MARKET DEVELOPMENT AND THE ECOLOGICAL COMPLEX*

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THERE have been few theoretical statements on how and why periodic markets evolve into daily markets, change in size and structure, or disappear from the landscape. Similarly, no satisfactory conceptual schemata have been devised to account for major changes in market systems involving the reorganization or the disappearance of market days, the addition of new market days in the week, and the relocation of markets and the establishment of new market centers. *(1)* Although these issues cannot be vouchsafed until considerably more data are available from different parts of the world, a commonly recognized approach in human ecology can be used as a basis for research in this field.

THE ECOLOGICAL COMPLEX. Human ecologists have defined an ecological complex as consisting of four interrelated clusters of variables: ***population***, expressed in terms of distribution, density and demographic structure; ***organization***, including economic and social institutions, the division of labor, and the patterns of socioeconomic interaction; *technology;* and, *environment,* embracing both natural conditions and the man-made landscape. *(2)* From the early writings of the human ecologists *(3)* until the present, this ecological complex has been related to such important ecological processes as competition, collaboration, succession, dominance, invasion, differentiation, and spatial interaction. Several works on human ecology show a keen appreciation of the interrelationships between spatial and temporal locations, and of the relation of human behavioral patterns to temporal cycles and routine sequences of activity. *(4)* These works show interesting conceptual parallels with some recent geographical writings on the spatiotemporal characteristics of periodic markets. *(5)* Duncan has summarized the potential of the ecological approach as follows: "An ecological account of social change is attempted by referring to such instigating factors as environmental change (whether caused by man or other agencies), changes in size and composition of population, introduction of new techniques, and shifts in the spatial disposition or organization of competing populations. The interdependence of factors in the adaptation of a population implies that change in any of them will set up ramifying changes in the others." *(6)* This ecological approach to the process of socioeconomic change appears to form an appropriate conceptual framework for examining the changes currently taking place in the internal market systems of less developed countries.

ANDEAN MARKETS: METHODOLOGY AND RELATED RESEARCH. The generalizations which follow are based on detailed and extensive fieldwork on market systems in Andean Colombia and Ecuador and brief reconnaissance visits by both authors to various parts of Peru and Bolivia. In both Colombia and Ecuador, a wide variety of research methods and operational philosophies were used by the authors and their field assistants in data gathering and analysis. These included structured and unstructured questionnaire surveys, market censuses, pedestrian and vehicle censuses, participant observation, the use of archival materials and oral histories, and the derivation of theory by both inductive and deductive approaches. Visits to other areas in Latin America and an extensive survey of the literature on periodic and daily markets in different parts of the world suggest that, irrespective of the length of the market week or the nature of the particular culture history, most market systems exhibit many of the features of the Andean systems. *(7)*

In Colombia, data were gathered in 1969 and 1970 on market periodicities, synchronization, hierarchies, and itinerant trading patterns for more than fifty market centers between Bogotá and Bucaramanga in the

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north-central Andes, and for approximately twenty-five market centers in the Department of Nariño in southern Colombia. *(8)* The inductive findings have subsequently been extended to more formal theoretical domains, to questions on the origin and nature of periodic markets and market cycles, *(9)* and to an axiomatic derivation of a cognitive gravity model in a periodic market cycle context. *(10)*

In Ecuador, data were gathered in 1970–71, and in 1972, for the 164 market centers in the Ecuadorian Andes above an altitude of 1,500 meters. *(11)* Particular attention was given to the markets in the central highlands, and to the urban markets of the City of Quito, including an examination of the factors underlying the survival of periodic markets in an intraurban context. *(12)* Historical data were gathered for the development of the markets and market centers of highland Ecuador since the sixteenth century, and these have been used for studies of the development of market systems and of the factors underlying changes in the market days of periodic markets. *(13)* Studies were also made of interregional marketing chains and of the relationship of market-place trade to long distance commerce. *(14)*

ANDEAN MARKETS: FACTS REQUIRING EXPLANATION. Within the Andean highlands, there are marked contrasts between the market systems of the more accessible and more densely populated *core areas* and the market systems of the less accessible and less densely populated *peripheral areas.* The core areas generally have fairly good road systems, relatively frequent transport services, and easy access to large urban centers for the sale and purchase of goods. Typical examples are the eastern highlands of Colombia around Bogotá, the Cauca Valley around Cali, central highland Ecuador, the Mantaro Valley in central Peru, and the Titicaca and Cochabamba basins in Bolivia. The peripheral areas tend to have poorer roads, a lower density of transport facilities, less frequent transport services, and difficult access to major urban centers. Examples include most of southern highland Colombia and northern highland Ecuador, most of southern highland Ecuador, highland Peru north of the Callejón de Huaylas, the Ayacucho area in southern central Peru, and the central and southern Altiplano of Bolivia.

In relation to the general themes of market size, location, periodicity and development, the market systems of the core areas in the Andean highlands exhibit the following major characteristics:

1) There is a relatively high density of market centers, and movements between market centers can be effected fairly rapidly and cheaply.
2) The periodic markets in most areas show a moderate degree of synchronization, so that there are some markets occurring on every day of the week and it is possible for mobile traders to frequent up to seven different market centers in the same week.
3) As periodic market centers grow in size and importance, further market days are usually introduced. The two most common types of additional market days to be established after the initial major market day are a wholesale market day on the day before the major market day, and a minor retail market day with the maximum, or close to the maximum, possible temporal separation from the major market day. *(15)* Thus, for example, a market center's initial market day on Saturday may eventually be supplemented by a wholesale market day on Friday and a minor market day on Tuesday or Wednesday.
4) During the development of the market system, a number of market centers may change their market days so as to avoid conflict with neighboring centers, and some unsuccessful markets may disappear altogether. Most periodic markets in both core and peripheral areas are initially established on Saturdays or Sundays, days normally set aside for rest, recreation and religious activities, when the rural population normally visits nearby service centers. The competition between neighboring markets at weekends, combined with ecclesiastical protests about the desecration of holy days and the general custom that shops and offices should work from Monday to Friday, has induced many local authorities in core areas to

change market days from weekends to ordinary weekdays.

5) A substantial proportion of market centers, particularly the larger ones, have market activity on every day of the week, and many market centers combine a moderate daily market with one or more larger periodic markets each week.

In contrast to the market systems of the core areas, the market systems of the peripheral areas frequently exhibit the following features:

1) The density of market centers is relatively low, and movements between market centers tend to be slower and more expensive.
2) The periodic markets of any given area show very low degrees of synchronization, most of the markets being concentrated on Saturdays and Sundays. Mobile traders can usually only visit one, two or three different market centers in the week, and intermarket mobile trading is of lower importance than in the core areas.
3) Very few market centers have more than one periodic market day in the week. A rather larger number of centers have established daily markets, usually held inside municipal buildings, but these markets are generally small and sell only a very restricted range of goods.
4) Changes of market day are relatively rare, the majority being from ordinary weekdays to weekends rather than the reverse. Because competition with neighboring market centers is less intense than in the core areas, it is more convenient to hold markets at weekends so that the rural population can work on the weekdays and visit the market centers at weekends for trade, recreation and religious devotions.
5) A greater proportion of the total production is for local subsistence, and average per capita cash incomes are lower than in the core areas. A lower proportion of total trading takes place in the marketplace than in the core areas, more wholesale buying occurring at the places of production, and more wholesale and retail distribution occurs in permanent shops and warehouses. It is probable that the proportion of the population in the peripheral areas working as commercial intermediaries is lower than in the core areas.

A FRAMEWORK FOR EXPLANATION. Most market systems in less-developed countries appear to be imperfectly developed and in a state of rapid change, and their characteristics are not only attributable to present-day economic factors, but also to historical legacies and to sociocultural factors. What is sought here is a conceptual schema that is sufficiently general to take into account all market systems encountered and yet specific enough to permit the inclusion of unique local features. The ecological complex with its associated ecological processes provides an invaluable basis.

The nature of individual market systems can be explained by the four interdependent clusters of variables in the ecological complex. Population, technology, and general socioeconomic organization form the primary clusters, and environment assumes a secondary role. Market organization, treated as a subcluster of variables within the cluster of socioeconomic organization, can be considered as a series of dependent variables which change according to changes in the independent variables of population, technology, general socioeconomic organization and environment. Through a process of circular and cumulative causation, changes in the independent variables can lead to permanent and comparatively magnified alterations in market organization.

Figure 1 shows a case typical of many less developed countries, where changes in the market systems are initially triggered off by improvements in transport technology or the organization of transport services. These changes tend to be self reinforcing through positive feedback, so that the readjusted market system places more demands upon the transport system and hence may well lead to further transport improvements. A similar sequence of changes might be induced by a period of population growth causing an increase in population density and an augmented demand for goods and services. This change would tend to accentuate the competition between market traders and between neigh-

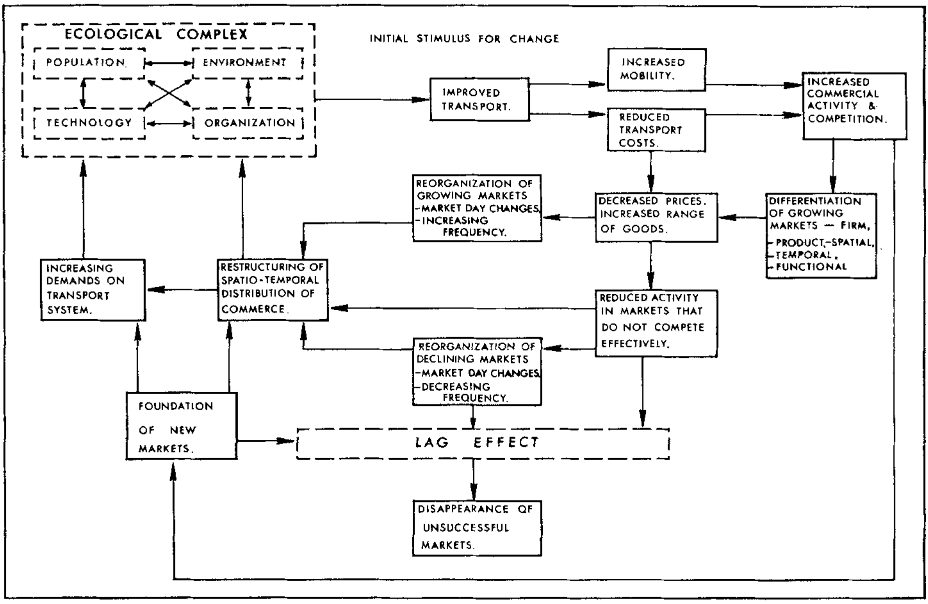

Figure 1. Circular and Cumulative Changes in Market Systems Initially Stimulated by Transport Improvements.

boring market centers, and growth in total trading activity would eventually result. This would place additional demands upon the transport system, and would necessitate the development of new market centers, an increase in the number of market days in existing market centers, or an improvement in transport services. Thus, population growth tends to cause increased spatial interaction, leading to greater competition, and to the reorganization or proliferation of market activities, or to a "shrinking of space" through the improvement of transport. The exact nature of the readjustment of the market system depends upon the characteristics of each of the clusters of variables in the ecological complex. Thus, if transport technology is at a very low level, increased commercial activity and spatial interaction are likely to lead to a proliferation of new market centers between existing centers. In contrast, if sufficient capital is available, a high level of transport technology may lead to a concentration of additional commercial activity upon existing market centers with a general improvement in transport facilities to accommodate the greater volume of interaction.

Since the first publication of Durkheim's *The Division of Labor in Society* in 1893, increased interaction or competition has been considered to be inextricably linked with increases in specialization or differentiation. (16) Durkheim's writings are easily linked to the writings of the Chicago school of human ecologists, (17) and differentiation can be considered as one of the fundamental ecological processes.

If we imagine an initial relatively unspecialized periodic market selling a wide variety of goods, but concentrating primarily upon lower-order goods which are frequently consumed by a large proportion of the population, we can identify five major types of differentiation which might occur as the general volume of commercial activity increases: *firm differentiation, product differentiation, spatial differentiation, temporal differentiation,* and *functional differentiation.* If the general volume of commercial activity decreased, there would eventually be a reverse process of *unification* which could be subdivided into the same five major types as differentiation.

Firm differentiation occurs when relatively unspecialized traders, each selling a fairly wide variety of goods, decide individually to concentrate upon particular types of goods. Product differentiation occurs when traders decide, or local authorities decree, that different types of merchandise should be sold in different parts of the marketplace. This is only possible when there is at least a moderate degree of firm differentiation, and the two processes tend to be associated with one another in the growth of market activities.

Spatial differentiation occurs when traders decide, or local authorities decree, that part of a market meeting in a particular marketplace should be moved to another site within the same market center. Thus, one initial market is divided into two new markets meeting at the same time. In the Andean countries, perhaps the most frequent case of spatial differentiation is the separation of livestock sales from trading in other types of merchandise. Temporal differentiation occurs when traders decide, or local authorities decree, that part of a market meeting in a particular marketplace at a particular time of the day should take place in the same marketplace at a different time of the same day. In small Andean markets, wholesale and retail activities take place simultaneously, but in the larger markets, wholesaling is concentrated in the early morning and retailing occurs mainly in the middle and late morning and the early afternoon. At times, spatial differentiation may be combined with temporal differentiation in a composite process of *spatiotemporal differentiation.*

Functional differentiation involves a process of specialization by a particular marketplace or market center. This specialization is not related to the splitting of unspecialized markets, as in spatial and temporal differentiation. Instead, it occurs owing to a conscious decision of the market authorities or traders, or to a gradual and essentially spontaneous process of identification by buyers and sellers. The market is increasingly dedicated to the sale of a particular type of merchandise, and often, to the service of a particular type of customer.

In addition to differentiation, individual markets have two further forms of adjustment to competition: *disappearance*, and *reorganization.* Disappearance is a straightforward phenomenon which requires little explanation. Markets which were once viable in conditions of lower mobility or greater demand density may have their trade areas captured by larger, more vigorous markets, so that there is little economic inducement to traders or consumers to continue to frequent the smaller market. The disappearance of a market is generally preceded by a long period of gradual decline, a lag period when the lack of complete economic information, the maintenance of long-standing social and religious obligations, the hope of a reversal of circumstances, and the inherent conservatism of many traditional societies all combine to postpone the final disappearance.

Market reorganization as a response to declining commercial activity generally involves a change in market day and/or a reduction of market frequency. Thus, the frequency of meeting may be reduced by a decree of the local authorities or by a collective decision of the traders, or some of the regular meetings may gradually decline and disappear while others survive. Common changes in the Andean area are from meeting daily to meeting only once or twice a week, or from meeting twice weekly to meeting only once a week. Occasionally, the frequency of meeting may be reduced from once a week to once every two weeks or once a month. In choosing a new market day, two contrasting approaches can be adopted. These can be described as the *integrative approach* and the *conflictive approach.* By adopting an integrative approach, the organizers of a market choose a day on which none of the neighboring market centers holds a market. Thus, they avoid clashes and maximize the temporal distance from neighboring, competing markets. (18) Hence, proximity in space is inversely related to proximity in time. In cases where a small, unsuccessful market meets on the same day as a neighboring larger market, an integrative approach to a change of market day by the organizers of the smaller market may ensure the market's survival. In other cases, however, the organizers of unsuccessful small markets meeting on ordinary weekdays may adopt an apparently conflictive approach, moving the market from mid-week to the weekend, and clashing with neighboring markets meeting at the weekend. This may sometimes be a direct attempt to force a "battle for customers" with the larger markets, or it may be an acknowledgment of the fact that the only way of ensuring a secure clientele for the local market is to hold it on the same day as the recreational and religious activities which attract people from the immediate neighborhood. Occasionally, the market day of a small market may be changed to the day immediately preceding the market day of a neighboring larger market, or to the early morning of the market day of the larger market, so that consumers and traders can visit the smaller market on their way to the larger market.

Market reorganization as a response to increasing commercial activity generally involves a change in market day and/or an increase in market frequency. A change in market day may avoid clashes with neighboring competing market centers, or it may avoid conflicts of interest with weekend recreational and religious activities. In the Andean area, growing market centers generally make integrative changes of market day, and usually move their markets from Sunday to Saturday or a weekday. As has already been noted, increases in market frequency generally occur through the addition of a wholesale market day just before the major market day, and one or more minor market days. Either before or after the development of wholesale and minor periodic market days, depending upon the distribution and volume of demand, a small daily market is likely to be established to serve the immediate neighborhood with such day-to-day necessities as bread, flour, and meat.

In addition to the adaptations to changing ecological conditions produced by the differentiation, disappearance and reorganization of individual markets, market systems may alter through the process of *market foundation.* The foundation of new markets may be organized and publicized by local authorities or local traders, or it may occur as an adaptive response to the regular visits of outside traders passing through the area or working as itinerant peddlers. Some newly established markets grow and eventually replace older markets, but the majority remain relatively small, and some eventually die out altogether. Successful new markets develop in the spatial and temporal locations where there are sufficient potential participants to justify a regular commercial gathering. Unsuccessful new markets may fail owing to a poor location, poor organization and publicity, or an unwise choice of market day. These unsuccessful markets may last a few weeks or months, but they eventually disappear like the older established markets that have failed to adjust to changing ecological conditions.

CONCLUSION. The ecological approach provides us with a conceptual framework that is particularly suited to the competitive and changing nature of internal commerce in developing countries. Both the competition and interaction of individual traders and competing markets can be described and interpreted using the ecological complex as a conceptual aid. This approach may lead us to a greater appreciation of social and institutional factors and of positive feedback processes in market systems in developing countries. Finally, it should be noted that the concepts which we have outlined within the ecological framework can be formally operationalized.

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(1) See, for example, M. Diskin, "An Historical-Ecological Approach to the Study of the Oaxaca Plaza System," in H. S. Cook and M. Diskin, eds., *Markets in Oaxaca* (Austin: University of Texas, for the Institute of Latin American Studies, forthcoming).

(2) L. F. Schnore, "Social Morphology and Human Ecology," *American Journal of Sociology*, Vol. 63 (1958), pp. 620–634; and O. D. Duncan, "Human Ecology and Population Studies," in P. M. Hauser and O. D. Duncan, eds., *The Study of Population* (Chicago: University of Chicago Press, 1959), pp. 683–684.

(3) R. E. Park and E. W. Burgess, eds., *Introduction to the Science of Sociology* (Chicago: University of Chicago Press, 1921); and R. D. McKenzie, "The Ecological Approach to the Study of the Human Community," *American Journal of Sociology,* Vol. 30 (1924), pp. 287–301.

(4) R. D. McKenzie, "The Ecology of Institutions," in A. H. Hawley, ed., *Roderick D. McKenzie on Human Ecology* (Chicago: University of Chicago Press, 1968), pp. 102–117; and A. H. Hawley, *Human Ecology: A Theory of Community Structure* (New York: Ronald Press Company, 1950), pp. 234–323.

(5) R. H. T. Smith, "West African Market-places: Temporal Periodicity and Locational Spacing," in C. Meillassoux, ed., *The Development of Indigenous Trade and Markets in West Africa* (London: Oxford University Press, 1971), pp. 319–346; R. H. T. Smith, "The Theory of Periodic Markets: Consumer and Trader Behavior," in *Preconference Publication of Papers, Annual Meeting of the Canadian Association of Geographers, University of Waterloo,* 1971, pp. 183–189; and M. J. Webber and R. Symanski, "Periodic Markets: An Economic Location Analysis," *Economic Geography,* Vol. 49 (1973), pp. 213–227.

(6) Duncan, op. cit., p. 683.

(7) R. J. Bromley and R. Symanski, "Market-place Trade in Latin America," (MS); R. J. Bromley, "Markets in the Developing Countries: A Review," *Geography,* Vol. 56 (April, 1971), pp. 124–132.

(8) R. Symanski, "Periodic Markets of Andean Colombia," unpublished Ph.D. dissertation, Syracuse University, 1971; R. Symanski, "Periodic Markets in Southern Colombia," in R. H. T. Smith, ed., *Periodic Markets in the Tropics* (Melbourne: Sorrett, forthcoming).

(9) Webber and Symanski, op. cit.; R. Symanski and M. J. Webber, "Complex Periodic Market Cycles," *Annals,* Association of American Geographers, Vol. 64 (1974), pp. 203–213; R. Symanski and R. J. Bromley, "Why Periodic Markets? An Alternative Hypothesis," (MS).

(10) M. J. Webber, R. Symanski and J. Root, "Toward a Cognitive Spatial Theory," *Economic Geography,* forthcoming.

(11) R. J. Bromley, "Periodic and Daily Markets in Highland Ecuador," dissertation in progress, Cambridge University, England.

(12) R. J. Bromley, "The Organization of Quito's Urban Markets: Towards a Reinterpretation of Periodic Central Places," *Transactions,* Institute of British Geographers, No. 62 (July, 1974), pp. 45–70.

(13) R. J. Bromley, "Traditional and Modern Change in the Growth Systems of Market Centres in Highland Ecuador," in R. H. T. Smith, ed., *Periodic Markets in the Tropics* (Melbourne: Sorrett, forthcoming); Rosemary D. F. Bromley and R. J. Bromley, "Custom, Convenience, Profit and Religion: The Debate on Sunday Markets in Nineteenth Century Ecuador," paper presented at the Society for Latin American Studies Annual Conference in Southampton, March, 1974.

(14) R. J. Bromley, "El Intercambio de Productos Agrícolas entre la Sierra y la Costa Ecuatoriana," *Revista Geográfica,* No. 78 (1974), forthcoming.

(15) R. Symanski, "God, Food and Consumers in Periodic Market Systems," *Proceedings,* Association of American Geographers, Vol. 5 (1973), pp. 262–266.

(16) E. Durkheim, *The Division of Labor in Society* (New York: Free Press, 1964).

(17) Schnore, op. cit.

(18) Smith, "West African Market-places," op. cit., p. 326; and R. J. Bromley, "The Spatial Pattern and Temporal Synchronization of Periodic Markets," *Swansea Geographers,* Vol. 11 (1973), p. 18.