Medical Geographic Research in Latin American and the Caribbean in the 1990s and Beyond

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ABSTRACT
This paper assesses medical geographic research in Latin America and the Caribbean during the 1980s. Aspects of health and health care worthy of attention during the 1990s include such classic geographical themes as human use of the environment, diffusion, migration, urbanization and urban structure, cultural pluralism and regional inequalities.

Geographical research on disease ecology in the 1980s examined the role of environmental characteristics in the distribution of particular diseases and the contribution of ecological and socioeconomic variables to differential risk of infection. The diseases and countries where they were studied included valley fever and Chagas disease in Mexico, schistosomiasis and tuberculosis in Puerto Rico, childhood diarrhea in Grenada and Bolivia and schistosomiasis, malaria, variola minor and respiratory illness in children in Brazil. Most of these studies of specific diseases effectively employed local-level mapping. Some geographers used official statistics and records to examine spatial patterns of health and illness within a country (Chile, Costa Rica and Jamaica) or smaller political unit (in Brazil and Colombia). Research on the provision and utilization of health services was conducted in Bolivia, Brazil, Chile, Grenada, Guatemala and Jamaica.

INTRODUCTION

The beginning of a new decade inspires reflection on the achievements of the previous one and goals for that to come. This paper assesses medical geographic research in Latin America and the Caribbean during the 1980s and outlines themes worthy of geographers' attention during the 1990s.

In their introduction to *Geography in America*, Gaile and Willmott (1989, xxv) describe "the roles that place and its locational attributes play in natural and human processes" as "the heart of geographic inquiry and knowledge." One possible description of the common core of medical geography is "the roles that place and its locational attributes play in health and health care."

In their review of recent work in medical geography in *Geography in America*, Earickson et al. (1989, 425) state that "at least 65 American geographers" are actively carrying out research in this specialty. Of those they identify, nine have focused at least part of their efforts on Latin America and the Caribbean. These geographers and the countries in which they have conducted research are as follows: Annis (1981), Guatemala; Bailey (1981, 1988), Jamaica; Enders (1981), Brazil; Haddock (1981), Puerto Rico; Hunter (Hunter and Arbona 1984, 1985), Puerto Rico; Kvale (1981), Brazil; Scarpaci (1985, 1987, 1988), Chile, Uruguay and Argentina; Taylor (Taylor et al. 1986), Grenada; and Weil (1979, 1981, 1985), Bolivia. The small size of this group explains the limited coverage of topics and places by medical geographers working in Latin America and the Caribbean in the 1980s. Fortunately, however, several of these scholars have been very productive. Very few geographers who are Latin Americans have investigated health problems. In her review of Brazilian geography in the 1980s, Becker (1986) mentions no work in medical geography. A few of the medical geography books published in the 1980s and aimed at a general

audience included some material on Latin America (Eyles and Woods 1983; Gesler 1984; Learmonth 1988; Meade et al. 1988). Others in which material on Latin America would have been appropriate included none (Jones and Moon 1987; Joseph and Phillips 1984; McGlashan and Blunden 1983).

In his review of recent geographical research in Latin America in *Geography in America*, Robinson (1989)demonstrates that a large share has been historical. Most of the publications he cites from the 1980s which might be called "medical geography" are analyses of the role of newly introduced infectious diseases and colonial practices detrimental to health in diminishing native populations after European contact (such as parts of Gade and Escobar 1982; Lovell 1985; Newson 1985, 1986, 1987; Stanislawski 1983). Johannessen's (1981) research on medicinal uses of melanotic chickens as evidence of early contact between Asia and the Americas is another example of **[end p. 223]** historical geography that includes a "medical" theme. Recent textbooks on Latin American geography contain scant information about health and health care.

Medical geography is often divided into the subfields of "disease ecology" and "health services research." Recent work in Latin America is discussed for each of these in turn in the following sections. The majority of the work cited appeared in *Social Science and Medicine.* At both the beginning and the end of the 1980s, this interdisciplinary journal published special issues focusing on medical geographic research in Latin America (Packard et al. 1989; Weil 1981b).

RESEARCH IN DISEASE ECOLOGY

Several geographers have examined the role of environmental characteristics in the distribution of particular diseases. Many have assessed the contribution of variations in humans' use of the environment and socioeconomic status to differential risk of infection. Fredrich (1989) attempted to ascertain the distribution and prevalence of valley fever (coccidioidomycosis) in Tijuana. Prothero and Davenport (1986) assessed the relationship between housing characteristics and Chagas' disease in a village in Chiapas, Mexico. In Puerto Rico, Haddock (1981) studied schistosomiasis, and Hunter and Arbona (1984, 1985) conducted research on tuberculosis. Taylor et al. (1986, 1990); Weil (1988); and Weil and Weil (1987) investigated risk factors associated with childhood diarrhea, the former in rural Grenada and the latter in both rural and urban areas of Cochabamba department, Bolivia. Kvale (1981) analyzed the distribution and transmission of schistosomiasis in northeastern Brazil. Smith's (1982, 99-112 ff.) larger study of agricultural colonization in the Brazilian Amazon included detailed consideration of malaria and other diseases. Morrill and Angulo (1981) studied variola minor (a mild form of smallpox) in one county in the state of São Paulo, Brazil. Ribeiro Sobral (1989) linked respiratory illness in children to air pollution levels in São Paulo. Local-level mapping has been employed effectively in most of these studies of specific diseases. Latin Americanists interested in particular diseases should be aware of a comprehensive reference, *Tropical and Geographical Medicine* (Warren and Mahmoud 1989).

Other geographers have employed official statistics and records to examine spatial patterns of health and illness within a country or smaller political unit. Haynes (1983) identified differences in causes of death for Chilean provinces. H. Wood (1981) analyzed socioeconomic

characteristics, medical attention, and rates and causes of mortality in three Colombian departments. As part of a larger study of Costa Rica, Hall (1984; 1985, 269-278) documented regional inequalities in indicators of health status and medical coverage. Shimada et al. (1981) linked environmental factors to differences in death rates, due to specific chronic diseases, among health districts in the state of Rio Grande do Sul, Brazil. Bailey (1981, 1988, 1991) used hospital records and health surveys to analyze spatial and socioeconomic variations in childhood undernutrition, morbidity, and mortality in Jamaica.

There has been some attention to diet. Blank (1981) looked at wet-season vegetable protein use among the Macusi in Amazonia. Hunter and de Kleine (1984) assessed the beliefs concerning healing and the nutritional value of geophagy (earth eating) in Central America. Schroeder (1990) studied decision making in food preparation as an adaptive strategy in northwestern Peru.

A few studies have addressed the implications of natural, economic, and political environments for human health. Slosek (1986) linked the distribution of *Aedes aegypti* mosquitoes (which serve as vectors for both yellow fever and dengue hemorraghic fever/dengue shock syndrome) to environmental characteristics, economic activities and political decisions. Smith (1982, 93-168) and Weil (1981a) studied health problems associated with agricultural colonization.

RESEARCH ON PROVISION AND UTILIZATION OF HEALTH SERVICES

Both Taylor et al. (1986, 1990) and Weil's (1988; Weil and Weil 1987) research on childhood diarrhea was aimed specifically at enhancing the effectiveness of programs promoting ORT (oral rehydration therapy), an inexpensive means of reducing mortality. In related research, Taylor worked with other geographers to identify household characteristics associated with patterns of health-care utilization in five communities in Grenada (Poland et al. 1990). Annis (1981) investigated the relationship between physical access and utilization of government health posts in rural Guatemala. Fox (1987) analyzed choice of health care for children in Cochabamba, Bolivia. Bailey and Phillips (1990) studied spatial patterns of health-care utilization in Kingston, Jamaica. In another study, Bailey examined contraceptive use (Bailey and Powell 1982) in the Kingston-St. Andrew metropolitan area. Enders (1981) evaluated**[end p. 224]** the perception and utilization of hospitals in Porto Alegre, Brazil, by low-income residents. Scarpaci's (1985, 1987, 1988a, 1988b) research in Chile addressed the impact of restructuring of medical-care financing, with increasing privatization, on the accessibility and utilization of medical care.

DIRECTIONS FOR FUTURE RESEARCH

Latin America's well-being in terms of health and health care relative to other parts of the globe and the great diversity within the region will come as no surprise to regional specialists. For example, Argentina's population is more similar to that of Canada than to Guatemala's in age structure, life expectancy and causes of death (Knouss 1992, Figure 1). Such basic characteristics are not recognized by many of our non-Latin Americanist colleagues and students, so it would be worthwhile to include attention to health and health care in our educational efforts.

Latin American countries must contend with the health problems identified with

"modernization," including homicides, accidents, chronic diseases and illness associated with environmental pollution, at the same time that infectious diseases that have long been controlled in the more industrialized countries continue to pose problems in the region. The threat of AIDS is enhanced because many Latin American countries do not yet have a screened blood supply.

Traditional geographical research in disease ecology to delineate the links between environment and disease as well as patterns of disease distribution and diffusion is still needed as input for prevention and control efforts for such diseases as onchocerciasis (river blindness), schistosomiasis and malaria, all of which are expanding numerically and areally in Latin America. Both human ecological and political economic approaches, ideally in combination, are necessary to elucidate the health consequences of "development" (Weil 1981a; Weil and Kvale 1985) and environmental pollution (Ribeiro Sobral 1989).

Several scholars have suggested links between migration and disease patterns in Latin America (for example, Prothero and Davenport 1986, 1326; Weil 1981a, 453). Migration has been a favorite theme of Latin Americanist geographers (c.f. Robinson 1989, 494); perhaps researchers will be encouraged to analyze its relationship to human health.

Urbanization and urban structure are other themes that geographers can productively explore in relation to health problems. Topics that warrant research include urban transmission of specific infectious diseases; spatial and socioeconomic analyses of patterns of nutritional status, morbidity, and mortality within cities; and accessibility and utilization of health care.

Geographers working in other parts of the world have fruitfully investigated the impact of informal and culturally pluralistic medical care on health and on access to and utilization of particular practitioners, facilities and services (for example, Bhardwaj and Paul 1986; Good 1987). Most of the research on these themes in Latin America has been carried out in other disciplines (see Davidson 1983; Finerman 1984; Price 1989). One geographer (Fredrich 1981) has studied folk medicine in St. Lucia, and another (Smith 1982, 146-168) included material on folk medicine in a larger study of agricultural colonization in the Brazilian Amazon.

Change in the distribution of economic resources is an important research issue, with the rise or decline of infant (under age one) and toddler (ages one to five) nutritional status and mortality serving as meaningful indicators. Although they are not geographers, C. Wood and Carvalho's (1989) socioeconomic and spatial study of inequality in Brazil; Dewey's (1989) review of the impact of market production on nutrition in Peru, Jamaica, and Mexico; and Browner's (1989) review of the repercussions of changing women's roles in Latin America on reproduction and health merit mention. Geographers could play a key role in identifying patterns of nutritional status and mortality at multiple scales and in documenting the repercussions of changes in international trade and investment, distribution of land and capital, and labor arrangements for diet and health at the community and household levels.

The economic crisis of the 1980s has instigated a steady net flow of capital out of Latin America, a deterioration in living standards and decreased government spending on health programs.

Health care in Latin America is heavily based on hospital and physician services, so it is not cost-effective. Because of higher unemployment and reduced purchasing power, the middle class is increasingly dependent on public provision of health care at the same time that overall government expenditures in most countries are declining. In many countries, there is competition for scarce resources between the national ministry of health, which largely serves the poor, and social-security health systems, which mainly serve the formally employed. Regional inequalities in financial resources and medical facilities and practitioners are pronounced.

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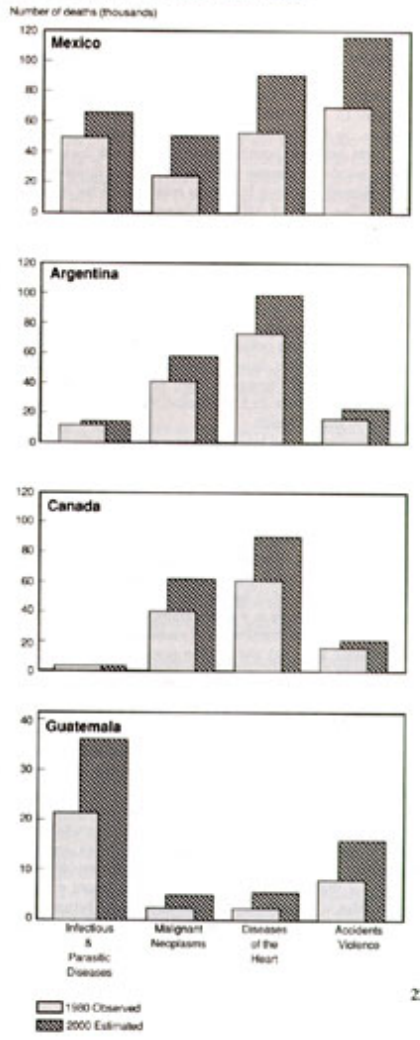
Figure 1. Estimated deaths for the year 2000 for selected countries and for selected groups of causes using patterns observed in 1980.



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The youth of the rapidly growing Latin American population creates heavy demand for primary health care. The increase in the older population creates demand for expensive care for the elderly. The allocation of funds for health programs thus involves tension between generations as well as between the "haves" and "have nots."

The contemporary politics of health care is a fundamental research area explored only by Scarpaci (1985, 1987, 1988a, 1988b) among the geographers conducting research in Latin America during the 1980s. Work in Latin America by scholars in other disciplines indicates the significance of economic and political relations in shaping health programs and their effectiveness (see Belmartino and Bloch 1989; Bossert and Parker 1984; Laurell 1989; Morgan 1990; for a more general discussion of these issues, see Navarro 1982; Turshen 1989), the disruption of health and health care wrought by the economic crisis (for example, Musgrove 1987; Simonelli 1987) and warfare (see Garfield 1989; Lundgren and Lang 1989), and the debates regarding privatization and decentralization of health care (Ugalde 1984). Geographers' attention to characteristics of places and spatial analyses can elucidate these problems and account for differentiation in ways unlikely to emerge from research by scholars in other disciplines. Geographers who are not Latin Americanists have begun to address the politics of health and health care in the third world. For example, Stock (1986) has taken medical geographers to task for uncritically "developmentalist" approaches, and Wisner (1988) has argued that UNICEF's cost-reducing emphasis on "selective primary health care" is undermining the efforts of local communities and health workers.

In their list of "challenges facing American geography," Gaile and Willmott (1989, xxxi) pinpoint as a problem "the diminishing spatial scales at which most American geographers conduct their research. . .[focusing] upon increasingly smaller regions." This does not accurately characterize medical geography as a whole (for example, see Dutt 1987; Glick 1982; Hunter and Thomas 1984; Pyle 1986). Some geographical research at the global scale includes and provides insight into Latin America but would not be identified as Latin Americanist geography (such as Cliff and Haggett 1988; Seager and Olson 1986; Weil and Kvale 1985; W. Wood 1988). It is true that most medical geographers working in Latin America and the Caribbean conduct research in one community, a portion of one country, or one of the smallest countries in the region. This tendency reflects the general paucity of secondary data appropriate for analysis of particular questions; the time-consuming nature of firsthand data collection in an initially unfamiliar setting, often with reliance on second and third languages; and the expense of and difficulty in obtaining funding for comparative research in multiple locations. As long as researchers remain conscious of the larger environmental and social context of local situations, focusing on the local level need not be a disadvantage. It allows comprehensive analysis of complex issues that often is not possible at a regional or global scale.

Geographer Wisner and scholars from other disciplines recently prepared a special issue of ***Social Science and Medicine*** on "The Political Economy of Health and Disease in Africa and Latin America" that emphasizes the need for research that encompasses several scales simultaneously (Packard et al. 1989; c.f. Prothero and Davenport 1986, 1326-1327). Anthropologist Moran, who has had extensive training in geography, whose research overlaps that of much in our discipline and who has done some work on health problems associated with agricultural colonization in Amazonia, is editor of a new monograph series published by University of Michigan Press dedicated to research at multiple scales. In his recent review of Latin Americanist geography, Robinson (1989, 489) discusses with feeling the lack of commitment to and appreciation of fieldwork by many geographers. There has also been a common failure to acknowledge that most fieldworkers have been well aware of and had much

to say about local linkages to the larger ecological, economic and political systems within which their case studies are embedded. Research at multiple scales and more productive synthesis of theoretical and empirical work, what Gilbert (1986, 545) has referred to as "theoretically informed empiricism," will require greater tolerance of individual differences and appreciation of others' work than has been the norm thus far.

Although secondary data that lend themselves to geographical analysis of health and health care in Latin America and the Caribbean are increasingly available, and some geographers have used these effectively (see Hall 1985; Haynes 1983; H. Wood 1981), more often than not field research is required to assess their validity and reliability. For example, Hunter and Arbona (1984, 1985) found that the reported distribution of tuberculosis in Puerto Rico reflected the location of reporting practitioners and facilities rather than the actual distribution of the disease. Continuing development of GIS as an analytical tool and the diffusion of personal computers and ever-enhanced software both in agencies within Latin America and among professional geographers will increase capabilities for the generation and analysis of secondary data greatly, but will hardly obviate the need for fieldwork.

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CONCLUSION

Most medical geographic research in Latin America during the 1980s was successful both as medical geography and as Latin Americanist geography. That is, it represented meaningful contributions to the analysis of particular topics and methods of interest to medical geographers who are not Latin Americanists and was based on and contributed to sound understanding of places. This review indicates that there are many health issues that would benefit from attention by Latin Americanist geographers. The small size of the work force calls for well designed projects, collaboration among geographers and with scholars in other disciplines and high individual research productivity.

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