

INTEGRATION CENTERS: A TERRITORIAL PLANNING EXPERIENCE IN THE STATE OF TABASCO

Baldemar Hernández Márquez, Judith Pérez Castro, and Efraín Pérez Cruz¹

Date received: February 9, 2015. Date accepted: August 14, 2015.

Abstract

In this article, the authors assert the need to research territorial integration at the micro-regional level, due to the fact that the biodiversity is so varied between each of the micro-regions in Mexico, not only in terms of natural resources, but also in terms of human resources. This has always constituted a major obstacle for regional integration, in spite of the multiple efforts made through numerous programs, which have failed for a variety of reasons, a principal one of which has been their lack of continuity.

Keywords: Integration centers, territorial planning, regional integration, geographic spaces, micro-regions.

INTRODUCTION

Mexico is known as a country ailed by serious inequalities. In 1811, Alexander von Humboldt wrote in his *Political Essay on the Kingdom of New Spain*: "Mexico is the country of inequality. No where does there exist such a fearful difference in the distribution of fortune, civilization, cultivation of the soil, and population [...] This immense inequality of fortune does not only exist among the cast of whites (Europeans or Creoles), it is even discoverable among the Indians" (cited by Narro, Moctezuma, and De la Fuente, 2013: 11). This situation has become recurrently manifest in Mexico, and social and regional inequalities are growing daily.

There is no doubt that major efforts have been made to reverse these serious inequalities and combat poverty with social programs, such as those launched during the sustained period of growth in 1934-1970. However, the number of poor people has not declined. Between 1934 and 1940, the Gross Domestic Product (GDP) per capita grew at an annual average rate of 2.7%. The employed population grew at an annual average rate of 1.26%, while the Economically Active Population (EAP) grew at an annual average rate of 1.3%. Prices grew at an annual average rate of 6.3%, and wages at 3.6% (Ayala, 1988: 214-245). In other words, the EAP and employment grew at similar rates, but weal wages fell by 2.7%, undermining the purchasing power of families, and hitting the low-income strati especially hard. Even without data about income distribution, it is likely that poverty levels have budged very little (Soria, 2000: 146).

The age of industrialization in Mexico began in 1941-1955, financed by the surpluses of commercial agriculture through the so-called "neolatifundism," and the economy began to take off, buttressed by declining wages, as inflation rose at an average annual rate of 11.8%. The minimum wage plummeted from 63.5 pesos in 1939 (with a 100 base in 1978) to 31.1 pesos in 1955, a 51% drop, while industrial sector productivity grew by nearly 50% between 1939 and 1952 (Bortz and Sánchez, 1985: 50). Real wages at 1939 levels were not recovered until 1965. The employed population grew between 1940 and 1955 at a rate of 3.3%, meaning that the economy was able to create new jobs for the growing population, but the impact of poverty was derived from falling wages.

In 1956-1970, Mexico implemented an economic policy for growth with price stability. However, it only further polarized commercial agriculture versus rural agriculture. The Mexican government ceded some of its role as invigorator of growth to foreign investment, which began to take steps to appropriate the most dynamic sectors of the economy and, undoubtedly, fostered industrial concentration (Soria, 2000).

In 1970-1987, inequalities between rural and urban areas deepened, derived from the structural problems of the industrial sector and its incapacity to respond to widespread poverty, as well as the exhaustion of the import substitution model. Moreover, the government's tax, education, and healthcare reform proposals turned a blind eye to the industrial sector. All of these factors combined marked the start of the structural crisis that afflicted the Mexican economy, which was unable to react and make the changes necessary to insert itself in the geographic map of globalization, with the formation of economic blocs that answer only to their own interests, in a scenario in which predatory capitalism has reached its growth limits (Piketty, 2014).

A FEW THEORETICAL CONSIDERATIONS

The role of planning is to address problems that appear with varying degrees of intensity in different geographical areas, such as those that arise from the process of spatial concentration. Therefore, it is necessary to have a theoretical framework to lay the groundwork for incorporating spatial dimensions into planning (Kuklinski, 1985).

This concentration prompts severe inequalities, manifest in the extremely asymmetrical globalization of the economy. Unlike the old center-periphery paradigm, the new system is polycentric in addition to the north and south categories, where analytical capacity has been lost, because the center and peripheral regions in the new international order do not fall symmetrically along the hypothetical dividing line between North and South (Vásquez Barquero, 1990).

Development theory, the cornerstone of free exchange and the planned economy, rested on the limitless exploitation of the planet's resources, until it was discovered that these resources are not infinite. This realization marked a shift in the way in which regions are organized, with an effort to seek development not tied solely to natural and human resource-based exploitation, but also development that would truly translate into improving the living standard of the population and, more importantly, would contribute to environmental conservation (González, 1979).

However, in economics, space is no trivial issue. There are, at minimum, five different perspectives of this concept (Isaac and Quintana, 2012). The first comes from the European economic tradition, which defines the concept of space as a physical barrier to economic activity. The second emanates from the economic growth theory of the 1950s and 1960s, which revived the idea of space as a mere container for economic activity.

In the 1970s, the interpretation of space took a sharp turn. In development theory, space was seen as a production factor and, therefore, a source of advantages for companies. Space started to be viewed as diversified and relational, insofar as development came about heterogeneously in selected areas (Capello, 2007).

In this way, the space–territory represents the support for any type of human activity, which is why its organization, as well as cognitive space (Capello, 2006), not only determines the location and distribution of production activities or production nuclei, but also leads to a multifunctional dimension, manifest in the legal agreements that emerge from the political consensus among various agents and territorial levels. A lack of territorial planning results in spatial anarchy, inefficient exploitation of resources, and an ignorance of potentialities.

Concretely, in Latin America, Montes (2001) asserted that territorial planning has increasingly become a central issue of national policies aiming to achieve balance between economic and social variables and the demands of society, productivity, and environmental conservation. Territorial planning, according to the author, denotes two conceptual and methodological connotations: on the demand side, related to the study of the socioeconomic and political problems of a population existing in a certain territory, and on the supply side, the particular circumstances and features of the environment in which the activities of the social actors take place, as well as the potential to satisfy demand.

In summary, territorial planning refers to a set of concerted actions to shape the transformation, occupation, and utilization of geographic spaces, based on the needs and interests of the population, territorial potential, and harmony with the environment, all of this with the goal of promoting social and economic development.

It is useful to note that although territorial planning has gained ground in recent decades, especially in light of demographic growth, the pauperization of standards of living for vast swaths of the global population, and environmental issues, it is still not an emerging object of study in the social sciences field, and rather to the contrary, we find the most important and relevant works on this topic in the first half of the twentieth century, such as studies by the geographer Walter Christaller in the 1930s, who built his central place theory in Germany, articulating the concepts of central place, central good or service, and spheres of influence.

The centrality of a place depends not on space but rather on the function it has; that is, there are a variety of central places ranging from those that specialize in functions (for example, trade, industry, etc.), ubiquitous or disperse—which may be found in various places—and those goods or services that are centrally produced. The concepts of economic distance and threshold are also important to understand the centrality of place. Economic distance is the path that the consumer is willing to travel to purchase the good [...] Threshold is the minimum quantity of consumers or demand required for an economic activity to emerge and be sustained (Peña, 2003: 188).

Along these same lines is Lösch's (1957) concept of economic regions, described as an alternative to the geographic, political, and cultural borders that traditionally divide states and which are considered to be artificial, with low development potential.

The economic region is based on the distribution of productive activities throughout a territory, as well as the dynamics of economic processes, depending on distance. In ideal terms, this notion brings us to a continuous and homogenous space, economically independent, with uniform distribution of population and resources, which, due to its nature, is able to maximize utility and benefits for consumers and producers. The various production units are hexagonally stable for the entire population residing within an area, but will increase to the extent that they will have to sell to increasingly distant zones. The final result is the economic concentration of activities.

Other pivotal territorial organization models include Perroux's (1955) development poles theory, which Boudeville, five years later, would apply to the field of geography. Here, the emphasis is on finding a model for the regional functioning (Coraggio, 1972) of the exogenously located production demand, either at random, due to some public authority, or another cause. There is also the gravity model, which analyzes central places, their hierarchies, and the relationships between them to understand the general structure of cities. It is called the gravity model because, just like in the physical sciences, this persuasion holds that there are spaces that exercise a field of gravity over individuals, principally dependent on the density or mass of the city and distance, but also the monetary flows, jobs, migration, products, and services that characterize it (Cárdenas and García, 2005). Likewise, the comprehensive regional development model is based on the endogenous—sustainable development theory and views comprehensive policy planning and local engagement

as the principal means of resolving social demands and attaining collective welfare. This proposal, in large part, emerged as an alternative response to import substitution and liberalization models, which have been implemented primarily in developing countries, and have impoverished much of the population, causing national debt, the deterioration of living standards, and environmental harm.

Finally, it is fitting to note that territorial organization analyses must take into account social and geographical–territorial factors, because, as Andrés (2013: 37) asserted:

[...] with the passage of history, changes come about in the social structure, new functions are sought to satisfy the inherent needs of each moment, new production processes arise, a territorial structure based on modern systems of connection is woven, and the continual modernization of social structures leads to the conclusion that the basic conditions of primitive settlement end up becoming their principal dysfunction.

In other words, in territorial organization, as in the majority of social processes, there is no single generalizable model. Rather, the features and needs of the population must be taken into account, as well as geographic conditions, economic capacities, the productive vocation, communication channels, the density of social relations both within and outside of the community, and the ways in which demands and community organization change over time.

TERRITORIAL ORGANIZATION AND THE COMMUNITY DEVELOPMENT OF *CENTROS INTEGRADORES* (INTEGRATION CENTERS)

The idea of *centros integradores* (integration centers) finds its origin in Vasco de Quiroga's pueblo-hospitals of Santa Fe, and subsequently, Michoacán, in the mid-sixteenth century. The aim was to restructure community life to do away with severe social inequalities, through family integration, the incorporation of women into the workforce under the same conditions as men, the reorganization of property, collaborative work, and participation of city people in rural activities (González, 1979). The word hospital in this sense referred to “hospitality,” to the service and warm welcome given to all those who needed it.

Vasco de Quiroga drew on the Aristotelian idea of the origin of cities—although he did not take it directly from the source—as the foundation for his indigenous republics. “[...] The perfect community of several villages, according to Aristoteles, is a polis [...]. Once man has formed a family and various families come together to form villages, and the villages come together to form the perfect community, a polis is attained” (González, 2006: 142-143). In particular in the state of Michoacán, Vasco de Quiroga sought to take advantage of the zone’s natural resource potential so

that, together with the creativity and accumulated knowledge of the indigenous groups, people could develop their capacities and improve their communities.

The pueblo-hospitals constitute the first recorded example of territorial development in the history of Mexico, although this term certainly had not been coined back in the colonial era. It was not until many years later that Mexico would record other experiences of regional development, which, although with different ends, also departed from the concept of territorial organization derived from the conceptual evolution of planning (Bettelheim, 1965), which in Mexico, had its beginnings in the development of water basins, 1945-1952 (Carrillo, 2010), and which would later come to be known by the name of regional and territorial planning (Cortez and Delgadillo, 2008).

In the mid-1980s, the state of Tabasco began to design an endogenous development model grounded in the territorial integration of its regions. The project revolved around the cultural identity and productive vocation of its natural human resources, who served as the pillar of growth and development in the micro-region.

In this way, integration centers, as they would come to be known later on, were born as the government's response to shape an organizational structure to ration public resources and improve services for a fairly disperse population with specific needs, where the role of the State, through public policy, is to respond to the population's needs in a well-organized society.

In this paper, we present some of the results of research that aimed to conduct a comparative analysis of integration centers to determine the major changes that have occurred throughout the three decades since this territorial planning project was launched and propose a model to bolster the development potential of these micro-regions.

THE FORMATION OF INTEGRATION CENTERS IN TABASCO

The state of Tabasco is located in the southeast area of Mexico. The integration centers project was launched in 1985 as part of an initiative to decentralize administrative services to the municipal and state government levels (Gobierno del Estado de Tabasco, 1988).

Figure 1. Geographic Location of the State of Tabasco in Southeast Mexico



*Source: Created by the authors for a presentation of the Integration Centers Project.
Conacyt – FOMIX Government of the State of Tabasco.*

When the centers were launched, the state had around 1,400 communities spread throughout the territory (INEGI, 1980), which made it difficult to implement public policies and provide products and services to the people.

The choice was made that government actions should be targeted towards a select group of settlements, which, for various reasons, had become poles of attraction for other communities. They would act as the heart of the integration centers, receiving supplies of goods, and home to first and second-tier healthcare services, primary and secondary education, and other community services. The objective was to meet the basic needs of the rural population, without having to travel to the county seat, or even the state capital (Gobierno del Estado de Tabasco, *Manual de Organización de los Centros Integradores*, 1984: 12).

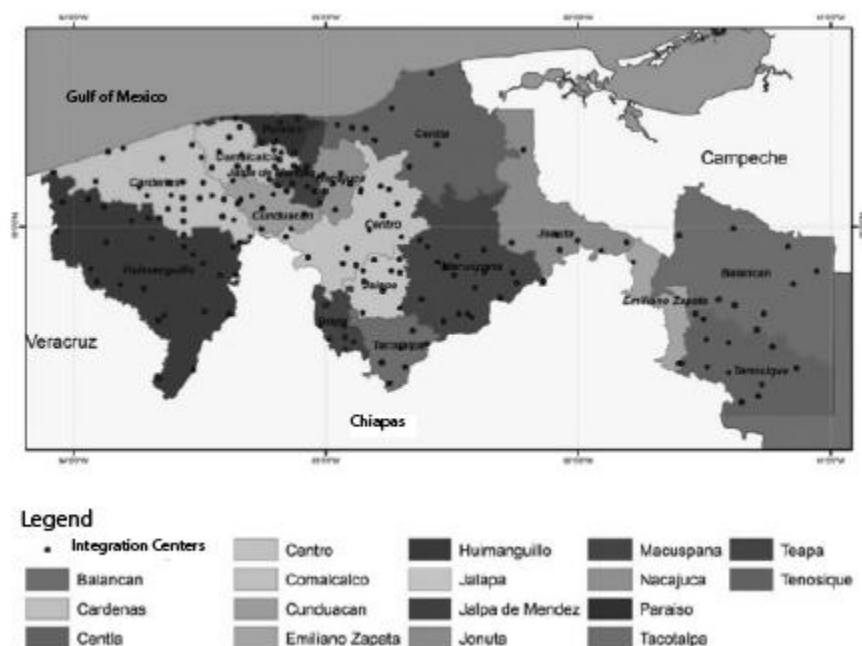
This process took into account the location of the communities, their geographic characteristics, natural resources, and productive vocation in terms of land use (Palma and Sánchez, 2002). Other factors included shared and traditional usages, customs, and knowledge. In this way, the integration centers, as poles of micro-regional development, slowly began to expand the coverage of public services and made resource use more efficient. To do so, the government established two principal strategies: 1) change the territorial and population structure to achieve integration, and 2) exploit the potential of each of the various regions throughout the state (Gobierno del Estado de Tabasco, 1983b).

For the first strategy, the government commissioned the construction and maintenance of infrastructure, with special mind paid to building bridges and highways to connect all of the villages that had been isolated for so long. Later on, this strategy would focus on the social side, entailing collaboration among members from different communities and governmental sectors to define the priorities for each micro-region.

For the second strategy, the government aimed to capitalize on productive advantages to reduce oil dependency and diversify economic activities. A set of resources and/or economic activities were defined for each integration center pursuant to its context, in addition to the capacities, usages, and customs (Gobierno del Estado de Tabasco, 1983a).

In summary, efforts were made to unite a scattered state through territorial planning as the discipline and instrument of public policy, with a sense of strategy and defense for existing physical resources, as well as the appropriation of natural sources of wealth (Cortez and Delgadillo, 2008: 56).

Figure 2. Geographic Location of Integration Centers in the State of Tabasco



Source: Created by the authors based on data from the Integration Centers Project.
Conacyt – FOMIX Government of the State of Tabasco.

The integration center model was legally supported by the Political Constitution of the United Mexican States, which, in Article 26, states that democratic planning is the basis of national development, to meet social demands and promote the participation of diverse segments of the population. The other legal support came from the Political Constitution of the Free and Sovereign State of Tabasco, in effect in the 1980s, which, in Article 6, asserted the state's right and capacity to design a democratic planning system that would make the various realms of state life—economic, political, social, and cultural—more dynamic, strong, durable, and fair. Likewise, it highlighted the role of municipalities in democratic planning through the drafting of triannual plans and annual operating programs. In other words, the idea was for various levels of government, and the members of the communities themselves, to partake in defining the objectives, goals, and priorities of the integration centers.

With this legal basis, the territorial distribution of the micro-regions started in 1985. The initiative began by mapping each municipality and the location of each settlement, taking into account its cultural identity, geographical proximity, and social and commercial relationship to the integration center.

Finally, the integration centers were established as follows: the municipality of Balancán with 9 integration centers, Cárdenas with 25, Centla with 8, Centro with 13, Comalcalco with 13, Cunduacán with 10, Emiliano Zapata with 2, Huimanguillo with 26, Jalapa with 9, Jalpa de Méndez with 8, Jonuta with 7, Macuspana with 19, Nacajuca with 6, Paraíso with 7, Tacotalpa with 6, Teapa with 7, and Tenosique with 11 (Gobierno del Estado de Tabasco, 1988). In total, 185 integration centers spread throughout 17 state municipalities.

RESEARCH ABOUT THE INTEGRATION CENTERS

Throughout the research process, we developed an information model to draw up an inventory of potentialities and productive vocations, as well as natural and human resources, for the different micro-regions. The office and field work required gathering information about sociodemographic dynamics, the economy, and public services in the communities to then make comparisons among the various integration centers. We also designed two instruments that were applied in the four regions into which the state of Tabasco has traditionally been divided: Centro, Chontalpa, Sierra, and Ríos, which encompass 185 integration centers. The first tool included the following items: 1) general features of the integration center, 2) location in geographic coordinates, 3) physical environment, 4) administration, 5) settlements or villages that comprise the integration center, 6) composition of the population, 7) public services infrastructure, 8) productive infrastructure, 9) leisure areas, 10) climatology, and 11) productive vocation. The second instrument was used

specifically to learn about the conditions of the educational services, and consisted of the following sections: 1) general features of the integration center, 2) education officials, 3) education level of the schools, 4) educational infrastructure, 5) student population, 6) teachers, administrators, and school board, 7) capacity to meet demand, and 8) special education needs.

With this information, we constructed two databases in the statistics program SPSS. The first contained socioeconomic conditions, with 142 variables and 186 cases, and the second dealt with the education system, with 107 variables and 717 cases. Key interviews were conducted with municipal delegates, education officials, the presidents of the parent-teacher organizations, representatives of community action committees, some members of non-governmental organizations, and other people recognized as community leaders.

Finally, three workshops were held to figure out how to handle all of the information and the researchers participated in an SPSS diploma program in order to obtain the final results of the research.

CONTRASTS BETWEEN THE INTEGRATION CENTERS OF YESTERDAY AND TODAY

When we began this research, we wondered in what significant ways the integration centers had changed since their beginnings, in the mid-1980s. Whether the passage of time had stalled their development or whether, on the contrary, the integration centers had managed to adapt and transform in response to the new demands of the population. Finally, we wanted to know if it was possible to build a territorial integration model, based on this experience, to take advantage of the productive vocation and natural and human resources. Initially, our hypothesis was that significant inequalities had arisen among the micro-regions in large part as a result of the differences that still persist between the various regions around the country, and also due to the inconsistency of public policies, which in turn would have exhausted this model of regional organization and development. In other words, just like Andrés (2013) posited, we assumed that time creates new needs and shapes social structures in new ways, such that organization slowly deteriorates, becoming less and less functional for the community, which leads to the abandonment of the model or the construction of a new model more suitable to emerging demands.

It is important to note that our analysis model used the ANOVA² and DUNCAN tests. First, to find if there were significant differences between the integration centers at the municipal level (ANOVA) and then to determine the significance level of these differences (DUNCAN), as well as to group the integration centers by their characteristics. In this way, with respect to the overall population average, the DUNCAN test produced three subsets. The first consisted of the municipalities with the

smallest populations per integration center, such as Tenosique with 601 inhabitants, Jonuta with 913, and Jalapa with 986. The second group contained the integration centers of the municipalities of Huimanguillo, Teapa, Tacotalpa, Balancán, Paraíso, Cunduacán, and Macuspana, which had, on average between 1,500 and 2,500 inhabitants. The third subset included the municipalities with the highest population density integration centers, such as Cárdenas, Centla, Jalpa de Méndez, Nacajuca, Comalcalco, Emiliano Zapata, and Centro, with an average of 2,500 to 5,000 inhabitants (see Table 1).

Table 1. Integration Center Populations 2010

| <i>2010 Population</i> | | | | |
|------------------------|-----------|---------------|----------|----------|
| <i>DUNCAN</i> | | | | |
| <i>Municipality</i> | <i>ID</i> | <i>Subset</i> | | |
| | | <i>1</i> | <i>2</i> | <i>3</i> |
| Tenosique | 11 | 601.55 | | |
| Jonuta | 7 | 913.57 | | |
| Jalapa | 9 | 986.11 | | |
| Huimanguillo | 26 | | 1549.81 | |
| Teapa | 7 | | 1551.43 | |
| Tacotalpa | 6 | | 1675.00 | |
| Balancán | 10 | | 1710.80 | |
| Paraíso | 7 | | 2045.14 | |
| Cunduacán | 9 | | 2528.22 | |
| Macuspana | 19 | | 2545.42 | |
| Cárdenas | 25 | | | 2762.72 |
| Centla | 8 | | | 2891.63 |
| Jalpa de Menéndez | 8 | | | 2952.88 |
| Nacajuca | 6 | | | 3030.67 |
| Comacalco | 13 | | | 3166.77 |
| Emiliano Zapata | 2 | | | 3356.00 |
| Centro | 13 | | | 5548.15 |

*Significance at 0.004.

Source: Created by the authors based on information from the Integration Centers Project. Conacyt – FOMIX Government of the State of Tabasco.

Looking at marginalization, after conducting another DUNCAN test, three subsets were also identified. The first contained municipalities with integration centers that had low average rates of

marginalization, consisting of Jalapa, Paraíso, and Centro. Medium-level marginalization was found in the municipalities of the second group, with Emiliano Zapata, Jalpa de Mendez, Nacajuca, Comalcalco, Cunduacán, Balancán, and Macuspana. Finally, the third group included municipalities with high marginalization levels, with the integration centers in Jonuta, Cárdenas, Huimanguillo, Tenosique, Tacotalpa, Centla, and Teapa. Fundamentally, this last group stood out as the only one in which all of the integration centers displayed high marginalization indices (see Table 2 and Figure 3).

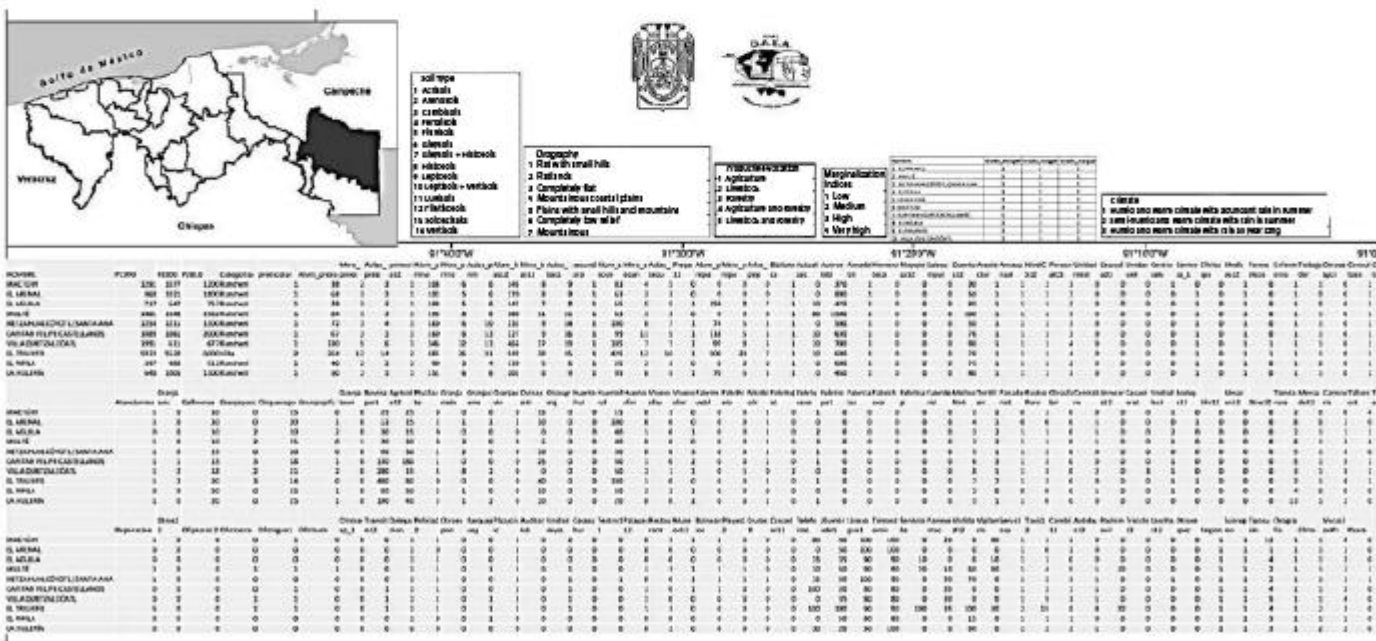
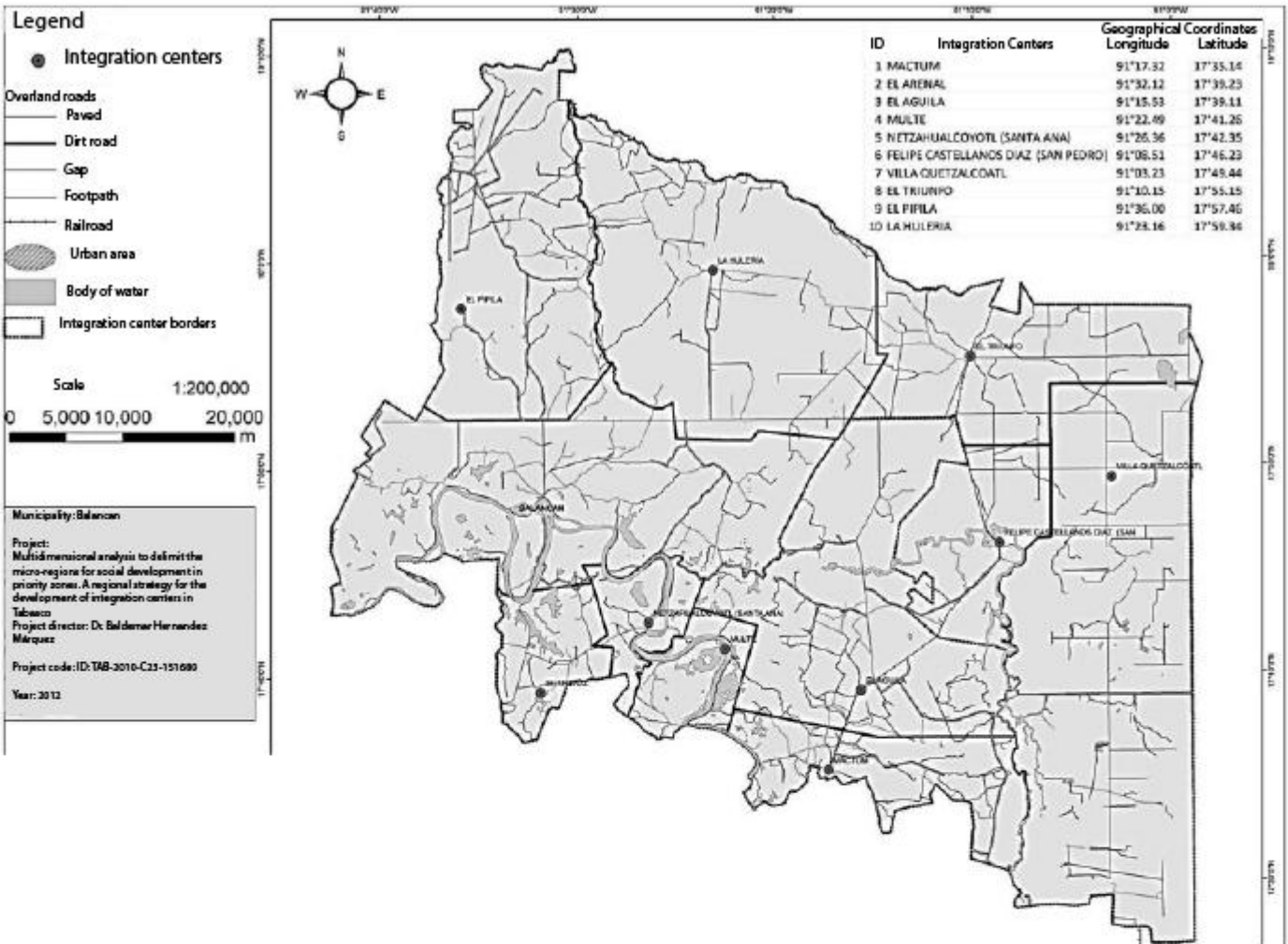
Table 2. Degree of Marginalization of the Integration Centers at the Municipal Level

| <i>Grado_marg10</i> | | | | |
|---------------------|-----------|---------------|----------|----------|
| <i>DUNCAN*</i> | | | | |
| <i>Municipality</i> | <i>ID</i> | <i>Subset</i> | | |
| | | <i>1</i> | <i>2</i> | <i>3</i> |
| Jalapa | 9 | 1.33 | | |
| Paraíso | 7 | 1.57 | 1.57 | |
| Centro | 13 | 1.69 | 1.69 | |
| Emiliano Zapata | 2 | 2.00 | 2.00 | |
| Jalpa de Méndez | 8 | 2.00 | 2.00 | |
| Nacajuca | 6 | 2.00 | 2.00 | |
| Comalcalco | 13 | | 2.08 | |
| Cunduacán | 9 | | 2.33 | |
| Balancán | 10 | | 2.40 | |
| Macuspana | 19 | | 2.42 | |
| Jonuta | 7 | | | 2.57 |
| Cárdenas | 25 | | | 2.64 |
| Huimanguillo | 26 | | | 2.77 |
| Tenosique | 11 | | | 2.82 |
| Tacotalpa | 6 | | | 2.83 |
| Centla | 8 | | | 2.87 |
| Teapa | 7 | | | 3.00 |

*Significance at 0.004.

Source: Created by the authors based on information from the Integration Centers Project. Conacyt – FOMIX Government of the State of Tabasco.

Figure 3. Degree of Marginalization of the Integration Centers in the Municipality of Balancán, Tabasco, Mexico



*Source: Created by the authors based on information from the Integration Centers Project.
Conacyt – FOMIX Government of the State of Tabasco.*

To investigate education infrastructure, information was collected about a sample of 717 schools from the different integration centers. The municipalities with the most schools in their integration centers were Huimanguillo with 96, Cárdenas with 92, and Macuspana with 72. Altogether, 36.2% of all schools were found in these integration centers (see Table 3).

Table 3. Number of Schools in the Integration Centers at the Municipal Level

| <i>Municipalities</i> | <i>Schools</i> | <i>Percentage</i> |
|-----------------------|----------------|-------------------|
| Balancán | 37 | 5.2 |
| Cárdenas | 92 | 12.8 |
| Centla | 35 | 4.9 |
| Centro | 64 | 8.9 |
| Comalcalco | 59 | 8.2 |
| Cunduacán | 35 | 4.9 |
| Emiliano Zapata | 9 | 1.3 |
| Huimanguillo | 96 | 13.4 |
| Jalapa | 29 | 4.0 |
| Jalpa de Méndez | 32 | 4.5 |
| Jonuta | 23 | 3.2 |
| Macuspana | 72 | 10.0 |
| Nacajuca | 24 | 3.3 |
| Paraíso | 27 | 3.8 |
| Tacotalpa | 25 | 3.5 |
| Teapa | 22 | 3.1 |
| Tenosique | 36 | 5.0 |
| Total | 717 | 100,0 |

Source: Created by the authors based on information from the Integration Centers Project. Conacyt – FOMIX Government of the State of Tabasco.

Of the 717 schools, the highest proportion belonged to primary schools at 34%, followed by the preschool level at 31.1%, the secondary level at 24.5%, and finally, pre-higher education at 10.3% (see Table 4).

Table 4. Education Level of the Schools By Integration Center at the Municipal Level

| <i>Education Level</i> | <i>Schools</i> | <i>Percentage</i> |
|------------------------|----------------|-------------------|
| Preschool | 223 | 31.1 |
| Primary | 244 | 34.0 |
| Secondary | 176 | 24.5 |
| College Prep | 74 | 10.3 |
| Total | 717 | 100.0 |

Source: Created by the authors based on information from the Integration Centers Project. Conacyt – FOMIX Government of the State of Tabasco. Conacyt – FOMIX Gobierno del Estado de Tabasco.

To evaluate the differences in educational services among integration centers, we conducted the DUNCAN test, and once again, three subgroups emerged. The first included the integration centers of the municipalities of Macuspana, Centro, Balancán, Centla, and Emiliano Zapata, where the majority of the integration centers had schools for all educational levels and had more than one pre-higher education institution. The second group included those institutions with all educational levels, the majority of which also had at least one pre-higher education school, whether a college prep school or an agricultural and livestock vocational school, including Jalapa, Jalpa de Méndez, Nacajuca, Cárdenas, Huimanguillo, Jonuta, Cunduacán, and Comalcalco. Finally, the third group included places where schools only reached the secondary level, meaning none of the integration centers had a pre-higher educational institution (see Table 5).

Table 5. Average Number of College Prep Schools in Integration Centers at the Municipal Level

| <i>College Prep Schools 2012</i> | | | | |
|----------------------------------|-----------|---------------|----------|----------|
| <i>DUNCAN</i> | | | | |
| <i>Municipality</i> | <i>ID</i> | <i>Subset</i> | | |
| | | <i>1</i> | <i>2</i> | <i>3</i> |
| Paraíso | 7 | 0.00 | | |
| Tacotalpa | 6 | 0.00 | | |
| Teapa | 7 | 0.00 | | |
| Tenosique | 11 | 0.00 | | |
| Jalapa | 9 | .11 | .11 | |
| Jalpa de Méndez | 8 | .25 | .25 | .25 |
| Nacajuca | 6 | .33 | .33 | .33 |
| Cárdenas | 25 | .40 | .40 | .40 |
| Huimanguillo | 26 | .42 | .42 | .42 |
| Jonuta | 7 | .43 | .43 | .43 |
| Cunduacán | 9 | .44 | .44 | .44 |
| Comalcalco | 13 | .46 | .46 | .46 |
| Macuspana | 19 | .53 | .53 | .53 |
| Centro | 13 | .54 | .54 | .54 |
| Balancán | 10 | | .60 | .60 |
| Centla | 8 | | | .75 |
| Emiliano Zapata | 2 | | | 1.00 |

Source: Created by the authors based on information from the Integration Centers Project. Conacyt – FOMIX Government of the State of Tabasco

Municipal delegations play a major role in representing communities, managing resources, enforcing the laws and regulations of the local authorities, overseeing public services, and community organization in general. Integration centers house offices for the municipal delegates, Civil Registry, treasury of the municipality, utilities—electricity bills from the Federal Electricity Commission, as well as drinking water and sewage—, Fisheries Office, and school board officials. The DUNCAN test produced two subsets. The first included the municipalities of Jalpa de Méndez, Jalapa, Tenosique, Nacajuca, Centro, Teapa, Cunduacán, Balancán, Comalcalco, Macuspana, and

Huimanguillo, where some integration centers did not have delegations. The second included the municipalities of Cárdenas, Centla, Emiliano Zapata, Jonuta, Paraíso, and Tacotalpa, where all of the integration centers had their own delegations (see Table 6).

Table 6. Delegations of the Integration Centers at the Municipal Level

| <i>Delegation 12</i> | | | |
|----------------------|-----------|---------------|----------|
| <i>DUNCAN*</i> | | | |
| <i>Municipality</i> | <i>ID</i> | <i>Subset</i> | |
| | | <i>1</i> | <i>2</i> |
| Jalpa de Méndez | 8 | .63 | |
| Jalapa | 9 | .67 | .67 |
| Tenosique | 11 | .82 | .82 |
| Nacajuca | 6 | .83 | .83 |
| Centro | 13 | .85 | .85 |
| Teapa | 7 | .86 | .86 |
| Cunduacán | 9 | .89 | .89 |
| Balancán | 10 | .90 | .90 |
| Comalcalco | 13 | .92 | .92 |
| Macuspana | 19 | .95 | .95 |
| Huimanguillo | 26 | .96 | .96 |
| Cárdenas | 25 | | 1.00 |
| Centla | 8 | | 1.00 |
| Emiliano Zapata | 2 | | 1.00 |
| Jonuta | 7 | | 1.00 |
| Paraíso | 7 | | 1.00 |
| Tacotalpa | 6 | | 1.00 |

* Significance 0.004.

Source: Created by the authors based on information from the Integration Centers Project. Conacyt – FOMIX Government of the State of Tabasco.

Finally, we wanted to investigate the productive vocation of the integration centers. The DUNCAN test revealed four subsets. The first, primarily agricultural, included the municipalities of Emiliano Zapata and Tenosique. The second, with Cunduacán, Balancán, Huimanguillo, Jalapa, and Nacajuca, was primarily agriculture-livestock and forestry. The third group contained integration centers with an agricultural and forestry-based vocation, consisting of the municipalities of Tacotalpa, Jalpa de Méndez, Jonuta, Paraíso, Centro, and Cárdenas.

Finally, there are the municipalities of Cárdenas, Centla, Comalcalco, Teapa, and Macuspana, with an agricultural-forestry and livestock-forestry vocation (see Table 7).

Table 7. Productive Vocation of the Integration Centers at the Municipal Level

| <i>Productive Vocation</i> | | | | | |
|----------------------------|----------|---------------|----------|----------|----------|
| <i>DUNCAN</i> | | | | | |
| <i>Municipality</i> | <i>N</i> | <i>Subset</i> | | | |
| | | <i>1</i> | <i>2</i> | <i>3</i> | <i>4</i> |
| Emiliano Zapata | 2 | 1.50 | | | |
| Tenosique | 11 | 1.91 | 1.91 | | |
| Cunduacán | 9 | 2.33 | 2.33 | 2.33 | |
| Balancán | 10 | 2.40 | 2.40 | 2.40 | 2.40 |
| Huimanguillo | 26 | 2.50 | 2.50 | 2.50 | 2.50 |
| Jalapa | 9 | 2.67 | 2.67 | 2.67 | 2.67 |
| Nacajuca | 6 | 2.67 | 2.67 | 2.67 | 2.67 |
| Tacotalpa | 6 | | 3.33 | 3.33 | 3.33 |
| Jalpa de Méndez | 8 | | | 3.63 | 3.63 |
| Jonuta | 7 | | | 3.71 | 3.71 |
| Paraíso | 7 | | | 3.71 | 3.71 |
| Centro | 13 | | | 3.92 | 3.92 |
| Cárdenas | 25 | | | | 4.00 |
| Centla | 8 | | | | 4.00 |
| Comalcalco | 13 | | | | 4.23 |
| Teapa | 7 | | | | 4.29 |
| Macuspana | 19 | | | | 4.53 |

**Significance 0.004.

Source: Created by the authors based on information from the Integration Centers Project. Conacyt – FOMIX Government of the State of Tabasco.

FINAL CONSIDERATIONS

Integration centers, as a territorial integration model, have played a relevant role for many communities in the state of Tabasco despite, as has been mentioned, the lack of continuity in governmental policies. To date, the micro-regions have continued to function, with some significant inequalities among them, which reflect population growth, the services available to them, marginalization rates, and educational conditions. While conducting this research, we also found many favorable factors worthy of consideration. For example, some integration centers recorded significant population growth, to the extent that some have reached nearly 5,000 residents. Another question concerns the development of management capacity, taking into account the organizational model that has permitted them to improve and expand infrastructure and public works and services. The latter, if supported by targeted public policies, could allow these integration centers to achieve sustainable development and become self-sufficient, not only in terms of the food supply, but also to compete in the national and international markets.

One strategy to achieve development would be to strengthen the cognitive space of the micro-regions through an educational model that revives their productive vocations. A project of this nature might begin with the integration centers that have the best educational infrastructure and could take advantage of the human resource potential. This would also prevent migration derived from a lack of jobs, which tends to happen in micro-regions that are unable to absorb their trained human resources.

Finally, it will be necessary to stimulate public and private investment, both national and foreign, based on feasibility studies with the social participation of the people, to achieve equitable wealth distribution in a self-sustaining fashion, mitigating inequalities between the micro-regions of the integration centers. In this sense, territorial organization constitutes a viable option to integrate scattered communities, as a way to efficiently take advantage of the primary potentialities of their productive resources, capitalizing on the quality of labor available in communities, and raising the income of people who would otherwise emigrate to the state capital or the center of the country, or even as *braceros* to the United States, in all cases with no guarantee of improving their standard of living, as is happening in some integration centers where marginalization has fallen, despite a lack of continuity, which is what this paper suggests.

BIBLIOGRAPHY

Andrés, José (2013), "Equipamiento comercial y organización territorial", *Papeles de Geografía*, (57-58), pp. 35-53.

- Ayala, José (1988), *Estado y desarrollo. La formación de la economía mixta mexicana, (1920-1982)*, Mexico, FCE/SEMIP.
- Bettelheim, Charles (1965), *Problemas teóricos y prácticos de la planificación*, Madrid, Tecnos.
- Bortz, Jeffrey and Rafael Sánchez (1985), "Salarios y crisis económica en México", in J. Bortz *et al.*, *La estructura de salarios en México*, Mexico, UAM-STPS.
- Bustamante, Carlos (2008), *Actores urbanos y políticas públicas. Estrategias de los manufactureros de la Ciudad de México ante el neoliberalismo*, Mexico, UNAM-IIEc-Miguel Ángel Porrúa.
- Capello, Roberta (2006), "La economía regional tras cincuenta años: desarrollos teóricos recientes y desafíos futuros", *Investigaciones regionales* (9), pp.169-192.
- _____ (2007), *Regional Economics*, New York, Routledge.
- Cárdenas, Mauricio y Camilo García (2005), "El modelo gravitacional y el TLC entre Colombia y Estados Unidos", *Colombia Coyuntura Económica*, 35 (1), pp. 47-72.
- Carrillo, Ricardo (2010), Experiencias y perspectivas del desarrollo regional en Mexico. Keynote address presented at *15o Encuentro Nacional sobre Regional en México: AMECIDER 2010, "Situación actual del país: Políticas Públicas y Desarrollo Regional Sustentable"*, Villahermosa, Tabasco. November 18.
- Coraggio, José Luis (1972), "Hacia una revisión de la teoría de los polos de desarrollo", *Revista Latinoamericana de Estudios Urbano Regionales*, 2(4), pp. 25-39.
- Cortez, Héctor and Javier Delgadillo (2008), "Alcances del ordenamiento territorial en la planeación del desarrollo. Elementos conceptuales", in J. Delgadillo (coord.), *Política territorial en México. Hacia un modelo de desarrollo basado en el territorio*, pp. 55-105, Mexico, Plaza y Valdés.
- Gobierno del Estado de Tabasco (1983a), *Plan Estatal de Desarrollo 1983- 1988*, Tabasco, México, Publications State of Tabasco.
- _____ (1983b), *Planes normativos de la región del Grijalva y del Usumacinta, Tomo I*, Mexico, Publications State of Tabasco.
- _____ (1984), *Manual de Organización de los Centros Integradores*, Tabasco, Mexico, Publications State of Tabasco.

_____ (1988), *Memoria del Gobierno del Estado 1983-1988*, Tabasco, México, Publications State of Tabasco.

González Pedrero, Enrique (1979), *La riqueza de la pobreza. Apuntes para un modelo mexicano de desarrollo*, México, Cuadernos de Joaquín Mortiz.

_____ (2006), *La cuerda floja*, México, Fondo de Cultura Económica.

INEGI (1980), Censo General de Población y Vivienda 1980, Mexico, INEGI. Consulted at:
<http://www3.inegi.org.mx/sistemas/tabuladosbasicos/default.aspx?c=16762&s=es> septiembre de 2014.

Isaac, Jorge and Luis Quintana (2012), "Industria y vaciamiento productivo regional en México", in J. Calva (coord.), *Desarrollo regional y urbano. Análisis estratégico para el desarrollo*, vol. 13, pp. 39-34, Mexico, Juan Pablos.

Kuklinski, Antoni (1985), *Desarrollo polarizado y políticas regionales: en homenaje a Jacques Boudeville*, México, Fondo de Cultura Económica.

Lösch, August (1957), *Teoría económica espacial*, Madrid, El Ateneo. Montes, Pedro (2001), *El ordenamiento territorial como opción de políticas urbanas y regionales en América Latina y el Caribe*, Santiago de Chile, Cepal.

Narro, José, David Moctezuma y Diego de la Fuente (2013), "Descalabros y desafíos de la política social en México", *Problemas del Desarrollo*, 174 (44), pp. 9-34.

Palma, David y Arnulfo Sánchez (comps.) (2002), *Plan de uso sustentable de los suelos de Tabasco, Vol. II*, Tabasco, México, Colegio de Posgraduados–ISPROTAB.

Peña, Sergio (2003), "Comercio transfronterizo y su impacto en la región de El Paso–Ciudad Juárez: Una propuesta de financiamiento de la planeación binacional", *Frontera Norte*, 15(29), pp. 186-200.

Perroux, François (1955), "Note sur les notion de pole de croissance", *Economie Appliquee*, 7(1-2), pp. 307-320.

Piketty, Thomas (2014), *El capital en el siglo XXI*, México, Fondo de Cultura Económica.

Soria, Víctor (2000), "La inversión extranjera directa y el crecimiento económico de México", Paper presented at Seminar: La Escasez de Alimentos Básicos en México en el siglo XXI, Mexico, IIEC-UNAM.

Vázquez Barquero, Antonio (1990), "Dinámica regional y reestructuración productiva", *Revista Sociología del Trabajo*, no. 10, Siglo XXI, Madrid, Spain.

¹ Juárez Autonomous University of Tabasco, Mexico; Institute for University and Educational Research, UNAM, Mexico; Juárez Autonomous University of Tabasco, Mexico, respectively. E-mail addresses: baldemarh21@hotmail.com, pkjudith33@yahoo.com.mx, andefrain_perezacruz@hotmail.com

² The ANOVA and DUNCAN tests are statistics that we use to measure significant differences between the population averages of the integration centers.