, soil type and local traditions, slash and burn remains relatively the same in all regions. Agro-ecological intensification and the integration of livestock and agriculture is 2-3 decades old. Different alternatives have been tested, particularly the introduction of leguminous (covering the land or forming trees) to improve the soil and to build a bank of proteins for cattle. New techniques for the recuperation of pasture lands have become widely popular among ranches. The introduction of one or two annual plantations between two pasture areas allows re-establishing fertility through the injection of nitrates and, as a result, increases the pasture's productivity. However, being relatively high-cost because of its demand in terms of mechanization and inputs, this technique is almost unaffordable for small Amazonian farmers. This low level of mechanization, along with the increasing need of changing the production paradigm due to the closing of the pioneer space, has led to the elaboration of new farming techniques, as permanent food-producing plot, focused on land fertility more than on the exploration of natural resources. The first results are interesting from a technical, economic and social viewpoint. Revenues are as high as 4-5 t/ha for rice and corn, significantly surpassing the traditional 1.2-1.5 t/ha. Socially, these techniques have had a positive impact on comfort and work safety, food security, community empowerment and the involvement of youngsters in this new concept of farming. Besides this, the adoption of these new concepts paves the way for the reorganisation of the rural space at the property and community scales, especially through the implantation of agro-forest and pasture systems adapted to local conditions and through the reconstruction of forest areas in fragile zones (closeness to rivers, river sides, steep hills, etc.) Why did it take so long and why did we have to destroy so many natural resources before reaching this new paradigm?

Keywords

Agro-ecology, Amazonian frontier, Alternative to Slash and Burn, Landscape Management, No-Tillage and Direct Seeding

Cluster 8 - Friday, July 11th, 09:30 to 11:15

Working Group 23 – Territorial Development, Sustainability and Social Dynamics: Experiences from South America. Theme: iii) Productive Dynamics and Territoriality

Local territorial insertion of cattle breeders and artificialization of production systems: logics of cattle feeding in the Southwest of Argentine pampa

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Abstract

This paper proposes to evidence relationships between artificialization (supply feeding) of cattle feeding and the local social capital. Local social capital is here reinterpreted, since Social Geography, through the concept of territorial insertion of farming activity. This local insertion develops in three dimensions of human activity: production (i.e. economic sphere), livelihood (private sphere) and participation (public sphere).

Presently the main process of cattle breeding transformation in the South West area of Buenos Aires Province is the artificialization and complexification of cattle feeding. Under the project network *Aide au Développement Durable (ADD) Transformations de l'Élevage et Dynamiques des Espaces (TRANS)*, ten cases studies of farms representing diverse combinations of artificialization and complexification are analyzed with the local territorial insertion concept. It shows us clearly that most locally inserted systems are not necessarily the less artificialized ones. Nevertheless the type of combination or contradictions between the three dimensions of local territorial insertion is strongly in relation with forms of artificialization and complexification of animal nutrition. This gives indications to assess the sustainability of production systems: artificialization should correspond to a form of strong local insertion in order to be sustainable.

Validation of Work Balance methodology to evaluate strategies and discuss viability of beef farms in Uruguay.

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ABSTRACT

In Uruguay, 89% of total surface is affected by meet production (bovine and ovine) with extensive grazing systems, considered as "traditional" in socio-cultural and productive aspects as well. Ninety-five percent of that surface is occupied by farms larger than 100 hectares.

In last five years some important changes in have been observed and thus may affect in uncertain way the future and evolution of agricultural sector. With animal slaughter rise, low reproductive rates, rise of meet price, rise of land values, larger surfaces sowed with soja, afforestation, change in actors within productive systems and agro-industry as well, and larger difference in economical results between agriculture forestry and meat production, thus may lead to think that some changes will take place in qualification and organization of the work force, in a context with lack of services in rural zones an high degree of urbanization..

We are trying to validate the "Work Balance" methodology with the goal to enhance our knowledge and comprehension of work's dynamic at farm level. The first results show a larger variation in indicators making evident different strategies like "farmer" or "businessman" associated with the proportion of the participation and kind of tasks at routine and seasonal work done by the farm owner. We are interested in validate and discuss this methodology in order to help to anticipate the viability of this systems in this uncertain and changing context.

Wage labour: modes of territorial adjustment of work groups and livestock farming activities. Illustration in Brazilian Amazonia and comparison with other regions of the world

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Abstract

Wage labour is important in livestock farming in Amazonia, as in other regions. It is increasing, and agricultural production systems that were hitherto family-based are increasingly turning to it. Few studies have been carried out on wage labour in livestock farming. Yet it impacts on both the operation and reproduction of livestock farms, and the territorial dynamics in which they interfered. The issue we address here is that of the place of different patterns of wage labour (the term covers indeed several distinct situations) in the sustainability of livestock farming and territorial dynamics. To this end we analysed the different types of wage labour in Brazilian Amazonia and compared them with those found in other regions of the world. These patterns refer to different forms of mobility that underpin territorial adjustments of work groups and livestock farming activities.