

Research on Commercial Agriculture and Ranching by North American Geographers, 1980-1989

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ABSTRACT

Recent work has more largely dealt with agriculture than ranching, the thrusts of the preceding decade in the latter area largely being terminated. Study of commercial agriculture tends to have focused on the settlement frontier, smallholders in the Caribbean, and the integration of these into national economies. With the notable exception of sugar production, the more capital intensive and modern sectors of food and industrial crop production and export crop production have been neglected. The oversight is regrettable inasmuch as it is the modern sectors that contribute so much to GNP, to earnings of foreign exchange, and to the quality of life in the burgeoning urban sectors of population.

A decade ago Griffin and Hoy (1981) and Thompson (1981), respectively, reviewed the work of geographers in the United States on commercial agriculture and livestock raising in Latin America. It is a reflection of the demographics and career tracks among Latin Americanist geographers described by Robinson (1989) that the agricultural and livestock topics are combined today, and that the privilege of reviewing them is the fortune of one whose renewed early commitment to the historical geography and technology of land drainage in North America had reduced his involvement in Latin American work to that of a spectator. Regrettably, the pulling together of twenty years of research on the evolution of the livestock industry and urban food supply systems in Chile, El Salvador, Brazil and Mexico awaits completion of the North American projects, in which academic and non-professional audiences are more largely interested and supportive.

As a spectator enjoying the work of Latin Americanist geographers in the commercial agriculture and livestock sectors, I am indebted for identification of the players and the venues to the preparers of the *Handbook of Latin American Studies* (1981-1985), *Current Geographical Publications* (1981-1988) and *Dissertation Abstracts International* (1980-1989), to say nothing of the editors of the discipline's major journals and the proceedings of the Conference of Latin Americanist Geographers. Acknowledged, too, are the insights and guidance to the literature in Robinson's recent (1989) review of the work done by Latin Americanist geographers. Thus, these perspectives are from the sidelines (Mr. Sauer would have harrumphed: "from the armchair."). However, they are indicative of the scope of work reported to have been done in the 1980s. Readers of this volume may wish to draw attention to oversights of different perspectives.

As I see it, the principal continuity to recent research is with the settlement frontier, most commonly the fringe of forested areas where land extensive husbandry prevails, yielding but modest increments of wealth for the commonweal. In this context, Jones (1989) recalls how Latin American nations perceive the inevitability and desirability of opening new lands, which process is consistent with the basic developmental theme in the North American experience. Investigations by geographers of expressions of the frontier ethic, according to Jones alternatively put in Panama as the "*cultura del potrero*," have been made from Mexico and Central America to Bolivia. Various, the settlement process is related to demographic pressure, improved access to urban or export markets, the degradation of higher quality land, the dominance of local elites in land consolidation, commerce and transportation, and to national policies that favor the spread of larger scale agricultural and pastoral enterprises in which the elites are prominent.

Geographers working in the Caribbean islands, where the settlement frontier has all but disappeared, make a very strong case that the village or smallholder sectors are effective in creating sustainable intensive agriculture. Yet, it is clear that these sectors are disadvantaged in the development of the frontier elsewhere.

Perhaps the closing of the frontier in Central America, separately reviewed by Augelli (1984; 1987) and Jones, together with the deepening general problem with national debt and the cost of agriculture based on petroleum and other imported [end p. 215] inputs, will result in larger national recognition and fostering of the village smallholder sectors, about which geographers study so much.

The closing of the frontier in Costa Rica is dramatized in terms of national economic and social impacts by Augelli (1984), whereas Jones' review of the process in all of Central America (1989) tends to be more concerned with the implications for the extinction of environments and species. Earlier in the decade Frost (1981) provided case studies of far reaching impacts by human activity upon wildlife in Belize and Barker (1980) reviewed real and potential disharmonies between agrarian reform and Peru's ambitious national parks program designed to preserve fauna and flora while fostering tourism. Alcorn (1984) offered a view of economic pressures and conservation in Huastec managed forests. Hoy and Belisle (1984) concluded that strategies to address pervasive environmental degradation in Guatemala's western highlands could not be expected to be applied, given incomprehension among national elites and deep societal and economic concerns of higher priority. Place (1985) attributed to the beef boom in Guanacaste a deterioration of economic opportunity and the quality of life for the peasants, along with the destruction of environment and species, to say nothing of the growing vulnerability of Costa Rica to dependence upon one marketplace and an extractive activity marked by volatile prices. The merits of cattle ranching are further questioned as to development policy for the eastern Amazon in Hecht's comprehensive dissertation (1982). Sternberg's (1981) longstanding concerns over such problems in Amazonia were aired as well, early in the decade.

The usefulness of remote sensing in measuring the progress of deforestation was tested for Parana by Dicks and Henry (1986), while Green, Logan and Buscher (1987) applied the technique to measure the impact of the freeze on Parana's coffee area in 1975. More in the nature of an inexpensive and expeditious general reconnaissance through remote sensing was an approach to identifying seasonal and cultural effects on vegetation in Central America proffered by Ludeke, Holz, Phillips and Nevem (1986).

Brierly's review (1985) of priorities adopted in agriculture by Grenada's People's Revolutionary Government and Herlihy's work (1985) in the Chocó describe adjustments to the reality of smallholder and national aspirations in quite different settings. Whereas in Grenada the provision of a focal role for small and medium sized farms was driven by a collapsed traditional system of estate agriculture, in the Chocó the "village settlement model" was adopted by relatively isolated people to retard being overtaken by the national society and economy. Intermediate on the spectrum were the responses described in Parker's dissertation (1981) on a *varzea* community in the Brazilian Amazon and Works' dissertation (1984) and paper (1987) on the Aguaruna in the Alto Mayo Valley of eastern Peru. The relatively secure and sufficient subsistence systems of the Aguaruna, to say nothing of their social system, is being eroded through unabashed adoption of commercial rice cultivation and the perceptions of land and wealth introduced by Spanish speaking colonists. Among the collaborative adoptions which had rachitic outcomes were an irrigation system and tractor. The transformation of the cultural ecology of the *caboclo* settlement in response to government policies and programs was more general and profound.

Several other investigators enriched our knowledge of the development process in the eastern interior of the Andean republics. Hiraoka and Yamamoto (1980), Bromley (1981), and Rudel (1983; 1989) worked in Ecuador; Cordova Aguilar (1982) worked in Peru; while Hiraoka (1980), and Works (1980) contributed on the Bolivian tropics. Crist (1983) added impressions of revisited town and countryside in the pioneer zone along the Llanos-Andes border. Hoy shared (1986) views of Guadeloupe revisited. The Hiraoka and Yamamoto work offered a fine cultural ecological study on northeastern Ecuador in which the focus was on settlement types and farming systems. The strengths of a smallholder polyculture based on a slash-mulch cropping system was juxtaposed with the deficiencies of a guided settlement process that produced insufficient farm to market roads and seemed to foster the prospects of large-scale monocultural operations.

Rudel's study of resource partitioning in an isolated southeast Ecuadorian smallholder settlement of forest Indians and colonists from the Sierra concluded that rural development was inhibited by a single overland access controlled by interests in Cuenca, and because the elites in the settlement were unable to form coalitions to promote their interests beyond Cuenca at the national level. Cordova Aguilar's dissertation concluded that the smallholding agricultural sector in Frias, northwestern Peru, did not benefit from road opening, while the elites in commerce and transportation did. Perhaps, in nations so lacking in resources the reduction of isolation to satisfy the elites is the best that can be done. Both Hiraoka and Works, in reviewing failed Bolivian colonization schemes involving smallholder settlers from the highlands, considered that the government's colonization schemes perpetuated poverty and, as Works noted, lead policy makers to conclude that nationally [end p. 216] beneficial frontier development required large-scale export oriented monoculture, for which, the author opined, the requisite social and economic underpinnings were absent. In a dissertation on settlement geography in Western Paraná, Muller (1987) found that family sized mechanized farms with diversified crop and livestock interests were viable where land was good, cooperatives and agricultural industries were supportive and when secure title and infrastructure were in place.

Weil's (1989) work in the Chaparé of Bolivia indicated that successful pioneer households with diversified and productive farming enterprises could be described as to distinctive demographic and social characteristics. It is a useful line of inquiry not essayed by others. I do not recall that geographers have separated out the degree to which settlements anywhere have been composed of households with intent and demographic and social attributes that suggest permanency and economic success, or are composed of commercial farms developed by absentee provincial investors, or are occupied by households destined to provide day labor or to move on. To what degree is speculation on changing land values part of the enterprise? Only Rudel's Ecuadorian work (1983) seems to focus on the matter.

Pena Franjul's dissertation (1985) on rural and infrastructural decision environments in Peravia province and Santo Domingo, Dominican Republic, appears to be seeking how development opportunities might be optimized. Mercado-Escobar's dissertation (1983) on historical land use patterns in the steep eastern highlands of Puerto Rico cautions that in areas of long-established settlement it is important to understand and accommodate the economic and social contexts for destructive part-time agriculture before adopting environmental remedies prejudicial to the immediate well being of the land users.

A timely paper by Dickinson (1986) assesses research on national settlement programs and proposes that current endpoints of such national endeavors might be sustained economically and in sound environmental circumstances were governments to foster land management models after Yurimaguas, the Costa Rica Tropical Science Center System, or a composite of both. Antonini and York (1980) suggest how integrated rural development in the Dominican Republic may be facilitated through involvement of North American universities; and Antonini (1984) reports the outcome of field work with North American students in the Chambo vicinity, highland Ecuador, under the auspices of the Centro Panamericano de Estudios e Investigaciones Geográficas. It is a commendable study of the relationship of land use to the physical qualities of land and the nature of tenure in an area where owners of small and large properties have accommodated to the physical stage for generations. Still, one wonders about the role of migration and of remittances in sustaining the systems.

Like Brierly, Floyd (1983) has been dealing with endpoint equivalents among long-established peasant settlements of the Caribbean. Brierly reminds us that since the late 1930s Royal Commissions and later, world and regional development institutions, have identified the relative strengths and weaknesses of systems of estate and peasant agriculture. Nevertheless, until Brierly found that Grenada enjoyed significant increase in food and export crop production after the short-lived People's Revolutionary Government implemented economic changes that fostered peasant agriculture, along with the development of light industry, it isn't evident that national governments had grasped such a message so firmly. The vital role of small to medium

sized farms in feeding Jamaica and in providing surplus for export, as contrasted with petroleum dependent estate agriculture, is reassurance for Floyd. In this vein was Innis' (1983) persuasive case that monocultural estates could be phased into the polycultural small to medium sized farms with sustained social and economic benefit in Jamaica. On the other hand, Innes' (1981) perspective on plantation agriculture on other large islands in the region endorses monoculture in circumstances where land shortages and demographic pressures are not severe. An opportunity to marry the know-how of capital intensive agriculture and traditional horticulture in Jamaica, and elsewhere in the Caribbean, is indicated in Belisle's two papers (1984) on the lamentably low level of articulation between local food production capabilities and the needs of the tourist industry. More hopeful is the Hernandez dissertation (1987) about how to achieve acceptance of quinoa in Ecuador's economic formal sector.

Dixon's (1985) work on the transformation of the coconut palm in remote Honduras from a subsistence to a cash crop, like Kent's (1983; 1986) and Dixon's (1987) portrayals of beekeeping, respectively in Peru and southern Mexico, reinforce how current frontier and established peasant communities might be strengthened by the adoption of profitable, environmentally sound, but relatively low input pursuits through a modicum of training and technical assistance. Fitting into this context is the fresh research of Conway and Glesne (1986) on the impact that remittances from absentee household members bring to rural St. Vincent. The questions should be asked more often **[end p. 217]** everywhere from Chiloé to Chihuahua, where remittances long have supported village agriculture and entrepreneurship.

The responsiveness of smallholders and the landless to opportunities to extend cropping to lands *de temporal* to obtain sustenance and supplemental income was described by Doolittle (1983) for valley of the Rio Sonora. This study of the adjustments made over decades by established peasant households is reminiscent of the subjects in Ryder's dissertation (1989) and in those of Montanez (1985) and Mercado-Escobar, previously mentioned. Ryder assessed the soundness of farmer perceptions as to relative land quality and fragility and the factors that motivated farmers to crop as they did in the Las Cuevas watershed, Dominican Republic. The Montanez dissertation analyzed land use, erosion and farmer attitudes toward conversion in the Las Cuevas watershed using a stratified random sampling of units. Discriminant analysis predicted sensitivity to soil erosion, and analysis through a damage function identified significant perceptual, technological and economic factors related to the adoption of conservation methods. At root, the maximization of immediate income prevails over other considerations. The relative viability of rural settlement in five sectors of the semiarid Enriquillo-Cul de Sac depression was determined in Bodini's dissertation (1984) using threshold analysis of natural, spatial and human factors. Economic marginality was general.

The potentially integrative struggles of the landless and smallholders for land, a larger share of the resources that they create, and for support from public officials and public services, was reviewed historically for Mexico by Johnson (1982). More satisfying an essay for evidence of a field component was Ballard's (1984) paper, which noted possible endpoint models in the form of cooperatives where Sandinista guidance was providing liberation and integration for the Miskito of northeastern Nicaragua. While the sustainability of such involuntary institutions needs to be studied, Ballard's primary concerns, like Johnson's, are with larger issues having a bearing on the organization of society.

What strikes me as being a more useful larger task to be pursued at this point by agricultural geographers is reflected in the approach of Lawson (1988), who made a nationwide empirical analysis of price and credit policy impacts on agriculture in Ecuador. The work of most investigators who were cultural geographers recognized that national policy is both socially and spatially selective, producing uneven economic change, but Lawson's study of interactions between macro-processes and local-level spatial structures affords a useful model for geographers in the United States who would offer work that national policy makers in Latin America will appreciate. Graduate students in cultural geography, it seems to me, will be well served by developing a firm grasp of the Lawson perspective since they enter a world in which other social scientists, as

Preston (1983) noted, are grappling with concepts of ecosystems, the regional framework, and change in traditional farming systems. These quests for understanding require more outreaching that heretofore has characterized our relationships with other Latin Americanists. Perhaps CLAG should seek an interdisciplinary thematic conference, with governmental agency and corporate participation, in order to broaden the impacts of the work of geographers while broadening geographers.

Bromley's (1987) richly documented and theoretically well grounded analysis of national policy in fostering growth of marketing centers to effect rural, regional and national economic development in Ecuador should be well appreciated abroad, too. Another broad picture of agricultural performance, regionalization and policy to which national advisers to decision makers can respond in Brazil was collaborated upon by Graham, Gauthier and Mendonca de Barros (1987). With the large picture in mind Posner, Antonini, Montanez and Grigsby (1983) offered a well illustrated, useful land classification scheme for areas of considerable local relief that is based on climate, soils and topography. Less elaborate was an approach to establishing general crop zonation to the national level by Johnson's (1981) use of production data on beans in Guatemala. Horst's (1987) reminder of monocropping, intercropping and multicropping in highland Guatemala and Ecuador, where small and fragmented properties are the rule, suggests the inherent difficulty of capturing the fine texture to landuse patterns through generalized agricultural zones. Miller's review (1982) of the nature of the small farm in Central America complemented Horst's. Larger understanding of the origins, nature of, and sustainability of these traditional agricultural systems and practices are reviewed in Denevan (1980).

An affirmation of the consistency in temporal spacing of periodic and daily markets in Guatemala in 1940 with findings of later research elsewhere appeared in Jones (1989), who found a central place location to be most applicable to populous regions and that more isolated markets conform less to a Christallerian system. Sperling's dissertation (1987) found that traditional diffusion processes did not explain economic and spatial variability of food distribution patterns in Medellín so usefully as market and infrastructure and development perspectives.

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The project for the relief of social and political tensions in Latin America that Kus found in the Chavimochic Canal of north coastal Peru (1986) highlights a theme which most of you can document. The project, in at least eight versions since 1912, has never been completed, but its recurring revival in periods of drought has reassured the region that salvation is just over the horizon, like *El Dorado*. This white elephant remains a phantom, like so many that lie between Constitución and Coquimbo, Pará and Trinidad's east coast, and Coahuila, or the Elephant Butte Dam in the United States. But, white elephant skeletons, like the vanishing frontiers, should remind us that, aside from the Caribbean area, we have done less exploring of the nature of commercial systems, areas and farmers that have sustained populations in national core areas for a century or more than we have frontiers. The problems of agriculture in all areas, but particularly in the core areas, afford a backdrop to the Gonzalez paper (1985) on population, food supply and agricultural dependency in Latin America. We are not contributing as much with our work on the frontier to overcome dependency as we might in core areas.

Representative of focal agricultural areas nearer the national core about which we are in need of historical and current perspectives are the Norte Chico, the Mendoza and Cuenca basins, the delta of the Paraná-Paraguay, the Montevideo milkshed, the triangulo Mineiro and Mata Mineira or Mexico's Bajío and La Laguna. DeBlij's (1985) survey of wine regions in Chile, Argentina and Brazil and Hudson's (1985) survey of the geography of cocaine help some in this respect. More useful to the student of the Latin American livestock industry is the challenging Jordan's (1989) interpretation of the transferability of Iberian lowlands/highland models for cattle ranching to the New World. Quite instructive about core areas of husbandry is Kus' review (1989) of the environmental and economic misfortunes that have befallen the sugar cane industry of the Chicama Valley

over the past two decades. The contrast with sugar plantation developments in the Dominican Republic could not be sharper, as the latter are described by Chardon (1984). Kirchner's (1980) historical account of sugar in Tucumán and of the texture of life for seasonal migratory labor captures a disheartening universal circumstance for which no end is in sight. On the brighter side, is Wilson's (1984) historical geographical research on multinational agribusiness as positive factors in economic growth and geographic change in Brazil. His account of decision making on location in industry is both instructive as to the predictability of managerial choice in a manufacturing sector and as to decisions less guided by theory than creative choice. Zeferino (1987), also working in southern Brazil, found through the application of locational analysis theories and techniques that better geographical distribution of public sector wholesale agricultural marketing facilities could have been realized than through the government's mode of site selection.

To conclude this bystander's view of the work done in the 1980s by North American geographers concerning the agricultural and livestock sectors in Latin America, one misses the contributions of scholars formerly active, and one regrets that the ranks of new doctoral degree recipients are but an average of two per annum. Cheering is the relative increase of individuals with Hispanic surnames among Ph.D. recipients. I trust that all find the personal need and support to sustain the calibre of work that marks geographers whose careers continue in full stride. I trust, too, that the merits of the geographer's research perspectives and future thematic conferences may become so known among agency officers here and abroad that opportunities for collaborative development work may be fostered. The nature of land use, environmental degradation, and social change are well researched for the tropics, but more so for smallholder systems and ranching than for the core areas where provisioning and export sectors contribute so much more to the gross national product. Work on food crop marketing is exciting; little is happening with reference to livestock product marketing. One is enthused about the taking of stock and the fresh questions, and the testing of new methodologies, that has marked recent studies. From this bystander's viewpoint, the stuff of enriched understanding and teaching has been forthcoming. The stuff of impacting policy making is there, as is the content to enrich exchange with Latin Americanists in other disciplines. Perhaps such outreaching would enrich the recruitment process and contribute to the growth of the specialty group.

References

Alcorn, J. B. 1984. Development policy, forests, and peasant farms: Reflections on Huastec managed forests' contributions to commercial production and resource conservation. *Economic Botany* 38(4): 38.

American Geographical Society Collection. 1981-1988. *Current Geographical Publications* 44(1) to 51(1).

Antonini, G. A., et al. 1984. Chambo: Evolución del paisaje y su relación con el potencial productivo agrícola. *Revista Geográfica* 96: 5-24.

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Antonini, G. A. and M. A. York. 1980. Integrated rural development and the role of the university in the Caribbean: The case of Plan Sierra, Dominican Republic. *Caribbean Educational Bulletin* 7(3): 15-36.

Augelli, J. P. 1984. Costa Rica: Transition to land hunger and potential instability. *Proceedings of the Conference of Latin Americanist Geographers, Vol. 10*. Ed. by K. M. Kvale, 48-61. Muncie, IN: Conference of Latin Americanist Geographers.

_____. 1987. Costa Rica's frontier legacy. *Geographical Review* 77(1): 1-16.

Ballard, P. L. 1984. Toward indigenous liberation: The Sandinista and the Miskito of northeastern Nicaragua.

Antipode 16(2): 54-63.

Baker, M. L. 1980. National parks, conservation, and agrarian reform in Peru. *Geographical Review* 70(1): 1-18.

Belisle, F. J. 1984. Notas sobre la articulación entre el turismo y la producción de alimentos en Jamaica. *Revista Geográfica* 99: 99-107.

_____. 1984. Food production and tourism in Jamaica: Obstacles to increasing local food supplied to hotels. *Journal of Developing Areas* 19: 1-20.

Bodini, H. C. C. 1984. Viability of small-farmer communities in the Enriquillo-Cul de Sac depression of Hispaniola. Doctoral Dissertation, University of Tennessee.

Brierley, J. S. 1985. The agricultural strategies and programs of the people's revolutionary government in Grenada, 1979-1983. *Proceedings of the Conference of Latin Americanist Geographers*, Vol. 11. Ed. by L. Pulsipher, 55-61.

Bromley, R. 1981. The colonization of humid tropical areas in Ecuador. *Singapore Journal of Tropical Geography* 2 (1): 6-24.

_____. 1987. El análisis de centros de mercadeo en el enfoque "funciones urbanas para el desarrollo rural." *Revista Geográfica* 106: 135-183.

Chardon, R. 1984. Sugar plantations in the Dominican Republic. *Geographical Review* 74(4): 441-454.

Conway, D. and C. Glesne. 1986. Rural livelihood, return migration, and remittances in St. Vincent. In *Proceedings of the Conference of Latin American Geographers* Vol. 12. Ed. by David L. Clawson, 3-11.

Cordova Aguilar, H. 1982. Negative development: The impact of a road on the agricultural system of Frias, northwestern Peru. Doctoral Dissertation, University of Wisconsin-Madison.

Crist, R. E. 1983. Westward thrusts the pioneer zone in Venezuela: A half century of economic development along the Llanos-Andes border. *American Journal of Economics and Sociology* 42(4):451-462.

De Blij, H. J. 1985. *Wine Regions of the Southern Hemisphere*. Totowa, N. J.: Rowman and Allanheld.

Denevan, W. M. 1980. Latin America. In *World Systems of Traditional Resource Management*. Ed. by G. A. Klee, 217-244. New York: John Wiley & Sons.

Dickinson III, J. C. 1986. Settlement in the humid tropical life zones of Latin America. *Proceedings of the Conference of Latin Americanist Geographers*, Vol. 12. Ed. by D. L. Clawson, 34-42.

Dicks, S. E. and J. A. Henry. 1986. Satellite detection of deforestation. *Florida Geographer* 20: 22-29.

Dissertation Abstracts International: The Humanities and Social Sciences Vol. 40(7) to Vol. 50(5). 1980-1989. Ann Arbor, MI: University Microfilms International.

Gonzalez, A. 1985. Latin America: Population, food supply and agricultural dependency. *Revista Geográfica* 101: 91-96.

- Graham, D. H., H. Gauthier and J. R. Mendonca de Barros. 1987. Thirty years of agricultural growth in Brazil: crop performance, regional profile, and recent policy review. *Economic Development and Cultural Change* 36(1): 1-34.
- Green, J. E., B. E. Logan and J. P. Buschur. 1987. A remotely sensed inventory of the 1975 Paraná coffee freeze. *Ohio Geographer* 15: 44-49.
- Griffin, E. and D. Hoy. 1981. Geographic research on commercial agriculture in Latin America in the 1970's. In *Proceedings of the Conference of Latin Americanist Geographers: Geographic Research on Latin America: Benchmark 1980*. Ed. by T. L. Martinson and G. S. Elbow, 230-241. Muncie, IN: Conference of Latin Americanist Geographers.
- Handbook of Latin American Studies* Nos. 43, 45, and 47. 1981, 1983, 1985. Austin, TX: University of Texas Press.
- Hecht, S. B. 1982. Cattle ranching development in the eastern Amazon: Evaluation of development policy. Doctoral Dissertation, University of California, Berkeley.
- Herlihy, P. H. 1985. Settlement and subsistence change among the Chocó Indians of the Darien Province, eastern Panama: An overview. In *Proceedings of the Conference of Latin Americanist Geographers Vol. 11*. Ed. by L. Pulsipher, 11-16. Muncie, IN: Conference of Latin Americanist Geographers.
- Hernandez, S. 1987. Incorporation of high-protein, endemic cultigens in the economic formal sector of Ecuador. Doctoral Dissertation, Michigan State University.
- Hiraoka, M. 1980. Settlement and development of the upper Amazon: The east Bolivian example. *Journal of Developing Areas* 14(3): 327-347.
- Hiraoka, M. and S. Yamamoto. 1980. Agricultural development in the upper Amazon of Ecuador. *Geographical Review* 70(4): 423-445.
- Horst, O. H. 1987. Commercialization of traditional agriculture in highland Guatemala and Ecuador. *Revista Geográfica* 106: 5-18.
- Hoy, D. R. 1986. Guadeloupe: Then and now. *Revista Geográfica* 103: 35-43.
- Hoy, D. R. and F. J. Belisle. 1984. Environmental protection and economic development in Guatemala's western highlands. *Journal of Developing Areas* 18(2): 161-176.
- Hudson, T. 1985. South American high: A geography of cocaine. *Focus* 35(1): 22-29.
- Innes, F. C. 1981. Plantations as institutions under stress in the Caribbean today: A historical geographic approach. *Canadian Journal of Latin American Studies* 6(12): 81-87.
- Innis, D. Q. 1983. Aspects of Jamaican post-industrial agriculture. *Journal of Geography* 82(5): 222-226.
- Johnson, D. 1981. Agricultural zonation using production data: The example of beans in Guatemala. *Revista Geográfica* 94: 117-121.
- Johnson, K. 1982. Peasant struggles in contemporary Mexico. *Antipode* 14(3): 39-50.

[end p. 220]

Jones, J. R. 1989. Human settlement of tropical colonization in Central America. In *The human ecology of tropical land settlement in Latin America*. Ed. by D. A. Schumann and W. L. Partridge, 43-85. Boulder, CO: Westview Press.

Jones III, J. P. 1982. The periodic and daily Indian market system of southwest Guatemala. *Revista Geográfica* 96: 47-53.

Jordan, T. G. 1989. An Iberian lowland/highland model for Latin American cattle ranching. *Journal of Historical Geography* 15(2): 111- 125.

Kent II, R. B. 1983. Beekeeping in rural development: The Africanized honeybee in Peru. Doctoral Dissertation, Syracuse University.

_____. 1986. Beekeeping regions, technical assistance, and development policy in Peru. In *Proceedings of the Conference of Latin Americanist Geographers* Vol. 12. Ed. by D. L. Clawson, 22-23. Muncie, IN: Conference of Latin Americanist Geographers.

Kirchner, J. A. 1980. *Sugar and seasonal labor migration: The case of Tucumán, Argentina*. University of Chicago, Department of Geography, Research Paper No. 192.

Kus, J. S. 1986. Chavimochic: A Peruvian irrigation project, In *Proceedings of Conference of Latin Americanist Geographers* Vol. 12. Ed. by D. L. Clawson, 19-24. Muncie, IN: Conference of Latin Americanist Geographers.

_____. 1989. The sugar cane industry of the Chicama Valley, Peru. *Revista Geográfica* 109: 56-71.

Lawson, V. A. 1988. Government policy biases and Ecuadorian agricultural change. *Annals of the Association of American Geographers* 78(3): 433-452.

Ludeke, A. K., R. K. Holz, P. L. Phillips, and R. S. Nevem. 1986. *Revista Geográfica* 103: 19-34.

Mercado-Escobar, M. C. 1983. Natural resource conservation and small-scale farming in the eastern highlands of Puerto Rico: Social and historical perspectives. Doctoral Dissertation, University of North Carolina at Chapel Hill.

Miller, E. E. 1982. Small farms in Central America. *Revista Geográfica* 96: 38-46.

Montanez, G. 1985. Land use, soil erosion, and farmers' attitudes toward conservation: Basis for land management policies in Las Cuevas watershed, Dominican Republic. Doctoral Dissertation, University of Florida.

Muller, K. D. 1987. The impact of agricultural mechanization in South Brazil: The case of west Paraná. Doctoral Dissertation, University of Wisconsin-Milwaukee.

Parker, E. P. 1981. Cultural ecology and change: A *caboclo varzea* community in the Brazilian Amazon. Doctoral Dissertation, University of Colorado at Boulder.

Pena Franjul, M. M. 1985. Decision environment for cropland ecodevelopment in Peravia Province, Dominican Republic. Doctoral Dissertation, Texas A&M University.

- Place, S. E. 1985. Export beef production and development contradictions in Costa Rica. *Tijdschrift voor Economische en Sociale Geografie* 76(4): 288-297.
- Posner, J. L., G. A. Antonini, G. Montanez, R. Cecil, and M. Grigsby. 1983. *Revista Geográfica* 98:5-22.
- Preston, D. A. 1983. Contemporary issues in rural Latin America. *Progress in Human Geography* 7(2): 276-181.
- Robinson, D.J. 1989. *Latin America*. In *Geography in America*. Ed. by G. L. Gaile and C. J. Willmott. Columbus: Merrill Publishing Company, 488-505.
- Rudel, T. K. 1983. Roads, speculators, and colonization in the Ecuadorian Amazon. *GeoJournal* 19(4): 437-446.
- Ryder, R. H. 1989. Land evaluation, environmental perception, and agricultural decision-making in Las Cuevas watershed, Dominican Republic. Doctoral Dissertation, University of Florida.
- Sperling, J. 1987. Food distribution in a Colombian city: Patterns and Processes of change. Doctoral Dissertation, Columbia University.
- Sternberg, H. O'R. 1981. *Frontieres contemporaines en Amazonie bresilienne: Quelques consequences sur l'environnement*. Paris: Centre de recherche et documentation sur l'Amerique latine.
- Thompson, J. 1981. Publications on livestock production and marketing in Latin America and the Caribbean by North American Geographers. In *Proceedings of the Conference of Latin Americanist Geographers: Geographic Research on Latin America, Benchmark 1980*. Ed. by T. L. Martinson and G. S. Elbow, 262-268. Muncie, IN: Conference of Latin Americanist Geographers.
- Weil, C. 1989. Differential economic success among spontaneous agricultural colonists in the Chaparé, Bolivia. In *The human ecology of tropical land settlement in Latin America*. Ed by D. A. Schumann and William L. Partridge, 264-297. Boulder, CO: Westview Press.
- Wilson, J. R. 1984. Multinational enterprise in Brazilian geographic development: 1968-1978. Doctoral Dissertation, University of Minnesota.
- Works, M. A. 1980. An evaluation of planned settlement in the Bolivian tropics: The 1974 plans. *Geographical Bulletin* 19:7-13.
- _____. 1984. Agricultural change among the Alto Mayo Aguaruna, eastern Peru: The effects on culture and environment. Doctoral Dissertation, Louisiana State University and Agricultural and Mechanical College.
- _____. 1987. Aguaruna agriculture in eastern Peru. *Geographical Review* 7(3): 43-358.
- Zeferino, A. C. 1987. Location of public sector wholesale agricultural marketing facilities in southern Brazil Doctoral Dissertation, University of Wisconsin-Milwaukee.

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