

# NEW TRENDS IN STUDIES OF SCIENCE AND MEDICINE IN LATIN AMERICA

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*HEALTH, HYGIENE, AND SANITATION IN LATIN AMERICA C. 1870 TO C. 1950.*

By Christopher Abel. (London: Institute of Latin American Studies, University of London, 1996. Pp. 48. \$11.50 paper.)

*MISSIONARIES OF SCIENCE: THE ROCKEFELLER FOUNDATION AND LATIN AMERICA.* Edited by Marcos Cueto. (Bloomington: Indiana University Press, 1994. Pp. 171. \$29.95 cloth.)

*SALUD, CULTURA Y SOCIEDAD EN AMERICA LATINA.* Edited by Marcos Cueto. (Lima: Instituto de Estudios Peruanos, 1996. Pp. 250.)

*BIOTECHNOLOGY IN LATIN AMERICA: POLITICS, IMPACTS, AND RISKS.* Edited by N. Patrick Peritore and Ana Karina Galve-Peritore. (Wilmington, Del.: Scholarly Resources, 1995. Pp. 229. \$45.00 cloth, \$16.95 paper.)

*PSIQUIATRAS Y LOCOS: ENTRE LA MODERNIZACION CONTRA LOS ANDES Y EL NUEVO PROYECTO DE MODERNIDAD, PERU, 1850-1930.* By Augusto Ruiz Zeballos. (Lima: Instituto Pasado y Presente, 1994. Pp. 156.)

The last ten years have witnessed considerable growth in scholarly interest in the social dimensions of science and medicine in Latin America. The approaches taken in this body of work have been varied. Some researchers have been interested primarily in examining how Western science has functioned as an arm of U.S. foreign policy in Latin America. Others have demonstrated that despite assumptions to the contrary in the United States and Europe, Latin American scientists have often been important innovators in their fields. Still other scholars have been interested in linking developments in public health and medicine to broader political and ideological currents in Latin American countries. Some of this new work has emphasized the use of medicine by Latin American governments as a means of social control of their citizens, while other studies have focused on the way that local medical practitioners, scientists, and even patients have adapted or rejected imported scientific and medical technology. Much of the scholarship has been influenced by a social constructivist approach that questions the universality, and in some cases even the validity, of Western scientific or biomedical knowledge. Yet despite differences in

discipline, subject, and theoretical approach, this new body of work exhibits a common rejection—sometimes implicit, sometimes explicit—of earlier studies of medicine and science that focused on research breakthroughs and the civilizing mission of Western science.

Certainly one of the most important innovators and prolific contributors to the new social history of medicine is Marcos Cueto. The essays in *Missionaries of Science: The Rockefeller Foundation and Latin America*, his edited volume, are significant in two respects: in exploring the foundation's political and economic motivations for involvement in Latin America; and in discussing the reception of programs by local scientists, doctors, and the public in general. The chapters are arranged chronologically and show an evolution in foundation policy from early campaigns to eradicate diseases to agricultural assistance programs to more sophisticated projects for scientific research and training. The contributions also show a surprising flexibility on the part of some Rockefeller personnel in Latin America and a fascinating range of reactions to the programs depending on historical and social conditions. This book provides a highly useful overview of the Rockefeller Foundation's activities in Latin America.

The first essay by Cueto analyzes the surveys of medical, scientific, and public-health conditions conducted by the Rockefeller Foundation in fifteen Latin American countries during the 1920s. Although these reports provide some information about the organization of medical education and the type of clinical facilities that existed, today these surveys reveal more about the cultural assumptions of the surveyors than about the situations in the countries visited. If anyone needs confirmation that scientific inquiry is not value-free, the Rockefeller Foundation surveys provide ample evidence, many sounding more like the cruder formulations of modernization theory than like useful assessments for initiating assistance programs.

Armando Solórzano's contribution to *Missionaries of Science* offers a fascinating discussion of the varied results of Rockefeller Foundation campaigns against yellow fever in Veracruz and Yucatán during the Mexican Revolution. Solórzano shows how in both areas, foundation efforts strengthened the authority of the central government in a critical period when Washington perceived Alvaro Obregón as the lesser evil in an unstable situation. Yet ironic differences existed in the two situations. In Veracruz, where nationalism and anti-Americanism were strong, the Rockefeller Foundation's success in fighting yellow fever, coupled with other visible public-health measures, finally overcame local hostility and created greater tolerance for the United States and U.S. citizens. In Yucatán, in contrast, an unlikely combination existed of friendliness toward the United States (the origins of which Solórzano does not explain) and a post-revolutionary socialist government that challenged the authority of the Mexican state. The Rockefeller Foundation campaign in Yucatán controlled yellow fever

to encourage foreign investment and protect Mexican troops from becoming ill so that they could enter the area to defeat the socialist experiment led by Felipe Carrillo Puerto.

The skillful alignment of Rockefeller Foundation plans with governmental political objectives can also be seen in the campaign against yellow fever in Brazil. Steven Williams's contribution to *Missionaries of Science* shows how the foundation's alliance with the Brazilian Departamento Nacional de Sanidade Público helped to wrest control of public health from state governments that had frequently used dramatic fumigation campaigns to win the political support of residents. The success of the Rockefeller Foundation's anti-larval approach to yellow fever reinforced the Brazilian government's efforts to centralize public-health initiatives.

Although governments sometimes welcomed Rockefeller Foundation projects, reception of its assistance programs in Latin America was not always unambiguous. As Cueto shows in his essay on foundation support for physiology research in four countries, while Latin American scientists welcomed the financing and scientific expertise offered by their U.S. counterparts, they often rejected the Rockefeller Foundation's mission of transforming medical and scientific education according to U.S. models.

At times the models that the Rockefeller Foundation proposed were almost entirely inappropriate because of lack of information about the Latin American socioeconomic reality or because of decisions to simply ignore it. This is the point made by Deborah Fitzgerald in her essay on agricultural assistance programs in Mexico. She demonstrates the disjuncture between the foundation's model of agricultural development (relatively large, capital-intensive commercial farms operated by middle-class families) and the Mexican reality (small, labor-intensive subsistence farms operated by poor peasants) to explain the minimal success of the foundation's "green revolution" in the 1940s. Joseph Cotter, in contrast, does not deny that the program did little for peasants but maintains that it should be considered successful. His essay on programs in Mexico stresses the importance of the Rockefeller Foundation's efforts in the development of the agricultural scientific community and the fact that crop yields went up in certain farming sectors.

Cotter's essay and the last one in *Missionaries of Science* by Thomas Glick are the only two that emphasize Rockefeller Foundation successes in Latin America. Glick goes so far as to claim that the genetics program in Brazil was "a model success story in Latin American science [that] illustrates the creative intervention of a U.S. foundation in the development of a scientific discipline abroad" (p. 149). It may be true that in Brazil an ideal "fit" existed between local scientists conducting genetics research and the Rockefeller Foundation as represented by Harry Miller, whom Glick characterizes as flexible and willing to listen to what the Brazilians had to say. It would be useful for understanding this program, however, to know some-

thing more about the social and political context in which it functioned. Only at the end of the essay does Glick mention that interest in eugenics in Brazil in this period was one factor that encouraged genetics research.

Another volume edited by Marcos Cueto is a fine collection of articles on public health in Latin America, *Salud, cultura y sociedad en América Latina*. The book begins with an introduction by Cueto that serves as an overview of both the history of public-health initiatives in Latin America and the historical scholarship on the subject. Studies published in the 1970s inaugurated the new social history of medicine and public health in Latin America. These works, influenced by dependency theory and the writings of Michel Foucault, tended to emphasize the instrumental use of medicine and public-health initiatives by elites to further their own economic and political interests. While more recent works have not rejected this interpretation, they have tended to emphasize more the complexity of reactions of doctors, scientists, and the public to these modernizing medical projects. The essays in *Salud, cultura y sociedad en América Latina* are in keeping with this new approach.

The first two essays discuss the efforts of Brazilian doctors to conduct biomedical research relevant to Brazilian social conditions. Julyan Peard analyzes the “tropicalista school” of medicine that was important in Bahia in the second half of the nineteenth century. As the name implies, tropicalista doctors were interested in the effects of tropical climates on human beings. More specifically, they asked whether Brazilians could actually be healthy or whether heat and humidity created problems of hygiene that could not be overcome. For many belonging to this school, environmental influences were crucial to understanding disease because the environmentalist explanation (as opposed to a purely bacteriological one that was gaining ascendancy) held out the hope that progressive social policy could create a healthy population, even in the tropics.

Jaime Larry Benchimol’s contribution on Brazilian bacteriologist Domingos José Freire and the nineteenth-century origins of bacteriology in Brazil shows the close link between public health and nationalism. Although Freire’s attempts to create a vaccine or a cure for yellow fever ultimately failed, he remained an important public figure and man of science, eventually heading a major bacteriological institute and winning the support of both the republican and the abolitionist communities.

Three articles in *Salud, cultura y sociedad en América Latina* deal with specific diseases. Lilia Oliver examines the ways in which the primarily miasmatic approach to cholera in Guadalajara in the nineteenth century focused governmental and public attention on the need for improved urban hygiene. According to the miasmatic perspective, vaporous exhalations contained noxious substances that caused disease. Diego Armus discusses the anarchist discourse on tuberculosis in Argentina between 1870 and

1940 and finds that this view was shared in many ways by others with more conservative agendas for social reform. Diana Obregón demonstrates how governmental political and economic expedients, as well as the corporate interests of the medical community, changed attitudes toward leprosy in Colombia.

An essay by Marcos Cueto on disease eradication programs of the Rockefeller Foundation demonstrates the limited success of the campaigns against hookworm, yellow fever, and malaria. He also shows how the foundation focused on diseases that its scientists believed they could easily eradicate with little investment in infrastructure but avoided dealing with the root causes of the diseases—such as poverty, impure water, and lack of plumbing. According to Anne-Emanuelle Birn, the Lázaro Cárdenas administration in Mexico attempted a public-health program focusing on these structural problems, while the Rockefeller Foundation in Mexico continued to address diseases that could be fought economically and dramatically. Ultimately, due to lack of funds and changing political visions of later Mexican administrations, many aspects of the foundation's more limited approach were adopted. The result is that even sixty years later, the lack of potable water and inadequate plumbing remain major public-health problems in Mexico. The rural health campaign initiated in 1918 by the Brazilian Liga pro Saneamento, as studied by Nisia Trindade Lima and Nara Britto, had more in common with Cárdenas's social conception of health than with that of the Rockefeller Foundation. The Liga attributed a major role to science in the reform of the state and considered eradication of illness in the countryside as a means of strengthening the Brazilian nation.

Christopher Abel's *Hygiene and Sanitation in Latin America c. 1870 to c. 1950* is a significant effort to summarize public-health initiatives and policy in the region. The first section of the book examines some of the initial motivations for governmental concern with health and hygiene in the late nineteenth century. They included the need to improve sanitary conditions in order to attract foreign investment and immigration, the appeal of health initiatives to positivist-influenced governments as integral to programs of modernization, and the need for governments to take an active role in public health in wartime (during the War of the Triple Alliance from 1864 to 1870; in the War of the Pacific from 1879 to 1883; and in the War for Cuban Independence from 1895 to 1898). But as Abel points out, despite interest in many quarters, even basic programs such as vaccination campaigns did not usually succeed until the 1930s.

The second section of Abel's study focuses on international efforts to introduce research techniques and approaches of Western science into fighting disease. Abel asks whether these groups—ranging from British philanthropic organizations to the Rockefeller Foundation to the massive U.S. effort to wipe out disease in the Panama Canal—really had the posi-

tive impact they claimed or whether they functioned primarily to divert countries from developing public-health programs that would have been more appropriate to their needs.

Of all the Latin American countries, the most research on the history of medicine has been done in Brazil. The third section of *Health, Hygiene, and Sanitation* synthesizes the literature on the development of Brazilian public health and discusses the first efforts to extend medical care to the countryside. In Brazil as elsewhere, hygienic measures were often introduced coercively. Obligatory vaccination programs, forced fumigation of housing, and sometimes even the destruction of residences in poor neighborhoods all created popular opposition to health campaigns.

The last two sections of Abel's monograph deal with connections among health, nutrition, housing, and the persistence of Luso-Hispanic, Amerindian, and Afro-Latin American traditions of healing. Abel contends, "Luso-Hispanic, Amerindian and Afro-Latin American practices of medicine were strikingly tenacious, since they remained the only available and affordable option for large sections of the population" (p. 35). This assertion is open to question, however, because researchers know so little about these practices for the period under study. How can researchers determine whether Latin Americans continued to use these systems primarily because of their cheapness and accessibility? Could it be that they found them more efficacious or more spiritually satisfying and therefore avoided biomedicine? It should not be forgotten that well into the period from 1870 to 1950, Western scientific medicine was often not that effective, placing doctors on the defensive with respect to healers from other traditions.

Abel has done an admirable job of reviewing the public-health literature on Latin America and raising important suggestions for future research. These include connections among health and hygiene and peasant movements; the extent to which public health was viewed by peasants and rural workers as mainly an imposition from above; and the role of women religious in nursing and spreading modern conceptions of medicine.

*Psiquiatras y locos: Entre la modernización contra los Andes y el nuevo proyecto de modernidad, Perú, 1850–1930* is an imaginative study linking the development of mental health with the most repressive aspects of the modern age in Latin America as well as with efforts to create a more humane society. Author Augusto Ruiz Zeballos characterizes the period of liberal political ascendancy in Peru as fostering individualism but lacking concern for the social equality of the majority of the population, especially the Andean population. He employs fascinating case studies to illustrate the instrumental and controlling aspects of psychiatry as well as its liberating possibilities.

In 1859 Dr. José Casimiro Ulloa founded a new mental hospital in Lima, El Manicomio del Cercado, where he hoped to initiate a new type of treatment for the mentally ill that would break with the common practices



of abuse and isolation. Although the doctors there promoted good food, fresh air, exercise, productive work, and hypnosis as forms of treatment, they were also obsessed with control and order and maintained that the mentally ill should be immediately separated from their families. This emphasis on control over cure eventually combined with overcrowding to make the Manicomio del Cercado less and less distinguishable from previous mental asylums.

Some of those incarcerated in the hospital were those thought to be “monomaniacal,” meaning that they were considered to be crazy on one particular point. In 1885 journalist Carlos Paz Soldán was hospitalized for such a disorder, specifically, because he was involved in spiritism and claimed to hear voices of conflicting spirits talking to him. Paz Soldán remained in the hospital for a hundred days, and during that time, he kept a record of his experiences. It appeared in *El Sol*, a journal he began to publish after being released from the hospital. This remarkable source enabled Ruiz Zavallos to describe the type of treatment that prevailed in this new liberal institution. Paz Soldán recounted the unnecessary enclosure of recent arrivals, the disdain of the doctors for the patients, and methods designed to break down individuals’ will and ability to think for themselves. Paz Soldán maintained that punitive isolation actually caused paranoia instead of curing it.

In the beginning of the twentieth century, eugenics, neurology, and physical anthropology as influenced by positivism became popular. The policy of enclosure was extended not only to criminals and the insane but to other troublesome sectors of the population, such as delinquent children, drunkards, and prostitutes. At the same time, however, a group of young intellectuals challenged the authoritarian view of modernity and began to offer an alternate vision. Some of these, like Abraham Valdelomar, rejected the doctors’ understanding of mental illness and maintained that for the medical community, the ideal type was *el burgés tranquilo*.

José Carlos Mariátegui was one of the critics of the inhumanity of the modern age that was based on class exploitation. After becoming a Marxist, Mariátegui began to shape an alternate vision of the twentieth century that included the indigenous people of Peru and was not at the service of elite capitalist interests. Ruiz Zavallos shows how Mariátegui also embraced psychoanalysis, which he believed could reveal the unconscious side of human behavior. Like historical materialism, psychoanalysis could be a means of helping individuals become more aware of how something that was not immediately visible could motivate or impede them.

The new science of psychology thus had both liberating and repressive possibilities, and the same can be said of recent developments in the field of biotechnology in Latin America. The volume edited by Patrick Peritore and Ana Karina Galve-Peritore, *Biotechnology in Latin America: Politics, Impacts, and Risks*, presents case studies demonstrating the potentials and

dangers of this technology. In one of the first books published on the subject, the editors take a political-economy approach to understanding biotechnology that helps place the contributions in a meaningful global context. Their introduction points out that this new technology has developed at a crucial juncture in the evolution of the world capitalist economy, when a shift has occurred to a knowledge-based global economy with decentralized government and corporate structures and regional economies that transcend the boundaries of nation-states. These changes have meant that massive pharmaceutical and agricultural firms can set the world's research agenda but that little oversight or control of biotechnology exists because multinational corporations have essentially extricated themselves from governmental or international regulatory regimes. This situation prevails at a time when it is becoming increasingly more apparent that the passing of genetically engineered genes within and between species may have grave environmental consequences.

According to the editors, biotechnology as it is currently being developed actually increases the inequality between developed and less-developed nations because the advanced Northern countries can use financial and political clout to impose various types of patents, copyrights, and other protections for intellectual property. Typically, large corporations maintain that raw genetic material, most of which is found in countries to the South (particularly in Latin America), is "the common heritage of humanity" to which everyone should have free access. But once these materials are genetically altered, the corporations consider them to be patentable commodities that the Latin American countries must purchase from their producers.

The first essay by Patrick Peritore on the political economy and the environmental impacts of biotechnology stresses that the presumed potential of biotechnology for solving problems of world hunger is misguided. He argues that problems of social justice are not amenable to technological solutions, as witnessed in an earlier panacea, the so-called green revolution. The problem is not lack of food—food production has actually outstripped the growth of the world's population—but rather of maldistribution. If new efforts to replace imported agricultural products with genetically engineered substitutes produced in the United States or in Europe succeed, such an outcome may actually aggravate problems of third world dependency and hunger because these countries will no longer be able to export even their traditional agricultural crops.

Daniel Goldstein's stinging contribution to *Biotechnology in Latin America* stresses the lack of research universities and scientists trained in the molecular sciences in Latin America as condemning the region to replicating technologies developed by others. He also rejects the widely held belief in Latin America that biotechnology is somehow going to solve problems of hunger and endemic disease. Goldstein points out that these are



social problems that can be solved through government policies that would make adequate food, clean drinking water, and education available to all. He ends by proposing that a possible solution to the problem is that a portion of Latin American countries' debt service could be invested in biotechnology projects in the industrialized world. Latin American countries could then train scientists in the most advanced genome projects, such as those on *Arabidopsis thaliana*<sup>1</sup> and *Caenorhabditis elegans*.<sup>2</sup>

The struggle between countries of the North and the South to control plant germ plasm is addressed by José de Souza Silva. He points out that much of the conservation effort so vigorously promoted by the United States and European countries (particularly in Costa Rica) seeks access to genetic information that natural preserves provide. During negotiations on the General Agreement on Trade and Tariffs, the North American Free Trade Agreement, and various debt renegotiations, Northern countries have pushed for international protection for intellectual property rights while advocating access to genetic raw material free of charge. Silva assumes that biotechnology can overcome the differences between temperate and tropical agriculture and that such change will spell the collapse of the export economies of many Southern countries after the biotechnological revolution that was based on their gene pool.

Three other essays deal with biotechnological policy in Mexico, Cuba, and Colombia. The Mexican study was based on a survey of attitudes of scientists, government administrators, and business executives involved in biotechnology. It was conducted by Ana Karina Galve-Peritore and Patrick Peritore. They discerned three major attitudes: a dependency-oriented analysis of the situation in which proponents advocated import-substitution industrialization, state promotion, and tariff barriers to protect new industries; a neo-mercantilist approach that supported state promotion of export industry and bilaterally negotiated trade agreements; and a neoliberal formula that proposed elimination of all state regulation of the economy, open markets, and export-led growth. The authors predict that a version of the neoliberal model will develop because Mexico, which lacks real biotechnical capacity, will end up donating its genetic stock and buying back genetically engineered crops that the country needs to continue being an agricultural exporter.

The study on Colombia by Gustavo Hernández-Boada acknowledges that biotechnology has humanitarian potential in less-developed countries. Examples include the extension of agriculture to poorer soils and the development of new diagnostic tools and cures for diseases. But

1. The identification of genes and mechanisms in this small plant should aid in the discovery of homologous genes in other germ plasm.

2. This is a key model system in molecular neurobiology. Every gene of neurobiological importance found in *C. elegans* is likely to be found in *Homo sapiens*.

echoing the essay on Mexico, Hernández-Boada stresses that while Colombia has the possibility of developing an appropriate biotech industry, doing so would require nationalistic political leaders dedicated to making such science work for the Colombian people. Instead, he foresees the familiar scenario: privatization of biotechnology by transnational corporations leading to Latin Americans buying high-priced commodities created from their own biodiversity.

Julie Feinsilver's essay on Cuba covers the one bright spot in the gloomy Latin American picture. Despite severe economic hardships, the Cuban government has determined to forge ahead with a "first world approach" to scientific development and to make biotechnology a means of earning desperately needed foreign exchange. Cuba was able to develop a biotech industry because of the emphasis placed on educational and scientific development since the triumph of the revolution in 1959. By 1989, Cuba boasted more than forty thousand science workers (one for every 250 inhabitants), many of them involved in various biotechnology projects. Cuba has established a research-development industrial complex at great national cost, especially given the U.S. trade embargo that forces inputs to be acquired in Japan and Europe at costs higher than importing them from the United States.

Cuba has made important advances in agricultural biotechnology and in creating industrial enzymes and bioremediation, but the Cuban industry has excelled in medical-pharmaceutical products. Some of its products include hepatitis B vaccine, various forms of interferon, and recombinant streptokinase (used to break up blood clots during heart attacks). One of the most commercially promising items now being produced is a diagnostic kit suitable for mass screenings for a wide variety of diseases, a kit that meets high international standards and costs less than the system currently being used in most places. Industry analysts in the United States predict billion-dollar sales for some products if Cuba can successfully enter the market. Doing so requires mastering sophisticated techniques that are only now being developed but also convincing potential customers and partners in joint ventures that the benefits are great enough to ignore threatened U.S. retaliation against countries that trade with Cuba.

The last two case studies in *Biotechnology in Latin America* deal with specific technologies and whether they really offer the panacea for Latin American agriculture that certain advocates have proposed. Ramón Aboytes-Torres's essay on recombinant growth hormone stresses that the adoption of this application to increasing milk production in dairy cows may not actually achieve that goal for long. It may require a number of other expenses that counteract the benefits of greater milk production, such as cows needing more food because of the increased rate of metabolism or the need to replace cows more often. Questions of safety also remain. The U.S. Food and Drug Administration has banned the milk of

cows treated with recombinant hormone. Aboytes-Torres therefore asks why this technology is being promoted in Latin America when its end product is not considered safe for the U.S. market.

In a discussion of the manipulation of gametes and embryos in livestock production in Latin America, José Juan Hernández-Ledezma and Valantine Solyman-Golpashini conclude that sophisticated techniques such as cloning embryos, producing embryonic stem cell lines, and creating transgenic animals have not been successful in Latin America largely because experiments were poorly planned, wasteful, or unrelated to the needs expressed by farmers. The authors suggest that the first step toward improving animal stock is to use one of the oldest techniques available: artificial insemination. Even that may not be employed frequently in Latin America, and the authors propose that the most beneficial approach would be to look for breeds that are genetically able to adapt to more ecologically sustainable practices, such as rotational grazing and pasture feeding of hogs and poultry.

In conclusion, the work that has been published on health and science in Latin America has reached a level of significant sophistication. It now appears that the field is ready to “take off” as more scholars address new issues. Important works have already been published on the training of scientists and engineers in several Latin American countries. Topics that would seem to be ripe for exploration are historical studies of the interpenetration of, or conflict between, Native American and African American healing traditions and European medicine; studies of gynecology and obstetrics in different societies; further exploration of mental health and its sociopolitical meanings; and medical discourse on women and children and its relation to state policy.