

Some elements to discuss the agrarian morphology asymmetry in the Mexicali-Imperial border region*

Algunos elementos para el análisis de la asimetría de la morfología agraria en la región fronteriza de Mexicali-Imperial

Quelques éléments pour l'analyse de la dissymétrie de la morphologie agraire dans la région frontalière de Mexicali-Imperial

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Abstract

The flagrant asymmetry in agrarian morphology along the lower Colorado River delta border region that can be recorded in satellite images and aerial photographs, accentuate the contrast between Mexicali and Imperial agricultural valleys. Such morphological frameworks seem to point toward a territorial antagonism that shapes two border agricultural models. Beyond the mere structural and organizational events that take place on either side of the border, the convergence of cross-border productive and trading processes raises questions regarding the nature and meaning of the asymmetry that exists in the binational agricultural scheme. This essay aims to explore some explicative elements within the historic, socioeconomic and political frameworks that gave way to the development of the border region of the lower Colorado River Delta.

Key words: Agrarian morphology, border agriculture, Mexicali-Imperial Region, parcels asymmetry.

Key words plus: Plots, agriculture agroecosystem, crop zones

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Resumen

La flagrante asimetría de la morfología agraria que se puede leer actualmente sobre los soportes aéreos grabados (imágenes satélites, fotografías aéreas, etc.) en la región fronteriza del bajo delta del Colorado acentúa el contraste espacial entre los valles agrícolas Mexicali e Imperial. Estos marcos morfológicos parecen poner en relieve un antagonismo territorial resumido en dos modelos agrícolas limítrofes. Más allá de los acontecimientos estructurales y organizacionales que se encuentran en un lado y otro de la frontera, la convergencia de los procesos productivos y comerciales transfronterizos nos llevan a preguntarnos sobre la naturaleza y el significado de la disimetría en la trama agrícola binacional. Este ensayo pretende explorar algunos elementos explicativos que hacen parte de los marcos históricos, socioeconómicos y políticos que dieron lugar al desarrollo de la región fronteriza del bajo delta del río Colorado.

Palabras clave: Morfología agraria, agricultura transfronteriza, región fronteriza de Mexicali-Imperial, asimetría del parcelario.

Palabras clave descriptores: Parcelas, agricultura, agroecosistemas, zonas de cultivo.

Résumé

La dissymétrie de la morphologie agraire qui peut être lu sur les supports enregistrés (images satellitaires, photographies aériennes, etc.), dans la région frontalière du bas delta du Colorado, accentue le contraste spatial entre les deux vallées agricoles de Mexicali et Impériale. Ces marques morphologiques semblent mettre en évidence un antagonisme territorial matérialisé par deux modèles agricoles voisins. Au-delà des effets structuraux et organisationnels qui ont eu lieu des deux côtés de la frontière, la convergence transfrontalière des processus de production et commerciaux nous amènent à s'interroger sur la nature et le sens de l'asymétrie dans la trame agricole binational. Cet essai a pour objectif d'examiner certains éléments explicatifs contenus dans les faits historiques, socioéconomiques et politiques qui ont structurés le développement de la région frontalière du bas delta du Colorado.

Mots-Clés: Morphologie agraire, agriculture transfrontalière, Région de Mexicali-Imperial, asymétrie parcellaire.

Mots-clés descripteur: Parcelles, agriculture, agroécosystèmes, zones conchylicoles.

Introduction: The Poor Quality of Recorded Spatial Support Data

Despite its pertinent and pedagogical aspects, the satellite imagery of the lower Colorado delta that has circled the world as an illustration of the border's contrasts has also generated countless speculations that search for a rational explanation for a complex landscape gap¹; a gap in the anthropic front in an arid and desert environment; a gap in the agricultural sector contrasting the urban sector; and, finally, a border gap between two entities with different values and identities (see Figure 1). What might seem to be a boring case of *déjà vu* in other latitudes takes on a sensational aspect in this region with the location of the border between a developing country and the most affluent country in the world. Within this context, all arguments are valid: from the stereotypes derived from the positive connotation regarding the solid and orthogonal agrarian morphology juxtaposed with another that is arrogant and anarchical, to the more elaborate and ideological, but not very convincing, contents. Could the recorded landscape terms aim to have an explanatory value in such conditions that provide few dimensions of the social relationship with space?



Figure 1: Structural units of the landscape South of the Colorado River Delta
Source: Map from GrayScale composition, LANDSAT-TM, 2007.

On one hand, the scale and bi-dimensional characteristics ignore the meaning of the volumes and pertinence of small structures. In this respect, a satellite image already constitutes a more advanced way in the abstraction of the original landscape. On the other hand, questions arise regarding the credibility of a landscape description carried out without taking into account the human and social dimensions that sustain it. In case the existence of a territorial structure that does not reflect the nature of the productive and social events can be admitted (that is, an adaptation to comply with complex processes or those foreign to the structures written on the landscape), under these conditions, is a tricky landscape being faced?

This essay will attempt to show that a tricky morphology is faced; one that does not reflect the nature of the agrarian practice of the moment, in which the landscape reading does not indicate the dimension or variety of the events underlying the visible order. The current asymmetry in the agrarian morphology between the Mexicali and Imperial valleys, despite its physical content and spatial-temporal changes, is also a sociopolitical field that has registered the major binational decisions of the past century.

1 Map of the Mexicali-Calexico area and their agricultural periphery in panchromatic mode (1:50,000) by the Spot Image Corporation in 1991.

Why did the neighboring valleys turn their backs on one another?

The continuity of agricultural space in the lower Colorado delta constitutes an event founded recently within the framework of the binational colonization established by the migratory waves of pioneers and the investments in the open and arid spaces of the Californias (Álvarez, 1987; Shaltz & López Calva, 2004; Toudert, 1999). Slightly more than a century ago, what currently appears to be a succession of green meadows - ,grain and vegetables fields settled around cities and towns, was a desert region known for its austere and desolate conditions.

The implantation of Imperial and Mexicali valleys in an environment of scarce hospitality was the starting point for the development of a border area. For more than half a century, this border area would wield regional leadership through the Mexicali Valley, after causing the downfall of the dying powers in the southern Baja California territory (Sánchez, 1994). The conjunction of investment flows toward the southwestern United States and the flow of Mexicans toward this new “El Dorado,” aided the colonization measures of Porfirio Díaz’s regime to start a symmetric project that barely crossed over to the U.S. side of the border². The disposition of the Mexicali Valley, along with the Imperial Valley, emerged within conditions of integration and detachment. These conditions were subordinate to the working of capitalism orchestrated by world commercial centers in an environment of a blurred border whose characteristics are the shared use of natural resources, development actors, and managerial strategies (Portais, 1992). What many years later may seem to be the same logic of transborder development also has all the ingredients to aspire to symmetric agrarian morphology at the beginning of colonization and during the height of the cotton cycle prior to World War II³. The concentration of land and hydraulic resources in the hands of the Colorado River Land Company and affiliates was such that problems could arise at any moment.

Naturally, the first events did not take long to happen with land assaults by the contingency of Mexican workers deported from the United States as a consequence of the 1929 economic crisis. Such acts were legitimized by President Lázaro Cárdenas through the nationalization of the territorial and hydraulic heritage of authorized enterprises⁴. From this point forward, Mexico has experienced a growing will to affirm its identity in the border space with the very late application of the agrarian reform that benefited thousands of new owners that arrived in successive waves from the early states that expelled their inhabitants⁵. The agrarian distribution would drastically change the nature of ownership in the Mexicali Valley. In fact, the leap was made from a system of large estate ownership, typical of the old Díaz regime, to one of contracted microproperties within the constitutional and post-Revolutionary legal framework. These ownership changes, in addition to being quite radical, are also fast and complex, culminating with the creation of ejidos (community-owned land), colonias (neighborhoods), and a network of cities and towns to carry out what remained of the cotton cycle (Toudert, 1997). These new organizational and structural terms allow the border’s political and administrative significance to be highlighted by the subordination of space to internal determinism and the integration of actors into a new political order that is gradually being developed in the region. It is worth mentioning that at this point in time the U.S.-Mexican border is far from confrontational. Along the border, processes of cooperative exchange take place on a daily basis, making good use of old transborder practices that have been confirmed and extended with duty-free zones (Ganster & Lorey, 2004; Romano, 1990).

The end of the natural fiber bonanza came with the fall of international prices, ushering in the practice of a productive reconversion that benefited from national programs of food self-sufficiency, such as SAM (1976), PRONAL (1983), and PRONADRI (1985)⁶. These programs would progressively tie

2 Referring to President Porfirio Díaz (1876-1911) and his border colonization project initiated in 1880.

3 Confirms the observation of aerial photographs taken in 1934, available at the Department of Topography of the Universidad Autónoma de Baja California.

4 With the creation of 38 ejidos (community-owned properties) (97,120 hectares) in 1937 and the nationalization of the Mexicali-San Luis Rio Colorado irrigation district.

5 The agrarian reform was codified by the Act of 1915 and later by the Agrarian Code of 1934.

production and its actors to central power after gaining maturity within the external productive and commercial chains. With the centralized and normalized productive period began a new territorial re-composition positioned in the production of grains. This act took place with the transfer of the land and water rights of some ejidatarios (common landholders) and tenant farmers who considered it pertinent to adopt a new career with the opportunities offered by the young regional industry and migration to the United States. At the same time that the recomposition of agricultural land took place, the political power of some families benefiting from the new territorial concentration in the regional field was being consolidated. Even though land transactions were formally prohibited due to agrarian law, new owners found gaps and mechanisms within the framework of their growing position to expand their wealth.

The process of territorial concentration in the Mexicali Valley take advantage of the failure of the post-cotton reconversion arrive at its culminating point with the start up of the new horticultural cycle in the early 1980s (Stamatis, 1993). The produce cycle began with important structural and organizational changes, including the return to external production, commercial chains, and the replacement of territorial acquisition with the leasing of land. The arrival of territorial reform with the revision of constitutional Article 27 and the promulgation of new agrarian law constituted an opportunity for the legalization of old informal practices in the Mexicali Valley⁷. In this respect, and in contrast to other entities in Mexico, the Mexicali Valley reformed itself before the formal reforms initiated in 1992 (Toudert, 1999; Wilson, 2005).

The anticipation regarding the legal events surrounding land transactions in the Mexicali Valley, as noted earlier, began gradually with the decline of the cotton cycle. The agrarian morphology modification, as a consequence of the territorial recomposition, did not become concrete within the usual norms and standards of the productive capitalist circuits. In fact, agrarian morphology, as a whole, continued to offer authorized structure with the conditions of the microproperty and its corollary of inefficiency in the modern agricultural organization and management. Parallel to the modernization of productive processes and the integration with binational sectorial chains, there is a stagnation of the agrarian morphology that keep an asymmetry with Imperial Valley, which is considered here to be a frank expression of the an incompetent productive process.

The fossilization of agrarian morphology: A barrier to change?

The fossilization of agrarian morphology can be understood in the case of the Mexicali Valley like a process in which a reconversion takes place only in the socioeconomic axis without touching upon the morphological aspects that remain almost the same. With this perspective, the current reconversion integrate the old morphological factor into the new business logic, making necessary adjustments to other production factors.

The current agricultural morphology of the Mexicali Valley is a product of a complex order of homogenous parcels set according to a geographical gradient and/or delimited by a landscape boundary of entropic or natural origin (Toudert, 1995). The writing of the homogeneous units in local landscapes takes its existence in the following interlinked and scaled limitations (see Figure 2):

- Upper limits: The upper limits are result of the organization of the production space in relation to the natural barriers and political and administrative borders. These limits can be synthesized with a demarcation line between the mineral space and the agricultural space. The irrigation canals constitute, in this case, the heads of the agricultural

6 SAM (Sistema Alimentario Mexicano / Mexican Food System), PRONAL (Programa Nacional Alimentario / National Food Program), PRONADRI (Programa Nacional de Desarrollo Rural Integral / National Program for Integrated Rural Development).

7 The revision of Article 27 of the Constitution was adopted in December 1991 and published one month later; the new agrarian act was approved in February 1992.

front in the desert land and the municipal boundaries east of the valley introduce a morphological and organizational contrast materialized by the international border, on the one hand, and the Colorado River banks and the railroad line that divides Mexicali and San Luis Rio Colorado, on the other.

- Internal limits: Internal limits are products of the shape of the land and organization of communications, water and sewage infrastructures that cross the valley in endless networks. These barriers create visual local and intralocal morphological joints that translate into intermediary structural units divided into subunits and shape and/or orient constellations.
- Intrinsic limits: Intrinsic limits are linked to the soil and physical-chemical state of the land. In fact, spaces overcome by salinity are gradually extracted for agricultural domains; thus, constituting secondary natural spaces colonized by halophyte vegetation that is different from indigenous species.

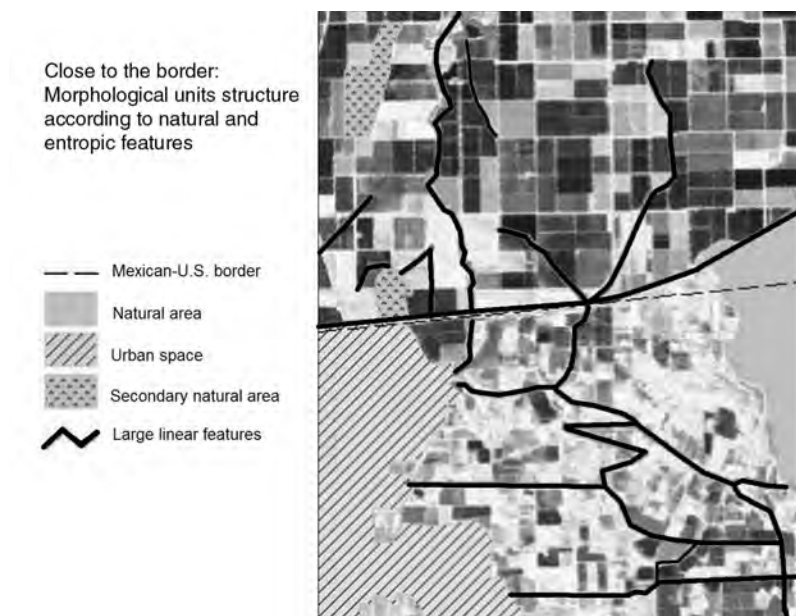


Figure 2: Sample of the logic of the morphological structure

Source: Digitizing on satellite image of IRS 1C (Liss3), 2007.

In the framework of these natural and anthropic barriers of the Mexicali Valley, those that stand out include the agrarian morphology with confusing and congruent boundaries, a division of parcels generally dominated by reduced or subreduced cellular structures with disarranged shapes, and multiple counterparts. In contrast, on the U.S. side of the border, the boundaries are frank and angular with multiple and repetitive shapes, in which a structural orthogonal plot dominates with linear perpendicular lots. The structural contrast between the two boundary valleys barely shows a zonal morphology in the Mexicali Valley:

- The southeastern zone of the City of Mexicali, characterized by reduced surfaces, a tight plot with multiple geometry dominated by the cellular type and the small orthogonal layout
- A more contrasting central zone south of the City of Mexicali, in which an irregular orthogonal design dominates
- The eastern and southeastern zone of the Mexicali Valley, characterized by larger

parcels arranged in a half regular orthogonal layout that looks like the one observed in the Imperial Valley.

Just like other agricultural valleys developed in arid environments in other parts of the world, the Mexicali Valley presents a very slow evolution of agrarian morphology in normal conditions⁸. Here, one should not lose sight that work is being conducted in a structured environment with different limitations at articulated scales that make the grouping of plots difficult. In such spaces that are characterized by a strong presence of infrastructure in varied modalities of production, land plays a shared role with networks of irrigation and sewage, roads and highways, and storage facilities and warehouses. The articulation of the zonal infrastructure implies the supplementary efforts of actors of territorial reconversion and the grouping of parcels on a local scale. In fact, the grouping of parcels in a continuous perspective, beyond what it generates in costs in the aggregation process, should also include the reorganization of networks and other infrastructures that in most cases are a property foreign to the land of support. The intervention of several public and private actors in the structure of the current agrarian morphology constitutes a limit to the continuous expansion in relation to the importance of the infrastructure, its users, and the conflictive management of their interests.

Figure 3 shows that both neighboring valleys have changed their morphological structure since the period prior to the Cárdenas reform. In the Imperial Valley, the changes show a clear tendency toward grouping of parcels within the original layouts. In the Mexicali Valley, a timid and dual tendency is seen toward the grouping and partition of some new layouts. Contrary to what is generally admitted, the morphological structure prior to the 1930s in both neighboring valleys does not correspond to what is



Figure 3: Changes in Border Agricultural Divided Parcels (1934–2007)

Source: Aerial photographs taken in 1934, available at the Topography Department of the Universidad Autónoma de Baja California and 2007 IRS 1C (Liss 3) satellite image.

8 This observation is also valid for the Imperial Valley, where a setting of the agrarian morphology can also be observed, although mobility is registered in the ownership average at the rate of 1.85 percent annually between 1982 and 1992; the same mobility can imply a decline, as is the case in Yuma, where the ownership average decreased to 4.79 percent annually for the same period.

currently observed in the Imperial Valley. Open and grouped parcels in the current Imperial Valley are modern products following the period of large estates owners, which was in an objective manner incapable of operating its production system in some parcels that were the same size as current lots. In fact, this reveals the inadequacy of the current agricultural expansion and organization with the capability of the production regimes authorized by the technological and business development of the latifundista (large estate owners) period.

With the passage of time, the structural and organizational changes that take place in the national and regional agriculture on both sides of the border will allow the gradual integration of agrarian morphology in production processes in the medium and long term in the Imperial Valley. By contrast, the Mexicali Valley, through an occasional lease, will integrate morphology in a logic of scattered aggregation to comply with spontaneous production cycles⁹.

The weight of socioeconomic history: Change in continuity

The modernization of Mexican agriculture and its insertion in the market culture are among other objectives of the agrarian reform that began with the 1982 crisis and culminated with the revision of constitutional Article 27 and the institution of new administrative mechanisms and supports for the agricultural sector (Rubio, 1995). The restructuring of the agricultural sector, in this respect, publicly proposed the historical bifurcation between an extensive traditional agriculture and a modern one that is inserted in the new data of the economic opening of the country. Endless production units rotate within these two models, whose survival strategy depends on the day-to-day decisions of the new agricultural policy (Toudert, 1999). The spirit of the last territorial reform, according to its promoters, consisted of regularizing inheritances in the midst of a growing deposition of the rights of the constitutional owners (see Table 1). Departing from the assumption of land as a transcendent factor in the modern processes of agricultural integration, the central policy bet on the mobility of property in the search for new competitive profiles (De Gortari, 1991; Dussel, 2002). The resulting territorial extension has not yet shown a frank tendency toward the concentration of property. Nonetheless, what can be observed is the growing lease of agricultural land¹⁰.

Table 1:
Limits at the land ownership from 1992

<i>Land vocation</i>	<i>Individual ownership</i>	<i>Association ownership</i>
Agricultural		
-With irrigation	100 Ha	3,750 Ha
-Without irrigation	150 Ha	7,500 Ha
Cattle raising	500 Ha	12,500 Ha
Forestral	800Ha	20,000 Ha

Source: Synthesis of Article 27, Section XV of the Political Constitution of the Republic of Mexico.

The reform of Article 27 continued the prohibition of foreign ownership in the border strip of 62 miles (100 kilometers) on land and 31 miles (50 kilometers) on the coast, which formally leaves 11 border irrigation districts out of the reach of foreign investment. The trusteeship, however, which allowed

9 This is a production process similar to the older traditional units in the scattering of its production units in the Mediterranean basin, in which the fieldworkers operated on several distant parcels.

10 Until 1996, according to data from the Secretariat of Agricultural Promotion of the state government, only 34 associations were established with 811 members for the management of 27,889 hectares.

foreign investment in tourism on coastal border property¹¹, does not seem to follow the same course in agriculture. Foreign agricultural companies show conformity regarding territorial leases in processes characterized by the rapid rotation of capital, utilizing a land market saturated by offers and overwhelming those actors marginalized by the new agricultural policy. At present, the agricultural sector's concern does not deal with the old fear of foreign ownership, but on how to attract and establish new partners, whoever they might be.

The Mexicali Valley is not exempt from this national panorama, although as mentioned earlier, this space was reformed prior to the agrarian reform, offering a territorial overload for the lease in a district characterized by a history of high productivity in the country¹². The technological packets for high yield crops in the Imperial Valley are reproduced in a similar manner to those in Mexicali. In addition, the productive and commercial chains become increasingly more binational through the horizontal integration of Mexican actors. However, here again is the bifurcation between a sector focused on the production of vegetables requiring high labor use and oriented toward the external market, and another sector focused on the highly mechanized production of grains under the shadow of a federal subsidy directed at the internal market. Both of these sectors share the speculative characteristic of the production processes and its continuous rejection of organizational changes that could possibly set a new relationship with the production factors.

As in many parts of the world, agriculture in Mexicali presents a conflictive dilemma with respect to the use and management of natural and human resources. The grouping of parcels that could translate into a substantial market for production units in the use of resources such as water, land, and the management of spatially scattered subunits, does not have the luck of taking place in a speculative environment that wastes resources and is accused of conducting informal practices. The relationship of agriculture, the environment, and labor conditions show a field of adjustment that prefers the permanence of

Homogeneous units based on compactness, structural similarity and orientation gradient.



Figure 4: An example of structural difficulties for grouping of parcels

Source: 1994 Spot-HRV1 and 1995 panchromatic satellite images.

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- 11 Such is the case as long as foreigners are considered nationals with respect to their property, thus renouncing their right to invoke protection from their respective governments.
 - 12 In an internal study in 1992 to determine the impact of the new agrarian law, SARH determined that leases cover approximately 35 percent of the agricultural surfaces in the state of Baja California. It also estimated leases during the 1996–1997 agricultural cycle to be 40 percent of the parcels in the Mexicali Valley, based on requests from PROCAMPO (Programa de Apoyos Directos al Campo / Direct Support Program for the Field).

competitive profiles in an environment characterized by expansionism at a lower cost and social control over labor conditions (Toudert, 1999). After all, why think about territorial grouping if entrepreneurs can lease land at a lower cost and deduct the productive and organizational waste in the maximization of other production factors?

The relationship between land and production systems, in the event that it may still seem pertinent, does not completely fit with its traditional meaning. Incidentally, there is a habit of thinking about agriculture through its connection to the land at the moment that corporations show a global vision of production systems, an ability to build investment capitals, the mobility of production sites, and flexibility in the management of resources (Bannano et al., 1994). The image of a farmer working his land "as a good head of household" belongs in the past; its weak sustenance is perhaps proportional to the loss of the territorial myth. The new modalities of the use of agricultural land are increasingly processed in the notion of the space of mechanisms that are dynamic, instantaneous, and lacking novelties in the landscape.

Conclusion: Morphological differences. Continuity in the processes

In an environment where land plays a supporting role, it is important to be aware of the continuity of the production processes that take place on both sides of the border to understand the use of agricultural lands and their deeds on the landscape. The reading from the land divided into parcels that constitutes a fast entry toward the systematization of the types of order, shows a risky side at the moment that agrarian morphology does not reflect with enough clarity the nature of the production processes and their degree of integration or modernization. In the Mexicali Valley, as in the Imperial Valley, in the event of continuity in production processes under a different logic, the border antagonism is far from being similar to the expression of the agrarian reform. Here, one faces a productive purpose in phase with a similar economic model in an environment adapted to the inherent characteristics of each valley and its insertion in spheres of differentiated influences. Even though the same technological package moves on either side of the border, at times the same actors and investments, the border antagonisms, and the weight of sociopolitical arrangements conforms the same objective under two different entrepreneurial sights that are sometimes contradictory. In these new productive environments, land plays only a supporting role after having been for so long an influential actor in agrarian mechanisms. Is this the end of the land myth at the U.S. Mexican border?

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