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ORGANIZATION OF SPACE IN THE AREAS OF AGRICULTURAL COLONIZATION IN LATIN AMERICA

One of the main processes of land use in areas situated in the humid tropics of Latin America is the agricultural colonization. The spread of agriculture over the areas covered with forest leads to the organization of their space. This assumes various forms, according to the way, the aim of colonization and to the conditions of natural environment of areas in which the process takes place.

The organization of space in the areas of agricultural colonization can be investigated in the scale of natural (physico-geographical) regions in which they are situated, i.e. at the regional level and in separate colonization zones or agricultural colonies, in other words at the local level. The aim of the paper is to find out factors and elements of the organization of space on both levels. It is also the attempt to establish their influence on differentiation of forms of the organization of space, which are noticed in the areas of agricultural colonization.

As the main factors of organization of space on the regional level, roads and towns have been accepted (after Pierre George). In his definition of the term the 'organization of space' the above-mentioned author writes i.a.: "In the organization of space some elements play special part, giving the inhabited space its compactness and functioning means. (...) Towns and roads organize the space".¹

The contemporary agricultural colonization is in the spatial sense strongly connected with road-building plans, which have been undertaken on a large scale in most Latin American countries in the past thirty years. The colonization areas, i.e. settled and agriculturally developed, spread on both sides of new roads, forming strips of some kilometres wide. Within the areas colonized by spontaneous settlers, they

¹ P. George, *Dictionnaire de la géographie*, Presses Universitaires de France, Paris 1974.

occupy comparatively narrow strips of land which directly adjoin the main roads and lie in the neighbourhood of the areas settled since a long time. Originating in that way, the colonization areas are the continuation of earlier occupied lands, thus marking the actual range of the so-called pioneer front (agricultural frontier). The areas under the programmes of planned colonization are usually quite distant from the lands settled for a long time. Their location is determined in advance by accessibility of larger pieces of land which are useful for agriculture, as well as by placing the existing and permanent points of settlement. The influx of settlers to the areas of planned colonization is controlled and often financed by the institution responsible for their management. Thus the cost of migration to new place and the fact of its distance from the settler's home-village do not make so essential difference as in the case of spontaneous colonization. That is why the areas of planned colonization usually make agricultural enclaves in forests and savannas. According to the local conditions, they also take the shape of an elongated strip which is spread along the main road. They can also take the larger pieces of land on both sides of the road which are cut by the system of local roads.

These two systems of location of agricultural colonization areas, i.e. gradual displacement of agricultural frontier and colonization or formation of the agricultural enclaves, occur in most countries of Latin America. The examples of the first system can be found in Selva Lacandona in south-east Mexico, along the rivers and roads joining the Andes with their eastern slope in Colombia, Ecuador and Peru. The agricultural enclaves are the areas of agricultural colonization originating along the new roads in Brazilian Amazonia and on the Bolivian Plain as well as in the border areas, for instance the Paraguayan colony of Puerto Presidente Ströessner, Mexican colonies on the Río Hondo and the Guatemalian ones in the department of Petén.

The importance of roads as space organizing factor is unquestionable and it is documented in literature in a convincing way. Much less attention has been paid to the importance of towns in the process of agricultural colonization.

Among the areas of contemporary agricultural colonization in Latin America we can find both the lands which developed in the neighbourhood of towns established at the beginning of colonial period, around mission colonies and military posts, as well as those organized in the areas without any settlements. In the latter case, agricultural colonization is very often a town-generating factor. The beginnings of towns arising in such areas are the camps of workers who constructed rail-

ways or roads and the seats of institutions organizing colonization. Some of the towns are established on the settlers' own initiative near a shop, a school, a pub or the like. The rate of increase in population number of those towns depends on their communication position in relation to the main markets, the character of production undertaken by the colonists (the greater the level of marketability, the greater the demand for services and thus the greater the influx of non-agricultural population) and the type of colonization.²

I think that the problem of mutual relations between the growth of towns and the development of colonization process should make one of the most important investigation problems in the analysis of the organization of space in the areas of agricultural colonization. Experiences from the colonization of northern Paraná in Brazil clearly speak for the role of the well-organized system of towns in the stabilization of settlement which decides on the success of agricultural colonization programme.

On the regional level each of the above-mentioned systems of creation of the agricultural colonization areas (the moving of the pioneer front and the making of agricultural enclaves) leads to spatial organization of another type. The former can be described as the organized space, where holdings and spontaneous settlements form a continuous system of agricultural landscape. In the second case we have to do with unorganized space, where agricultural colonies of different sizes are dispersed and separated by strips of undeveloped land.

The type of colonization is, as was mentioned above, only one of the factors which cause the existence of two types of space. The conditions of natural environment, first of all the relief and the quality of soils, often conditioning the continuity or scattering of agricultural areas, are of crucial importance.

Great differentiation of the processes of agricultural colonization and of the environment in which they occur, leads to the analysis of the organization of space in every colonization area, i.e. at the local level. For the illustration of that problem, three areas of agricultural colonization in Ecuador, Bolivia and Brazil have been chosen.

² "...the foundation of urban centres and the linking of these to their immediate rural hinterlands and to the outside have been the keystone of planned colonization in Northern Paraná — writes Dozier Craig;" Northern Paraná. An Example of Organized Regional Development", *The Geographical Review* 1956, Vol. 46, No. 3, p. 325. Pierre Monbeig also emphasizes the town-generating role of peasants' colonization ("Les structures agraires de la frange pionniere de São Paulo", *Cahiers d'Outre Mer*, 1951, pp. 1—22).

Thanks to the road-building, financed by the petroleum companies, the north of Ecuadorian Oriente has been "opened" for colonization in the early 1970s. In this region two forms of spatial organization can be met, i.e.

- linear, semidispersed settlements associated with spontaneous settlers,
- group communities in government-aided settlements.³

The holdings of spontaneous settlers are of the rectangular shapes of 200—250 m × 2000 m. Their shorter side is adjacent to the road. In the next phase, after the first row of holdings, the trail (*linea*) is made. New holdings are marked perpendicularly to it (Fig. 1). The

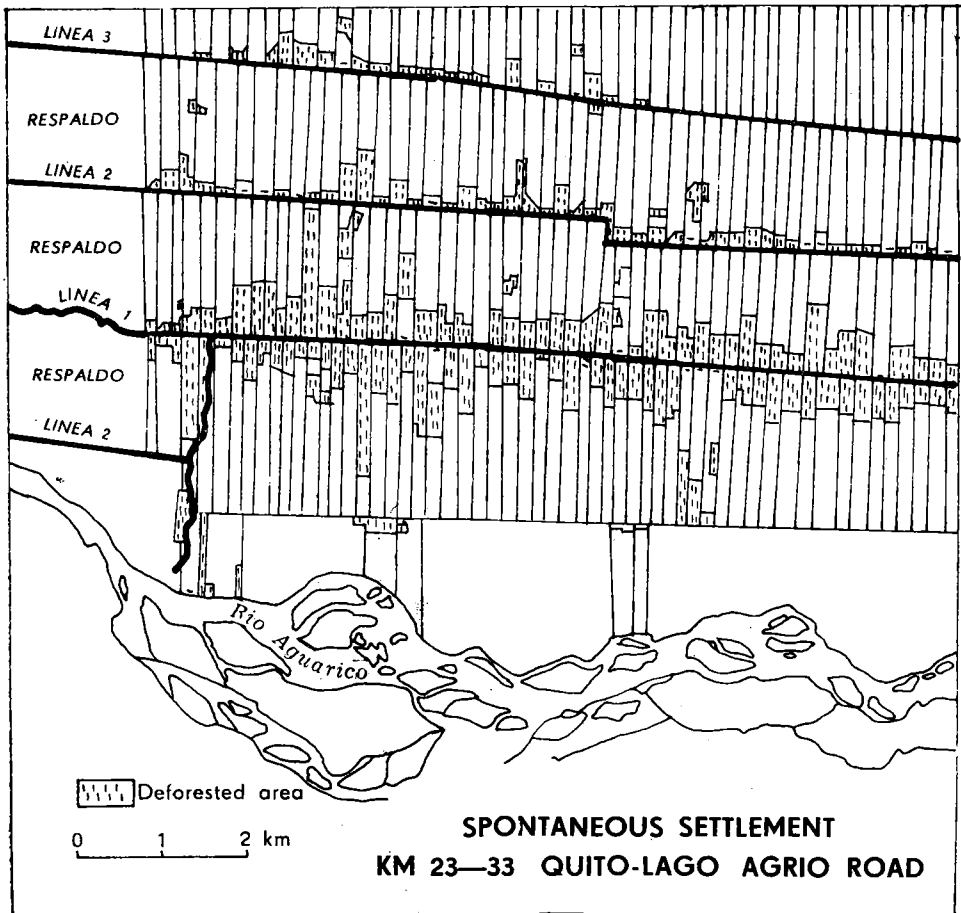


Fig. 1. Spontaneous settlement pattern in the Oriente of Ecuador

Source: Field survey and aerial photograph 712/R-4/1027, Instituto Geográfico Militar, October 28, 1975, published by Hiraoka M. and Yamamoto S., „Agricultural development in the Upper Amazon of Ecuador" *The Geographical Review* Vol. 70, No. 4, 1980, fig. 4, p. 431.

settlers build houses in the areas of their holdings and then they gradually clear the land of the forest. At the beginning, they cultivate subsistence crops and coffee and cacao cash-crops. As the soil becomes unproductive, they introduce livestock raising on the uncultivated lots.

The areas belonging to one of the agricultural colonies (Shushufindi Project of the area of 3,400 ha, designed for 80 families) were divided into four sectors. In the centre of the colony, there is a service sector, containing 80 residential lots, a school and administration houses. It is surrounded by private parcels for crop cultivation. The next sector is the communal pasture and, finally, the outside sector is made by the community forest reserve.

The colonization zone of San Julian (in the department of Santa Cruz in Bolivia), situated along the new road from Montero to San Javier was divided into 9 sub-zones (Núcleos Asociados de Producción Agropecuaria — N.A.D.E.P.A.), the latter being divided into 6 or 9 smaller „núcleos”. In each of them, 40 parcels of 50 ha each, were set aside. They met in the centre of the „núcleo”, where the lot of 4 ha for residential sector was reserved (Fig. 2).⁴

The example of the colonization area, in which we can observe the differentiation of the shape of holdings, which results from the differences in the relief and from the longer period of land use, is the colony of Pindorama in the state of Alagoas in Brazil. We can meet three types of holdings there: irregular blocks around the centre of the colony, broad strips on the level land of the “*tabuleiros*” and narrow strips (200 m) on the slopes of “*tabuleiros*”, situated between watersheds and the bottom of the valley.⁵

In the enclosed plans (Figures 3 and 4), the differentiation of size of holdings and of land use can be observed, too.

The above-mentioned examples show that the main elements differentiating the organization of space in the areas of colonization are the way of placing houses and the lands used for farming purposes. Two systems can be distinguished:

³ M. Hiraoka, S. Yamamoto, “Agricultural development in the Upper Amazon of Ecuador”, *The Geographical Review*, 1980, Vol. 70, No. 4, pp. 423—445.

⁴ G. Rivière, “Les zones de colonisation en Bolivie”, *Problèmes d'Amérique Latine*, No. 62, 1981, pp. 55—76.

⁵ S. Schacht, “Agricultural Colonization of the Zona da Mata of Northeast Brazil — the example of Pindorama”, *Applied Geography and Development*, Vol. 17, 1981, pp. 71—90.

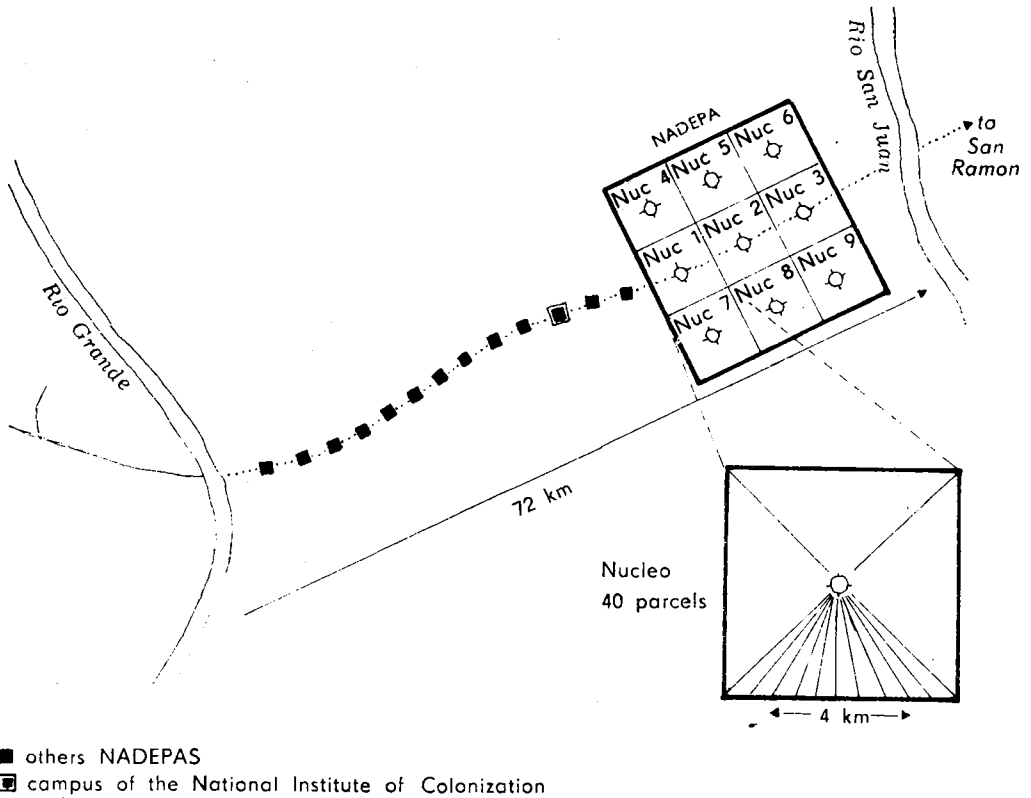


Fig. 2. San Julian colony, Bolivia.

Source: Rivière Giles, „Les zones de colonisation en Bolivie”, *Problemes d’Amérique Latine* No. 62, 1981, fig. 4, p. 66.

- the location of houses on individual holdings, which is typical of spontaneous colonization but it has also been observed in the areas of planned colonization in the south of Brazil;
- the location of houses in the separated part of the area, outside the agricultural lands. This system is met in many planned colonization areas, which have been formed at the initiative of public institutions.

Another element of the organization of space is the density of the local network of roads. It depends on the size of holdings and on the system of land distribution among settlers. The way of land distribution, i.e. the allocation of individual parcels to each family or the separation of areas assigned for crop cultivation, pastures, forest reserve

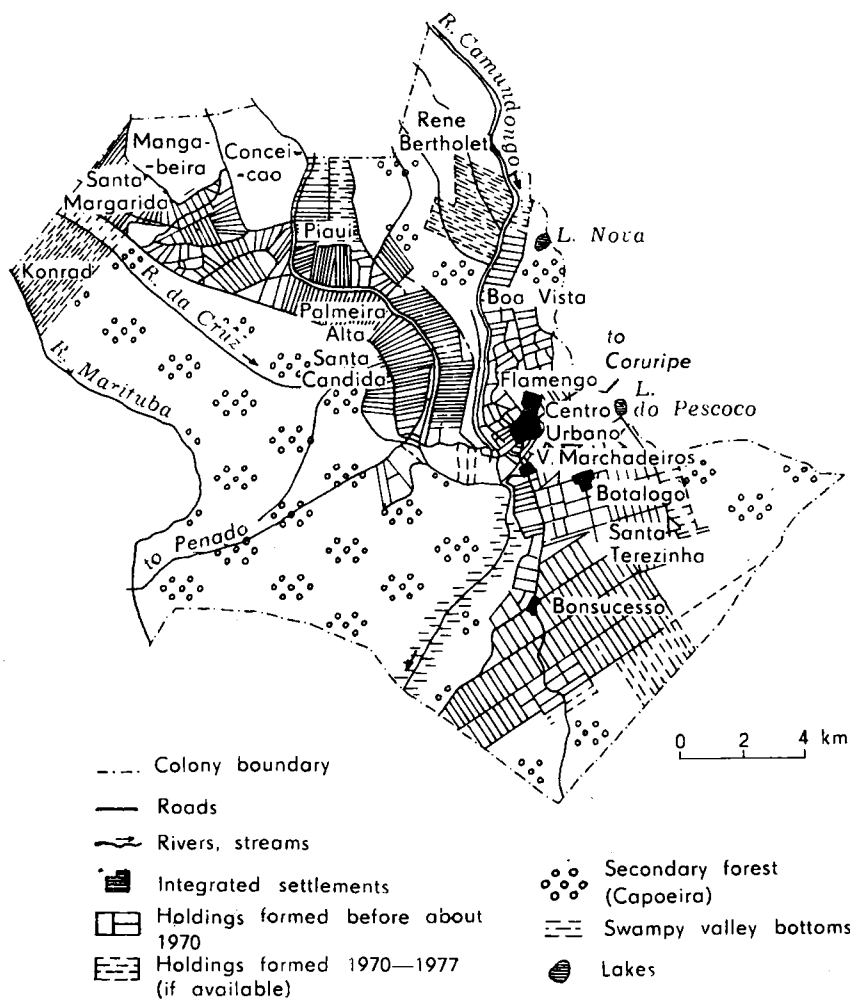


Fig. 3. Plan of Pindorama Colony, Brazil

Source: Schacht S., „Agricultural colonization of the Zona da Mata of North-East Brazil — the example of Pindorama”, *Applied Geography and Development*, Vol. 17, 1981, fig. 2, p. 81.

and later dividing them into individual parcels (it refers only to the arable lands, because pastures and forests are utilized commonly), is also an important element of the organization of space.

The last of the elements which differentiates the organization of space in areas of agricultural colonization is the form of land use. At the same time, it is the element that undergoes the greatest changes in time. The most frequent directions of such changes are: the extension of pastures at the cost of crop cultivation areas and

forests, and in the crop cultivation areas — the extension of the areas of perennial crops at the cost of annual crops, as well as the gradual shift from polyculture (*policultivo*) to monoculture.

The differentiation of the organization of space in colonization areas also results from other purposes of their development. In Latin American countries there are three main aims of agricultural colonization. In most colonization areas one of them is considered to be a priority one. These aims are the following:

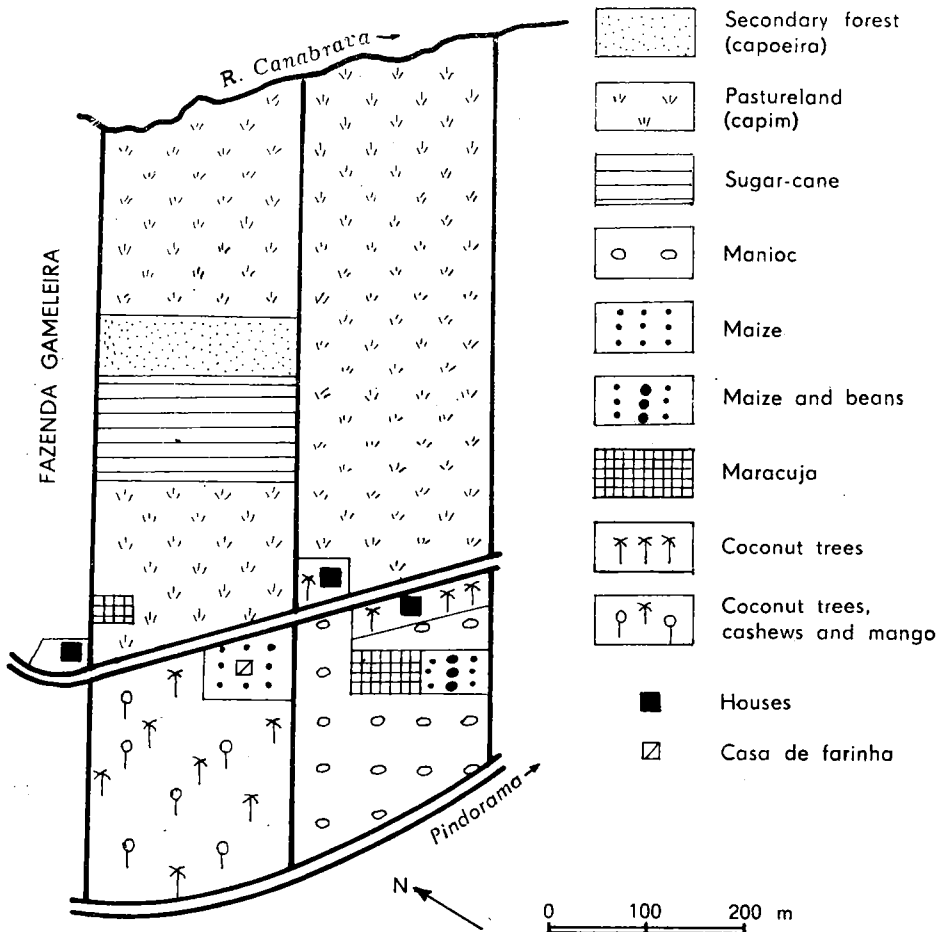


Fig. 4. Land use in Santa Margarida, Pindorama colony, Brazil (mapped on 4 October 1977)

Source: Schacht S., „Agricultural colonization of the Zona da Mata of North-East Brazil the example of Pindorama”, *Applied Geography and Development*, Vol. 17, 1981, fig. 3, p. 82.

- production for exports and market of large towns;
- provision of lands to farmers with no farmlands of their own and to users of undersized farms;
- protection of frontier areas.

The realization of a given purpose requires different organization of agricultural production.

In the areas colonized for production purposes, medium and large holdings (of hundreds or thousands of hectares) are prevalent. They specialize in cattle breeding or in the cultivation of crops, such as, oil palm, sugar cane, cotton, hevea trees and rice.

In the areas of colonization aimed at the provision of land to peasant families that migrate or are displaced from densely populated rural regions, there arise relatively small (30—1000 ha) individual holdings. They produce food for the farmers' needs, cultivate 1 or 2 crops or raise livestock for sale. The agricultural colonies of which the lands are commonly utilized by all inhabitants are being organized, too.

In the lands of the frontier zones, small agricultural colonies are established. In their centres the dwelling-houses are concentrated. The houses are surrounded by the areas on which small parcels, used mainly for subsistence crops, are set aside.

