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Recent Research on Traditional Food Production in Latin America

In *Geographic Research on Latin America: Benchmark 1970* (Lentnek, Carmin and Martinson, 1971) there was no specific examination of the geographic literature on traditional food production in Latin America, although some references appear in the articles by Parsons, Aschmann, Horst, and others. Nietschmann's essay on subsistence was methodological rather than a survey. Actually, prior to 1970, research on subsistence by geographers was somewhat limited in scope. A considerable amount of attention had been given to domesticated plants (origins, distribution, uses) by such geographers as Carl Sauer, Campbell Pennington, George Carter, David Harris, and others. In addition, regional monographs and articles devoted sections to food getting, but these were usually brief, descriptive, and emphasized plants and animals more than techniques, measurement, or analysis.

Since about 1970 the interest in traditional food production has greatly expanded, both in cultural geography and anthropology, often under the label of "cultural ecology." The shift towards a more ecological, systemic, and comparative approach was to a large extent initiated by geographers Harold Brookfield (New Guinea) and Philip Porter (Africa), as well as by such anthropologists as Andrew P. Vayda, Roy Rappaport, Richard B. Lee, and Harold C. Conklin. This orientation was clearly identified for Latin American geography by Nietschmann's seldom cited but prophetic 1970 CLAG paper on "The Substance of Subsistence." Nietschmann argued that the study of subsistence had suffered from the lack of quantitative data as well as from negative attitudes about subsistence, most of which were false.

Dominant themes within what might be called "the new cultural geography" include the consideration of crops as the core constituents of ecosystems or "agroecosystems;" the study of methods of production in terms of technology, resource management, and agricultural landforms; detailed data collection, especially for time and energy inputs and outputs and diet components; the analysis and comparison of carrying capacity and efficiency; attempts to explain agricultural change or intensification; ecological zonation of food getting activities; cultural means of minimizing subsistence risk; resource oriented

behavior in relation to perception; the transformation of subsistence; and an old theme that has "come out of the closet" the economic, ecologic, and demographic viability of traditional systems or techniques of production. Most of these themes are subsumed under the concept of "cultural adaptation," or a culture's strategy for survival, a useful approach to the examination of man-land relationships (Denevan and Schwerin, 1978,3-4).

By traditional, or "palaeotechnic," I refer to aboriginal and peasant food production systems or techniques that make little or no use of fossil fuels for machinery, fertilizer, and pesticides, in contrast to modern or "neotechnic" systems. Traditional techniques have deep roots in the aboriginal and colonial past. Of course, some of the approaches above have been or could be applied to modern systems. And in Latin America today many, if not most, farmers make use of both modern and traditional techniques. Much of what is considered modern commercial agriculture retains elements of traditional land management. It is probably best to speak of farmers as being somewhere along a continuum from more traditional to more modern, or to speak in terms of individual techniques rather than of farmers who are either traditional or modern.

This paper will briefly outline some of the more important geographical research in Latin America since 1970 on the themes above, carried out mainly by North American geographers. Considerable research on these themes has been done by anthropologists and others, and much of this work is indistinguishable from that by geographers; however, it will not be reviewed here.

Survey of the Literature

Shifting cultivation, long of interest to cultural geographers, is the subject to two major studies, a landmark analysis for Latin America (with emphasis on Peru, Venezuela, and Mexico) by Watters (1971), and a detailed monograph on the Yukpa Indians of Venezuela by Ruddle (1974a). Other studies of aboriginal *swidden* systems include those by Harris (1971), Denevan (1971), Blank (1976), Eden (1974), and Smole (1976). Kellman (1973; 1974a; 1974b; and with Adams, 1970) has studied weed invasion in *milpas* in Belize.

Interest in cultivated plants has continued, with examinations of specific crops by Johannessen (1970), Johannessen, Wilson, and Davenport (1970), Kimber (1970), Eder (1970), Donkin (1974), and in particular by Gade (1970b, 1972a, 1972b, 1976). The study of house gardens, ignored until recently, has been pioneered by

geographers, especially in the Caribbean. including Kimber (1973; 1978), Brierley (1976), Fredrich (1975; 1977), and Ruddle (1974,133-139).

Intensive agriculture, especially irrigation, terracing, and raised fields, has received considerable attention for the pre-Columbian period (see Patrick's paper in this volume), but much less for present-day farmers. Major exceptions are Donkin's (1979) comprehensive survey of terracing, Kirkby's (1973) monograph on irrigation in Oaxaca, Patrick (1977) on the Mexican *metepantli* terraces, Mathewson (1976) on the tab/ones of highland Guatemala, Knapp (1979) on the sunken fields of coastal Peru, Denevan and Bergman (1975) on swamp drainage in the Orinoco Llanos, and Wilken (n.d.) on the Mexican *chinampas*.

There have been several regional monographs that focus on a complex of subsistence activities. These include Nietschmann (1973; also see 1979) on the Miskito Indians of Nicaragua; Bergman (1974) on the Shipibo Indians of eastern Peru; Gade (1975) on the Vilcanota Valley of highland Peru; Basile (1974) on the Quito Basin of Ecuador; Ruddle and Chesterfield (1977) on the peasant farmers of the Isla de Guara in the Orinoco Delta; and Denevan and Schwerin (1978) on the Karinya Indians of the Llanos Altos of Venezuela.

Studies of the utilization of wild plants, insects, and animals have been made by Nietschmann (1972; 1973; 1974) for the green turtle and other marine and terrestrial game in eastern Nicaragua; by Wilken (1970) in highland Mexico, by Smith (1974; 1976; 1979) in Amazonia, and by Ruddle (1970; 1974b) for the Maraca and Yukpa Indians of Colombia and Venezuela.

The related themes of carrying capacity, agricultural intensification, change, and modernization have all received considerable attention in the social sciences, particularly through the influence of Boserup (1965) and in relation to economic development. However, there have been few contributions by Latin Americanist geographers. Some studies that are relevant here, at least in part, include Preston (1978, 38-85) on post-revolution highland Bolivia; Denevan (1976) on Amazonian Indian subsistence patterns; Turner, Hanham, and Portararo (1977) on the theory of agricultural intensification; Hoy (1978) and Hoy and Fisher (1974) on primary production and carrying capacity; and Eden (1974) on agricultural change among Indians in the upper Orinoco Basin. Other work on change has been done in connection with new agricultural settlement, but this topic is not covered here.

The theme of ecological zonation of subsistence activities has been an important

current interest of Andean anthropologists, but not by geographers, with the major exception of Gade (1975: 95-107). Bergman (1974) has looked at spatial patterns of hunting and fishing productivity in the Upper Amazon. Nietschmann (1973, 97-101; 115-128), for Nicaragua, has studied spatial availability and zonation of wild food sources and also seasonality, which is another topic neglected by geographers (also see Blank, 1976, 133-153).

A number of geographic studies give attention to seasonal and spatial patterns of dietary intake, including measurement, and with a particular emphasis on protein availability. See the work by Bergman (1974), Blank (1976), Nietschmann (1973), and Denevan (1971).

The topics of environmental perception and ethnoecology have received considerable attention from anthropologists working in Latin America, but little from geographers. An exception is the research by Ruddle and Chesterfield (1976; 1977) on traditional food procurement and rural development in the Orinoco Delta.

Returning to Nietschmann's call for more careful measurement of the characteristics of food production, we find some significant work by Latin Americanist geographers; however, the thrust of this approach has also been by anthropologists. Nietschmann (1972; 1973) himself has provided a model for input-output measurement (although more for hunting and fishing than for agriculture), which is frequently cited by anthropologists. Labor inputs in subsistence activities can be determined in terms of either time inputs or in kilocalories of energy expended. Time inputs, with nearly daily data for a full year, were determined for a Shipibo village by Bergman (1974). He confirmed what others have found elsewhere, that inputs for many subsistence economies are very low. Other studies that include input-output data include those by Ruddle (1974, 156-166) and Kirkby (1973, 59-70).

The management of agricultural resources-soil, water, slope, and climate by traditional farmers is a concern of a number of the studies previously mentioned. However, it has been the major interest of one field-oriented researcher, Gene Wilken, who has worked mainly in Mexico and Guatemala. He has produced a series of lengthy reports for the National Science Foundation (including 1977c and 1979b), papers at national and international meetings, and a number of articles (Wilken, 1977a; 1977b; 1978; 1979a; and n.d.). These studies are concerned with the ecological functions of resource management techniques,

including the ways in which natural components of agroecosystems are modified or manipulated in order to improve crop production. Other comparable work includes Williams (1972) on the *tepetate* soils of highland Mexico; Denevan and Bergman (1975) on swamp drainage in the Orinoco Llanos; Patrick (1977) on terraces in Mexico; Innis (1975) on soil fertility in Jamaica; and Mathewson (1976, 163-179) on *tablones* in Guatemala. One dimension of this is the role of specific tools in carrying out soil management (Donkin, 1970; Gade and Rios, 1972). For an overview of traditional agricultural resource management, see Denevan (1980).

Finally, there is the theme of the ecologic and economic viability of traditional systems of food production and procurement. There are many specific traditional practices that should be preserved in the face of pressures for modernization in order to reduce subsistence risk, to avoid over dependence on costly fossil fuels and chemicals, for soil and water conservation, and to minimize losses to disease and pests. Particularly important is diversification of crop species and varieties, since such diversity protects both crops and their habitat and can maximize production, and also provides a living genetic "bank."

While such systems, on a systematic basis, have been attempted experimentally, and their ecological values pointed out, they are still not a significant component of agricultural development research, planning, and implementation. Nevertheless, this is the direction in which development must move if it is agreed that a large number of people are going to have to be fed by small farmers producing from their own immediate ecosystems rather than drawing upon the resources of the entire earth as does modern agriculture. Agricultural science need not be neglected in this scenario, but it should be directed toward making local mixed farming systems more productive and not just towards the establishment of variations on mid-latitude, industrialized monoculture (Denevan, 1980).

There have been numerous indications in recent years of a shift towards this kind of thinking both at the public level and by international development agencies. See, for example, the recent *Science* article by Charles Weiss Jr. (1979) of the World Bank, and Richard Harwood's (1979) book on *Small Farm Development* sponsored by the Agency for International Development and the International Agricultural Development Service (Rockefeller Foundation). Two geographers have recently been employed to introduce thinking about traditional agriculture to A.I.D. training programs in Washington, D.C. (Don Vermeer) and in the field in Lesotho (Gene Wilken). Recent pertinent statements by geographers include Vermeer (1976), Wilken and Vermeer (1973), Wilken (1974), Innis (1972), Dickinson (1972);

1978), Clarke 1973; 1977) Klee (1980), Denevan (1980), and Innis (1980).

A fairly large number of Ph.D. dissertations and Master's theses have been written in geography since 1970 on traditional food production in Latin America. Ph.D. dissertations specifically on this theme include Bergman (1974), Fredrich (1975), Johnson (1977), Kirkby (1971), Patrick (1977), Ruddle (1970), Sammy (1977), Sheldon (1976), Snaden (1974), Williams (1970), and Wilson (1972).

Changing Interpretations of Subsistence Economies

Nietschmann (pers. comm.) in a written commentary for the 1980 CLAG session on "Aboriginal and Peasant Cultures," has succinctly summed up the changes in the "ideology of subsistence" by geographers and other scholars:

The First Transformation. Once common was an interpretation of subsistence as being a limiting economic condition where people could do no more than barely eke out an existence through hard, continuous work.

The Second Transformation. The view that "to the mouths of savages come but mere morsels" was largely replaced by a new interpretation based on detailed field work by geographers and anthropologists that showed traditional subsistence as being secure and adequate, a life of want not, lack not abundance.

The Third Transformation. As subsistence societies rapidly become historical facts rather than contemporary livelihood practices, another interpretation is needed to explain the resultant condition. People living in market-based societies can do no more than barely eke out an existence through hard, continuous work. Thus, the development of resource decline, habitat alteration, competition for land, cash markets, and economic dependency mean that mere subsistence conditions have caught up to the earlier mere subsistence interpretations.

In the decade of the 80s geographers will find more examples of impoverished market-based societies than they will of impoverished subsistence-based societies.

Clearly, pure subsistence is becoming a rarity and is being replaced by semi-subsistence whereby farmers both attempt to feed themselves and to participate in a market economy, very often unsuccessfully for both food and cash.

Prospects

The study of traditional agriculture by Latin Americanist cultural geographers is of long standing. While generally respected, this work has nevertheless been suspect in the eyes of some geographers who have seen it as irrelevant to present day problems, deficient in methodology, and descriptive rather than analytical or theoretical. Traditional practices and associated perceptions and beliefs were seen at best as interesting and at worst as impediments to economic development. This attitude generated heated discussion at the first CLAG Meeting, where Barry Lentnek (1971, 161) referred to "a retreat into the bush in search of contemporary fragments of a lost world or an escape into the long, and perhaps best forgotten past." The German geographer Walther Manshard (1974, 46) later wrote of "passive" societies concerned "only with day to day subsistence needs, " and characterized by "intangible factors which hamper development, such as religion, taboos, and traditions."

In the past 10 years approaches to traditional food production by geographers have become much more diversified, theoretical, and rigorous, as is indicated in the literature review above. New approaches to some extent have been pioneered by geographers, although probably more so by anthropologists.

An equally important change is the now widespread recognition of the social, ecological, and economic values of traditional systems of food production, a recognition that has penetrated to the highest national and international levels of development planning. It is clear that a very large portion of the world's people is still being fed by traditional farming and that this will continue for a long time to come. Urban employment opportunities in the Third World simply continue to be inadequate to absorb large numbers of rural people. In Colombia and Central America, 70 percent of the food is still consumed on small farms of less than 5 hectares (Sanchez, 1976, 480). In Mexico, of all farm units, 40.5 percent are traditional semi-commercial and 52.4 percent are traditional subsistence; the two categories take up 80 percent of the total crop land (Wellhausen, 1976, 136, 139). Latin America may be rapidly urbanizing, but the small farmer still is dominant in many regions. And the small farmer, almost by definition, lacks the capital and the freedom from subsistence risk to participate in full modernization, in massive productivity increases, in the Green Revolution.

So the small farmer, who is usually a traditional farmer, now has new respect. He, who has always loomed large in the background, is now looked to as a reasonable, even necessary, alternative to neotechnic development. There is a rising groundswell of interest in the traditional farmer, how he functions, and how he

can be improved without being destroyed. Even sociologists and economists are now talking about the safety first principle, subsistence ethics, and intermediate technology. Geographers have an opportunity to play a major role here.

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