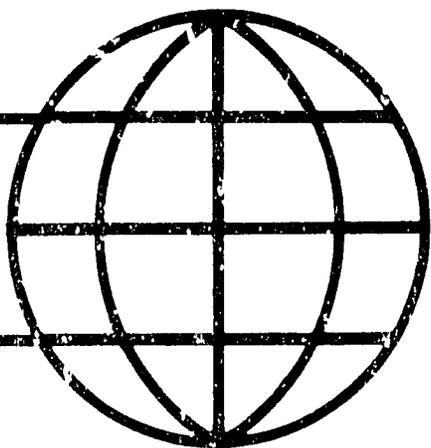
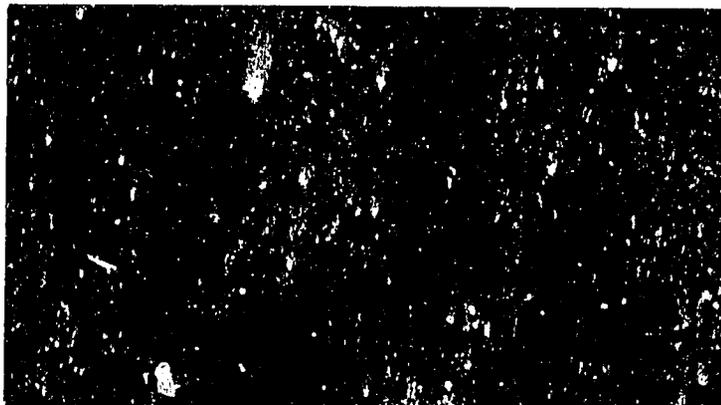


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**COOPERATIVE AGREEMENT ON HUMAN SETTLEMENTS  
AND NATURAL RESOURCE SYSTEMS ANALYSIS**



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SPATIAL ANALYSIS OF REGIONAL  
MARKETING SYSTEMS  
IN THE THIRD WORLD

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## INTRODUCTION

Through pioneering work in economic geography by Christaller (1966) and Losch (1954), social scientists became aware that a relationship exists between the spatial arrangement of a regional market system and the social and economic relations that organize the system. Subsequent work by Skinner (1965/66), Smith (1976, 1977), and others has shown that the ideal central place hierarchies described in early models have correlates in functioning market systems, so that particular kinds of social and economic relations between participants in a system have predictable spatial manifestations.

This characteristic has become the object of considerable interest among social scientists concerned with poverty and underdevelopment in countries of the Third World. Spatial analysis of market systems appears to offer the possibility of reaching an understanding of their underlying organization on a regional level, without requiring the time-consuming ethnographic analysis normally associated with market studies. In addition, the fact that a relationship exists between a market system's spatial arrangement and the social and economic relationships that compose it suggests the possibility of improving the economic opportunities of the people living within the region by modifying the location of transport services, bulking facilities, and market centers. This makes spatial analysis attractive to government and development agency planners, may be reluctant to support regional development efforts because they associate them with high costs in money and time, and with benefits that do not appear sufficiently tangible, and who are enjoined to treat development as a technical problem rather than a political one involving competition for resources among different interest groups. The construction or improvement of physical market facilities offers a tangible product at the end

of a project, and it may appear to avoid the need for explicit decisions about 'whose ox is to be gored' in a particular setting.

The article by Karaska in this volume provides an illustration of how spatial analysis has been used in Ecuador. He suggests a number of ways in which changes in the spatial arrangement of the Ambato regional market system might improve the economic opportunities of those who live there. However, because spatial analysis offers promise as an analytical tool for research and planning, its limitations should also be carefully examined. Otherwise, there is a danger that, like many other useful tools, it will become saddled with a reputation for failure arising from inappropriate application or unrealistic expectations, and will be discarded out of hand.

#### THE ORGANIZATION OF MARKETS AND MARKETPLACES

Smith (1977) has pointed out that the fruitful application of spatial analysis to the study of regional market systems is based upon an understanding of the relationship between market organization and marketplace organization. The former refers to the way in which supply and demand interact in a particular social and historical context to price commodities and the means of their production, while the latter refers to how physical channels of market exchange are organized on the ground. The application of spatial analysis to problems of regional marketing is based upon the premise that marketplace organization varies as market organization varies.

The options that are available to the participants in a market system are a function of the social relations between the exchanging parties. Relevant aspects of these social relations for shaping economic opportunity may include differences in the scale of operation or wealth between the exchanging parties,

differences in the relative scarcity or socially determined need for the goods controlled by each, or the ability of one party to outwait or outexchange the other.

These kinds of relationships are, in turn, a function of the distribution of the means of production necessary to produce the commodities being exchanged in the market system. Thus, it is the prior distribution of productive resources that shapes the prices of the commodities that are being exchanged in a particular market system. While commodity prices may feed back into the costs of productive resources, over the long term commodity prices are more reflective of the distribution of resources than they are causative. The result is that those who enter into unfavorable market relations are rarely able to improve their position simply by being more productive. The smaller resource base of the disadvantaged party is depleted, while the party with greater access to productive resources accumulates capital.

Drawing upon the work of Christaller (1966) and Losch (1954), Skinner (1964/65) and Smith (1976, 1977) have shown that the kinds of social relations described above, which are associated with different patterns of market organization, have their analogues in the spatial arrangement of market systems. The earlier works hypothesized a relationship between market organization and the spatial arrangement of the marketplace, and deduced what the spatial arrangement of a market would be if it were located on a featureless plain, and were characterized by total dedication to profit maximization by all suppliers of goods, complete rationality in the selection of market centers by consumers, a differentiated and regionally integrated market economy, equal purchasing power by all exchanging parties, and unrestricted perfect competition among all parties. However, because such conditions rarely

characterize the organization of real marketplaces in functioning market systems, the applications of the insights of Christaller and Losch were limited.

Skinner and Smith, however, demonstrated that functioning market systems also have characteristic spatial arrangements which act as signatures of the social relations that organize them. They defined several types of regional market systems, based upon the amount of hierarchy and differentiation among centers, and described them in terms of the social relations that one would expect to organize each type based upon the spatial arrangement. Smith (1977), defined four types of regional market systems for western Guatemala, which she argued had organizational features in common with market systems with similar spatial arrangements in other areas of the world.

The first type described by Smith was an interlocking market system, which was the system she studied which most closely resembled the ideal central place hierarchies described by Christaller and Losch. Smith's interlocking system is characterized by a well-developed hierarchy of market centers, which contains three levels relating to one another in a 1.3.12 ratio. The features of market organization observed to accompany this spatial arrangement included a lack of political control over the rural economy, so that the interaction of supply and demand was the primary mechanism for establishing commodity prices; and a lack of concentration and monopoly in both the production and distribution of commodities. In addition, production and marketing took place in a context of growing domestic demand for the commodities produced by smallholders, and there was sufficient differentiation of production within the market region itself that most rural demand was satisfied by rural production.

The second system described by Smith was a dendritic market system, characterized by only two levels of differentiation among market centers, with a high proportion of small centers in relation to the number of large ones. Because the smaller centers had only weak links to one another, the prices for commodities not in demand by the larger centers were priced according to local conditions only. Only commodities which were imported to the region through the larger centers or those local products which they collected and redistributed were priced on a regional level. Smith found the dendritic system to be characterized by monopoly control of market centers and transport facilities by traders from outside the region, with the result that smallholder participation in commerce was low. Most commodities which left the local areas where they were produced were transported out of the region altogether, and local areas were heavily dependent upon commodities imported from outside the region. While the dendritic system was "efficient" from the point of view of exporting goods from the region or distributing goods imported to the region from elsewhere, it offered few opportunities for greater local participation in commerce for regional economic growth and development.

The third type of spatial arrangement described by Smith was a primate market system, where she observed a single major center with no intermediate centers and many small ones. In the primate system, local trade was monopolized by urban merchants and outsiders to the exclusion of rural smallholders, and most productive resources were held by enterprises with interests outside of the regional economy. As a result of this control of commerce and productive resources by outside interests, the primate system depended upon less developed regions for food and labor and upon distant, more developed economies for markets.

Finally, Smith identified what she called a top-heavy market system, characterized by a proliferation of higher level market centers and the domination of commerce by rural traders. Rural producers depend upon nearby, less developed market systems to provide many of the commodities they purchase. Production occurred in the context of declining demand for the goods and services produced in the system. This, in turn, fostered intense competition among producers and traders to the exclusion of smaller competitors, and leading to concentration and monopoly of commercialization facilities and productive resources.

#### APPLICATIONS OF SPATIAL ANALYSIS

Smith and others (see Smith, ed. 1976) who have applied spatial analysis to the study of regional market systems have shown that it can be a powerful diagnostic tool which can indicate regional inequities in resource distribution, patterns of social differentiation among the members of a regional population, and the location and distribution of productive resources in both geographic and social class terms. The ability to analyze regions in spatial terms has important implications for social science research, because it allows us to perceive clearly how the processes of development and underdevelopment define and transform empirically observable economic activities. Spatial analysis also offers the possibility of improving the quality of development planning and evaluation by making it easier to predict and identify the factors limiting economic opportunity in a region.

At the same time, it is essential to remember that, while the spatial organization of a regional market system is predictive of the social relations that organize the system, it is not causal. Spatial arrangements reflect the

prior distribution of resources in the region. This distribution, in turn, reflects the production goals of those who exercise political control. It is the outcome of political struggle over control of productive resources that determines the social and economic relations that organize a market system, and hence its spatial arrangement, over the long term. Therefore, in order to understand how a market system functions and why economic opportunities, or their absence, are structured the way they are, it is possible to use the spatial analysis of a region as a means for making informed hypotheses about the ways in which productive resources are distributed and controlled. By using spatial analysis in this way, one is working backward from empirical data in order to understand the underlying relationships that cause those data to be ordered in a particular way.

This does not mean that the utility of spatial analysis is limited to serving as an academic tool. We have a number of examples of how changes in the spatial arrangement of marketplaces has resulted in improved conditions for the population of the affected region. Appleby (1976, 1978), for example, has described successful efforts by peasant communities in Puno, Peru, to establish rural markets in order to break the oligopsonistic control of urban merchants over the marketing of agricultural production.<sup>1</sup> It is important to remember, however, that such changes did not occur in a vacuum, but were part of a pattern of social and economic change in the larger economy.

The establishment of rural markets in Puno coincided with a period of rapid urban population growth that was creating a demand for foodstuffs that

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<sup>1</sup>Peasants received important support in this area from missionaries of the Seventh Day Adventist Church, who combined religious preaching with concern for peasant struggles for social justice in areas such as education and economic opportunity (see Hazen 1974; Levellen 1978).

the traditional system, based upon patron/client relations between urban merchants and peasants, was unable to satisfy. Whereas in the past they had been able to remain in the urban centers and wait for peasants to bring in their food from the countryside, merchants were forced to seek out new sources of food in rural areas to meet the growing demand. When they did so, they confronted a peasantry in the process of establishing a network of rural markets to which they were forced to turn in order to secure food, rather than being able to extend their patron/client ties.

The establishment of rural markets in Puno in the mid-20th century provided a structure for the social relations that organized the regional food market that was an alternative to the patron/client relations that had formerly prevailed. The increased competition among merchants and the hierarchical organization of bulking and transport facilities that resulted from the establishment of rural markets provided new opportunities for peasants to participate in the market system, and the revenues they earned through the sale of food products increased. However, the success of the change in the spatial organization of the market system resulted in conditions characteristic of that particular period. Attempts to establish rural markets at the beginning of the 20th century, before the beginning of a period of rapid urban population growth, would have failed because there was no pressure on merchants to seek out new sources of supply.\*

By the 1960s, the effects of national economic policies intended to keep food prices low for urban consumers, but which also discouraged domestic food production by smallholders through measures that included the subsidized

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\* See Appleby (1980) for a discussion of the relationship of urban population growth to changes in the regional economy of Puno during the 20th century.

importation of food staples and the focusing of agricultural development support in the area of industrial cash crops for export, were beginning to be felt (Alvarez 1980, 1983; Caballero 1984; Painter 1984b). Rural producers were outcompeted in regional markets by imported food products, and demand for peasant food production was on the decline. By 1980, the market network for bulking peasant production and transporting it to urban centers was not functioning in some areas of Puno, and the major purpose of the system was the distribution of manufactured goods from the cities into the countryside (Painter 1981, 1986).

This example from Puno indicates that changes in the spatial organization of a market system may improve the economic opportunities it provides to those participating in it. However, the efficacy of modifying the spatial organization could not be assessed simply with reference to the spatial organization itself, but was a function of changes in patterns of resource competition. Spatial analysis could predict the nature of many of the social relationships that organized the regional market system of Puno, but not the particular economic interests and political alliances that would demand or oppose such changes. While analysis of social relationships may indicate a possibility of improving economic opportunities through the modification of spatial arrangements, the practicality and long range sociopolitical impacts of such modifications must be a question for empirical investigation.

#### PREDICTIONS AND PRESCRIPTIONS

In this section of the paper case study material are presented from the eastern lowlands of Bolivia and from the Peruvian case discussed above, in order to highlight some of the ways in which spatial arrangements are

predictive of the kinds of social relations that organize a market system, and the ways in which economic opportunities will or will not be altered by changes in existing spatial arrangements.<sup>3</sup> In both cases, spatial analysis is a valuable tool for understanding how the social relations that organize the respective market systems limit the economic opportunities enjoyed by rural smallholders. However, the possibilities for improving economic opportunities through alterations in the spatial arrangements of the respective markets are quite different. Furthermore, the determination of how effective spatial modifications might be in each case can only be made after an analysis of the social relations that lie beneath the distribution of the physical features of each market system.

#### The Eastern Bolivian Lowlands

The market system of the settlement area of northeastern Santa Cruz department, in the lowlands of eastern Bolivia, resembles what Smith (1977) refers to as a primate market system. The system is dominated by the cities of Montero and Santa Cruz, which, because of their proximity to one another at the southwestern edge of the region, along the same paved road, and because they purvey essentially the same goods and services in the same rural hinterland,

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<sup>3</sup> The data on eastern Bolivia were gathered in 1984 as part of a research project sponsored by the Cooperative Agreement for Settlement and Natural Resource Systems Analysis of Clark University, the Institute for Development Anthropology, and the U.S. Agency for International Development. The Peruvian data were collected in 1979-80 with support from an Inter-American Foundation Learning Fellowship for Social Change and a Fulbright-Hays Fellowship for Doctoral Research. Ethnographic information on the two cases has been presented in detail elsewhere (cf. Painter 1981, 1984a, 1985a, 1985b, 1986; Painter et al. 1984; Perez 1985a, 1985b), and will not be repeated here.

may be legitimately viewed as a single urban center.<sup>4</sup> Below this primate center, markets are small, few in number, and undifferentiated in terms of the goods and services they provide.<sup>5</sup>

Observation of this regional market system indicates that many of Smith's deductions about the nature of social relations organizing a primate market system appear to be confirmed. First, the principal aspects of local trade are controlled by interests based outside of the region. The lumber industry is dominated by sawmills that represent multinational corporations. Agents of these firms routinely disregard national laws governing the cutting and sale of trees. Logs are sawed into boards, cured, and shipped to the United States or Europe for transformation into a final product that will be purchased by consumers. The major cash crops, corn and rice, are either consumed locally, or they are transported to Montero or Santa Cruz for processing by firms established to satisfy demands for corn to put in livestock feed and rice for consumption by humans in other areas of the country.

Secondly, productive resources are controlled by a few large-scale enterprises with interests outside of the regional economy. Settlement areas

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<sup>4</sup> This does not mean that the two cities are the same. They contrast sharply with one another in terms of their histories and the locally recognized ethnic groups that dominate political life in each. Furthermore, they resemble one another in terms of the goods and services they offer only with respect to northeastern Santa Cruz department. The hinterland of the city of Santa Cruz extends to the south and southeast, and in these areas is not serviced by Montero (see Stearman 1985:40-133).

<sup>5</sup> The low level of development of the regional market system has deep historical roots in the manorial economy that controlled eastern Santa Cruz until the state began to systematically promote capitalist agricultural development with support from international donor agencies in the mid-1950s. Prior to that time, economic transactions took place in the context of patron/client relations between the owners of large estates and resident peasant populations held in place by customary obligations of personal service and debt peonage (see Heath 1969).

were established in areas isolated from roads, and transport facilities are controlled by a small number of companies based in Montero or Santa Cruz that are principally concerned with transporting goods out of the region. Because of their limited cash reserves and political power, smallholders are unable to compete effectively for the limited quantities of agricultural inputs available in the region, and these are consumed by large-scale commercial agricultural enterprises.

Finally, the regional economy of northeastern Santa Cruz is dependent upon less developed regional economies for labor, and on distant, more developed economies for markets. The commercial agriculture that is the principal industry in the region has developed in conjunction with the increased availability of cheap migrant labor from the highland and valley regions of Bolivia. The cotton, coffee, and soybeans that are its most important crops are exported to Brazil, and the bulk of the region's beef production is consumed in European markets.

The unfavorable situation in which smallholding settlers find themselves in northeastern Santa Cruz has its origins in unsuccessful resource competition with regional elites, whose dominance of the political and economic life of northeastern Santa Cruz was not challenged when the Bolivian government undertook the promotion of capitalist agricultural development there in the 1950s. As a result they were able to monopolize access to roads and markets, with smallholder settlement being relegated to less desirable areas. State policy promoted smallholder settlement, but took no specific action to insure access to these infrastructural facilities or to enfranchise them politically in order that they might compete effectively for the development resources channelled into the region (Painter 1985b). On the other hand, political and

economic elites from other areas of the country have, on occasion, seen fit to speak out on behalf of settler interests as a device for limiting the power of increasingly assertive regional interests of their counterparts in Santa Cruz (Painter 1985a).

The broad outlines of the situation in northeastern Santa Cruz may be predicted on the basis of an analysis of the spatial organization of its market system. While specific details depend upon an understanding of the local context, spatial analysis is a useful tool for forming hypotheses in order to arrive at such an understanding. In addition, because the unfavorable situation of the settlers is the result of unsuccessful resource competition on a regional level, a regional plan to improve access to agroprocessing facilities, roads, transport services, and markets would enjoy good possibilities for improving the economic opportunities available to settlers. For these possibilities to be realized, a program of incremental changes in the spatial arrangement of the regional market system would either need to be focused on areas of economic activity not already dominated by elites, or it would have to include specific measures to strengthen institutions representing settler interests in order to insure that they were capable of competing with entrenched interests and that the improvements made were not simply appropriated by elites (see Painter et al. 1984).

#### Puno, Peru

As a result of the increasing demand for food by a growing urban population and the peasant response of establishing rural market centers, discussed above, Appleby (1976, 1978) characterizes the regional market system of Puno as resembling the interlocking system system described by Smith. This

characterization points to some of the potential pitfalls of spatial analysis, as it is based upon premises that have less to do with the empirical realities of production and commerce in Puno than they do with the difficulties of conducting region-based research. One major problem is the question of establishing regional boundaries. The Puno region as defined by Appleby stopped at the international border between Peru and Bolivia on the east, and at the eastern range of the Andes on the north. In fact, the city of La Paz, Bolivia, is a major source of goods and services for rural dwellers in Puno, and they in turn provide it with large quantities of meat, wool, and certain types of food products. Rural peasants in Puno also play an important role as intermediaries in an active commerce in manufactured goods between cities in Peru and La Paz (Painter 1981, 1984a). Likewise, selecting the eastern range of the Andes as a boundary for the market region of Puno has little to do with economic activity. Large numbers of peasants maintain access to lands east of the Andes, from where they market significant quantities of coffee, citrus, hardwoods, and gold the Puno system (see Collins 1981, 1984; Kuczynski-Godard 1945; Martinez 1969). While the difficulties confronting Appleby with regard to administering a research project on both sides of the international border and managing logistics on the two sides of the Andes undoubtedly left him with few practical alternatives, the fact that he defined his boundaries in ways that bore little relationship to the flow of commodities through the region under study undoubtedly influenced his perception of its organization and functioning.

In addition, Appleby's observations compared with my own (Painter 1981, 1986) would appear to indicate that the degree of hierarchy that one observes may be to a large degree a function of when one makes the observations and the

location of the researcher within the system. Based in the city of Puno in the mid-1970s, Appleby observed three levels of differentiation. However, in 1980, when I conducted research from a base in the outlying province of Huancane, I was unable to find clear differentiation below primary centers. Furthermore, that part of the system concerned with bulking and transporting rural produce to Peruvian urban centers was in advanced decay in all areas except east of the Andes. Elsewhere in the region, the system primarily served to purvey manufactured goods in the countryside. My own view of the Puno market system is that it more closely resembles a dendritic model than an interlocking one.<sup>6</sup>

Viewing the Puno market system as a dendritic network, one finds that many of the conditions that one would expect to find based upon the analysis of Smith are, in fact, present. There is near-monopoly control of transport facilities by traders who do not participate in commerce within the region, but are concerned with the export of products to other regions for processing and/or consumption, and the transport of people travelling out of the region in search of wage-labor opportunities. These traders control access to the region's primary markets, and while there is widespread peasant participation in commerce, this operates on a small scale and is dependent upon small traders being able to buy passage on the vehicles owned by their large counterparts. The Puno region is heavily dependent upon a number of manufactured goods produced outside the region. Local artisan production has been supplanted by manufactured commodities imported from outside the region in all but a narrow range of goods of interest to tourists. Regional urban centers are heavily

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<sup>6</sup> It should be emphasized that the intent here is not to criticize Appleby, whose Puno research is without parallel in terms of scope and detail of the data collected. Rather, I wish to show how different views of the same "empirical reality" can be simply as a result of the circumstances under which research is conducted.

dependent upon processed foodstuffs imported from outside Peru at the expense of local producers. Also, because of the lack of economic opportunity in agriculture, most rural families are compelled to participate in some form of wage labor migration out of the region in search of cash income to compliment agricultural production for their own use, so that wages constitute another import upon which there is considerable dependence.

In contrast to the situation in eastern Bolivia, the limitations on economic opportunity confronting rural dwellers in Puno are not likely to be remedied through modifications in the spatial arrangement of the market system. The declining revenues associated with agricultural production have their origins in national agricultural policies that cannot be addressed at the regional level (Alvarez 1980, 1983; Caballero 1984; Painter 1984b). The same is true of the concentration of marketing and transport facilities in the hands of a small number of people (Esculies Larrabure 1977; Figueroa 1980). The result of this complex of factors has been to limit returns to rural dwellers to such an extent that they engage in destructive land use patterns, sacrificing long-term production and productivity in order to satisfy an immediate need to spend as much time generating off-farm revenue as possible (Collins 1984, 1986). Because the problems facing rural smallholders in Puno are not the product of regional resource competition, but involve national decisions to favor entire sectors of the Peruvian economy over smallholder agriculture, it is very difficult to imagine how altering the spatial organization of the regional market system will have an impact on the social relations responsible for the present situation.

## DISCUSSION AND CONCLUSIONS

In both the Bolivian and Peruvian cases reviewed here, spatial analysis is a powerful tool for generating hypotheses about the social relations organizing the market systems in the respective regions. The power of the approach derives, on the one hand, from the ability of the spatial models to accommodate the particularities of diverse local circumstances in reference to a general theory of market organization, and on the other, to enable the researcher to be explicit about the relationship between empirically observable events, observations, and behaviors and the underlying relationships that generate them. The practical application of this is that a spatial approach can greatly simplify the process of reaching an understanding of the social and economic dynamics at work in a region for development planners and policy makers.

However, as is the case with most tools, inappropriate applications can lead to unhappy results. In the first place, the fact that something is empirically observable does not mean that it is a non-problematic unit of analysis. What one observes in a regional market system may be very much a product of how regional boundaries are defined, one's vantage point in the system, and the particular time in which observations are made. Secondly, while one can predict the kinds of factors that limit economic opportunity in a market system on the basis of spatial arrangements, there is no necessary backward linkage that will allow those factors to be addressed through changes in the spatial organization of the system. Whether or not such a linkage exists or not is a critical question that needs to be answered for each individual case before planning proceeds.

An important consideration in this regard is the location of the parties between whom the social relations that define market organization exist. In

the case of Bolivia, the factor limiting economic opportunities for smallholding settlers is unsuccessful resource competition with regional elites. While there are linkages of various types between northeastern Santa Cruz and the national and international economies, the arena for resource competition is the region itself. In Peru, this is not the case. Smallholders in Puno are the victims of policies hostile to them as a class at a national level. The factors limiting their economic opportunities are the same ones that limit the economic opportunities of smallholders throughout the country in similar ways. Region-based efforts to improve opportunities are not likely to show impressive results in the absence of national policy changes intended to improve conditions for smallholders.

Deere and de Janvry (1979:608) have argued that unfavorable terms of trade are the most common mechanism of surplus extraction from peasants in contemporary Latin America. Insofar as the terms of trade between smallholders and the other classes participating in a regional economy can be made more equitable by improving access to productive resources through modifications in the spatial organization of market systems, the contribution of this approach promises to be considerable. However, the considerable insight that spatial analysis affords us needs to be employed with a critical eye in order to avoid burdening the entire approach with expectations that it cannot fulfill.

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