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INDIAN POPULATION PATTERNS IN COLONIAL SPANISH AMERICA *

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Spanish colonialism was disastrous for the Indian population of America. By the end of the colonial period, all Indian groups who had come into contact with Europeans were less than half of the size they had been on the eve of Spanish conquest, and some had become extinct. Although the Indian population was reduced in size between 1492 and 1821, the demographic changes experienced by different Indian groups varied considerably. Some groups became extinct at an early date, others experienced a sharp decline followed by a slow recovery, and others continued to decline slowly into the nineteenth century. The uneven distribution of Indians in Latin America today clearly reflects not only their distribution at the time of the Spanish conquest, but also their subsequent demographic histories.¹ It is the aim of this article to identify regional variations in population trends during the colonial period and to suggest factors that may have been responsible for differences in the level of survival of Indian populations.

In the field of Latin American historical demography, research energies have been concentrated on estimating the size of the aboriginal population. Interest in other periods has been patchy, and only a few detailed studies have been undertaken of demographic trends throughout the period.² Research on the size of the aboriginal population has been characterized by wide divergences of opinion, testified by the fact that estimates for the aboriginal population of America now range between Alfred Kroeber's 8.4 million to Henry Dobyns's 90 to 112 million.³ Such differences of opinion, many of which remain unresolved, arise from the diversity of sources and methods used, as well as from the philosophical stances taken by individual researchers.⁴ Documentary evidence relating to the second half of the colonial period is generally more available and reliable, but the greater abundance of evidence, notably in parish registers, has perforce tended to restrict studies to the local scale.⁵ Given that the demographic histories of many Indian groups are disputed, poorly sketched, or restricted temporally

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or spatially, it might appear premature to suggest that broad patterns of population movement can be discerned. Nevertheless, research to date has devoted insufficient attention to the nature and causes of regional variations in decline and recovery. It seems time therefore to draw some preliminary conclusions from the research already presented, with the hope of providing a broad regional framework within which past research can be viewed and future research possibly directed.

REGIONAL VARIATIONS IN INDIAN POPULATION MOVEMENTS

From the limited evidence available, it would appear that Indian groups may be divided into three types according to the character of the demographic changes they experienced during the colonial period. The first group consists of Indian groups that after contact experienced a rapid decline in population, followed by a slow recovery during the colonial period. The second group would be Indian populations that after contact declined throughout the colonial period. Third would come Indian groups that after contact became extinct within one or two generations. The demographic histories of Indian groups in the first and third categories have been the most thoroughly researched, the former because they included the "high" civilizations of Mesoamerica and the Andes, and the latter because of the general interest in the early years of Spanish conquest and colonization. The demographic histories of Indian groups included in the second category have received less attention, and it is possible that future research will reveal that some groups experienced a slight recovery in the eighteenth century, requiring them to be transferred to the first category.

The areas where the Indians experienced a sharp decline followed by a period of slow recovery, often punctuated by epidemics, included central and southern Mexico, the highlands of Central America, and the Andes (Peru, Bolivia, and Ecuador). Dobyns, in attempting to estimate the size of the aboriginal population of America, has suggested that the Indian population declined by a ratio somewhere between 25:1 and 20:1 between the time of Spanish conquest and the population nadir, which occurred at different times in different areas.⁶ Several authors, including Dobyns himself, have noted that the scale of Indian depopulation varied from region to region, and a number of researchers have produced evidence of different depopulation ratios for different areas. Smith, working on the Central Andes, has estimated that between 1520–25 and 1571, the ratio of decline on the coast was a staggering 58:1, whereas in the highlands it was 3.4:1.⁷ N. D. Cook's population estimates for Peru for the longer period of 1520 to 1630 give depopulation ratios for the coast and the sierra of 16.7:1 and 3.9:1 respectively.⁸ The differences between the estimates of the two

authors stem largely from their different calculations for the Indian population in 1520, although both represent medium range estimates for that date. Smith estimates that the population in 1520 was about 12 million, although it is not clear whether this figure applies to the whole of the Central Andes or just to Peru; N. D. Cook estimates that there were 9 million in Peru alone.⁹ These estimates fall between the conservative estimates of Shea and Kroeber of 2.2–2.9 million and 3 million respectively and the high and generally unsupported 30–37.5 million proposed by Dobyns for the Andean civilizations.¹⁰ Clearly, the size of the estimate for the aboriginal population will affect the depopulation ratio. Although the population of Mexico on the eve of Spanish conquest was probably higher than that of the Central Andes, a similar difference in depopulation ratios between the coast and the highlands has been noted by S. F. Cook and W. Borah. Between 1532 and 1608, the depopulation ratio for the coast of central Mexico was 26:1, and for the plateau area, 13.2:1.¹¹ This difference is even more marked in the period 1518–68, for which they have calculated the following depopulation ratios: for the coast (under 3,000 feet), 47.80:1; for the intermediate elevations (3,000 to 4,500 feet), 9.55:1; and for the plateau (over 4,500 feet), 6.60:1.¹² Once again the high depopulation ratios depend on an acceptance of the high estimates for the aboriginal population, in this case the figure of 25.2 million for central Mexico proposed by Cook and Borah. This figure has been accepted by Dobyns, but others such as Sanders and Zambardino would reduce this figure by over half, while Rosenblat adheres to his original low estimate of 4.5 million for the whole of Mexico.¹³ Nevertheless, the relative difference in the scale of depopulation between the highlands and the coast remains unchallenged. In a later study, Cook and Borah analyzed demographic changes in Yucatán during the colonial period by comparing different ecological regions. They found that the population in the low-bush area declined less and began to recover earlier than the high-bush and tropical rain forest area, where the population had more or less disappeared by the mid-sixteenth century.¹⁴ They suggested that the demographic history of the low-bush area resembled that of the Mexican plateau, while that of the high-bush area was similar to coastal Mexico, a difference that they attributed to differences in climate and disease. Excluding the more complex pattern for Yucatán and accepting Cook and Borah's high estimate for the aboriginal population of central Mexico, it would appear that the decline in the Indian population on the coast of Peru was greater than in coastal Mexico, but that the decline in the Peruvian sierra was smaller than that on the Mexican plateau.

Although population losses in Mexico and the Andes during the immediate postconquest period were considerable, Indian groups in these areas later experienced a degree of recovery, despite interruptions

by epidemics. The decline in the Indian population appears to have been halted first in Mexico, where beginning in the 1620s and 1630s, many areas began to register increases in their Indian populations. Miranda suggests that during the second half of the seventeenth century, the bishoprics of Mexico, Puebla, and Michoacán registered increases of 20 percent.¹⁵ Variations occurred in the scale of increase and its timing, however, with increases affected not only by changes in the rate of natural increase but also by migration, including Indians fleeing from Spanish control into the interior.¹⁶ Despite regional variations, it is clear that the Indian population of Mexico (excluding the north) was increasing slowly during the seventeenth century; in the Central Andes, the increase did not begin until the second half of the eighteenth century.¹⁷ Possible reasons for the difference between these two broad regions will be discussed later.

The demographic history of Central America has not been researched as comprehensively, but it is evident that the Indian populations of Guatemala, El Salvador, Honduras, and Nicaragua also recovered to a degree during the colonial period. The Indian population in all these countries declined dramatically during the early colonial period, with the decline being most marked in Nicaragua. The highlands of Guatemala appear to have lost a smaller proportion of their population; the depopulation ratios calculated from estimates for Totonicapán by Veblen and for the Cuchumatán highlands by Lovell for 1520 to 1570–80 are 8.1:1 and 5.5:1 respectively.¹⁸ If the depopulation ratios are calculated to their respective nadirs, then the ratios are 13.5:1 and 16.1:1, figures that are fairly similar to those calculated for the Mexican plateau for roughly the same periods. The lowest level of decline appears to have occurred in Chiapas, where the population fell from about 400,000 at the time of contact to 78,580 in 1611, a ratio of 5.1:1.¹⁹ The highest losses in Guatemala were experienced in the coastal provinces of Soconusco and Zapotitlán, where by the 1570s, the Indians appear to have been reduced to about one-twentieth of the preconquest numbers.²⁰ These losses are paralleled in Honduras and Nicaragua, where the depopulation ratios in the colonized areas during the sixteenth century have been calculated at about 24:1 and 40:1 respectively, while in the uncolonized areas the population may have been reduced by one-third or one-half.²¹ Less research has been conducted on the Indian population of El Salvador, but given Daugherty's estimate of about 360,000 to 475,000 Indians at the time of conquest and the existence of about 59,000 Indians in 1551, it would appear that the scale of depopulation was similar to that of the highlands of Guatemala.²² MacLeod has drawn attention to the significant difference in losses of population between the highlands and lowlands of Central America,²³ although they have not been investigated in any detail. In my own research in the

area, I have preferred to compare effectively colonized and uncolonized regions, or areas inhabited by tribal and chiefdom groups, for reasons that will become apparent later. A common characteristic of Indian populations in Central America, perhaps with the exception of Chiapas, is that they did not begin to register increases until the last quarter of the seventeenth century, several decades later than those in Mexico. In the Pacific coastal provinces, the decline was checked at an earlier date (the 1570s) by immigration from the highlands.²⁴

Two areas that have not been discussed, but whose populations did recover during the colonial period, are the highlands of Bolivia and Ecuador. Research on Bolivia has been limited, but it would appear that the population declined relatively slowly until about the 1720s. Sánchez-Albornoz has estimated that the population of central and southern Upper Peru declined from about 280,000 at the time of conquest to 93,331 in 1683, a depopulation ratio of 3.0:1.²⁵ The depopulation ratio is low because the estimate for the aboriginal population is probably conservative and because the mining industry attracted immigrants who retarded the decline. As in Peru, some Indian villages in highland Bolivia did not begin to increase in population until the third quarter of the eighteenth century.²⁶ Even less research has been conducted on Ecuador. Indications are that the Indian population actually increased during the sixteenth and early seventeenth centuries until the 1680s, when it experienced a sharp decline, followed by another increase from the early eighteenth century. The picture is complex due to the Inca invasion just prior to Spanish conquest and due to internal migrations during the sixteenth century.²⁷

The demographic histories of many areas where the Indian population declined throughout the colonial period have not been researched in the same depth as those of Mexico, Central America, and the Andes. These areas include Costa Rica, Venezuela, Chile, Argentina, Uruguay, Paraguay, and parts of Brazil, which as far as present knowledge goes, possessed relatively sparse populations at the time of Iberian conquest.²⁸

Two areas that have been investigated in some detail are Colombia and Amazonia. A number of regional studies of Colombia have examined demographic trends throughout the colonial period. The studies by Friede and the Villamaríns of the Chibcha areas of Tunja and the Sabana de Bogotá indicate that the decline in Tunja was 9.3:1 between 1537 and 1755, and in the Sabana de Bogotá, it was 5.2:1 for 1537 to 1778. In the latter area, a slight, but temporary, increase occurred in the first half of the eighteenth century.²⁹ Meanwhile, Colmenares has shown that the tribal Indians of Pamplona experienced a decline of 10:1 during the colonial period, while Friede has shown that the Andakí and the Quimbaya had become almost extinct by the seventeenth century.³⁰

Cook and Borah have reworked the data provided by Friede and Colmenares for the Quimbaya and the Indians of Tunja and Pamplona by comparing coefficients of population movement for the three areas. They calculate that the Quimbaya, who lived at altitudes between 1,000 and 2,500 meters, experienced a higher rate of decline than did the Indians living in Tunja and Pamplona at 1,800 to 2,800 meters.³¹ Cook and Borah attribute the differential rate of decline to differences in climate at the two altitudes, and hence presumably, to differences in disease. They note, however, that the rate of decline of the Quimbaya was higher than that among Indians living at comparable intermediate elevations in central Mexico, and they acknowledge that other factors, as yet unknown, must therefore have been responsible for the difference between the two regions. They also note that the rate of decline in Tunja and Pamplona was lower than in the Mexican plateau and Mixteca Alta, although they are presumably referring to the period up to the 1630s because after that approximate date, the population in Mexico increased, whereas in Colombia it continued to decline.

Population estimates for Amazonia have necessarily been based on scant documentary evidence, often supplied by missionaries, and on a knowledge of the area's past and present subsistence patterns and resources. Denevan has suggested that the aboriginal population of Amazonia was 5.1 million, of which about 3.6 million were in Brazil. The latter figure compares with Hemming's estimate of 2.4 million for Brazil.³² Clearly, the date of contact with Europeans varied for different Indian groups in this area, with the result being that some Indian groups were able to survive intact throughout the colonial period because of their remote location while others became extinct. Denevan has suggested that the average depopulation ratio for Indian groups in Amazonia from contact to nadir was as high as 35:1.³³

The highest depopulation ratios are to be found in the islands and mainland fringing the Caribbean. Population estimates for this region have provoked the greatest debates, perhaps because of the accelerated decline in the Indian population and the difficulties of interpreting the early documentary record. Population estimates for Hispaniola have been the most hotly debated. Cook and Borah have estimated that the aboriginal population was 8 million, a figure that has been heavily criticized by several authors including Verlinden, who has proposed an alternative estimate as low as 60,000. Whatever the size of the aboriginal population, within twenty-five years, the Indians of Hispaniola clearly numbered only 30,000, and by the middle of the sixteenth century, they had become virtually extinct. Similar scales of depopulation occurred in Puerto Rico, Cuba, Jamaica, Panama, and along the coasts of Colombia and Venezuela.³⁴

EXPLAINING REGIONAL VARIATIONS IN INDIAN POPULATION MOVEMENTS

From the time of the Iberian conquest, observers, administrators, and researchers have suggested a variety of factors that could account for changes in the size of the Indian population. These factors may be divided into four broad categories: disease; the systematic killing, ill-treatment, and overwork of the Indians; the disruption of Indian economies and societies caused by conquest and colonization, including its psychological impact; and miscegenation. All of these factors contributed to the decline in the Indian population in most, if not all, areas, and it is doubtful whether any one factor alone can account for the regional variations in Indian depopulation outlined. Nevertheless, some writers have tended to attribute such variations, where they have been identified, to the differential impact of disease or to differences in government policy or in the activities of individual conquistadors, administrators, and colonists in different areas.

Disease

Most recent writers on the historical demography of Latin America agree that disease was a major factor in the decline of the Indian population.³⁵ The most notable killers were smallpox, measles, typhus, plague, yellow fever, and malaria. The documentary record contains numerous accounts of the populations of villages and whole areas being reduced by one-third or one-half as a result of epidemics, particularly of smallpox and measles, and the devastating impact of these diseases on previously noninfected populations has been corroborated by more recent epidemics.³⁶ It is often assumed that the greater decline in the Indian population of the tropical lowlands was due to the greater impact of disease resulting mainly from the presence of yellow fever and malaria, which only occur in climates where the mean temperature is over 20 degrees centigrade, and possibly due to the greater virulence of diseases in warmer climates.³⁷ But the explanation is not that simple. First, it seems likely that malaria and yellow fever, which require insect vectors for their propagation, were introduced relatively late into the New World.³⁸ It is generally held that malaria was introduced into the New World about the middle of the seventeenth century and that the first documentable epidemic of yellow fever occurred in Yucatán in 1648, although a few would argue for its presence at an earlier date.³⁹ Hence the early decline in the Indian population cannot be attributed to these diseases. Second, while it is true that intestinal infections are more prevalent in the tropics and that although they did not contribute directly to the mortality rate, they would have increased the susceptibility of Indians living there to more

deadly diseases,⁴⁰ a number of other Old World diseases were equally, if not more, virulent in the cooler highlands. Smallpox and pneumonic plague thrive in cool dry climates, where unhygienic conditions are often created that also encourage the spread of typhus.⁴¹ Furthermore, the concentration of population in large nucleated settlements in the highlands would have facilitated the spread of disease, whereas in the tropical lowlands, its spread would have been hindered by the dispersed character of the population and settlements.⁴² Despite these comments, it is important to recognize that many tropical coasts earned early reputations for being unhealthy, and it may be that there were other tropical diseases, as yet unidentified, that may have contributed to the higher death rate in those areas. At present, however, insufficient evidence exists to permit the conclusion that the lower level of Indian survival in the tropical lowlands can be accounted for wholly in terms of the greater impact of disease. Indeed, although disease was obviously a major factor that contributed to the decline of Indian populations and retarded their recovery, the pattern of its impact is likely to have been much more complex than is often suggested. The spread and impact of particular diseases would have depended not only on altitude and climate but on a variety of other factors, including the presence of vectors for transmitting the diseases, population density, the degree of interpersonal contact, subsistence patterns, sanitation, and immunity.⁴³

The Black Legend

Sixteenth-century observers blamed the rapid decline in the Indian population on the systematic killing, overwork, and ill-treatment of the Indians by conquistadors and colonists. In the Caribbean islands, the Black Legend was undoubtedly a reality that contributed significantly to the near extinction of the Indians there. In addition, many islands and the fringing mainland of the Caribbean as well as parts of Central America were depopulated as a result of the Indian slave trade. In 1542 the crown, under pressure from the Dominicans and anxious to preserve the labor supply, promulgated the New Laws. Although they were often infringed, by banning Indian slavery, moderating personal service, and calling for the regulation of tribute, the New Laws did generally improve the treatment of the Indians to the extent that the aftermath of conquest on the South American mainland, which occurred mostly after their introduction, did not become a repeat of the demographic disaster that had occurred in the Caribbean and to a lesser extent, in Middle America. Thus this change in crown policy can partially account for differences in the decline of the Indian population between these broad areas, but it cannot account for the regional variations noted within them. Nor can the regional variations be explained

by the employment of different policies toward the Indians in different areas because the crown intended the laws and institutions formulated in Spain to apply uniformly to all parts of the empire. While laws might be interpreted differently by different administrators in the field, officials were constantly changing. Moreover, it is doubtful that personnel in any one area interpreted the laws consistently in a manner that might account for a smaller or larger decline in the Indian population; any spatial variations in Spanish-Indian relations that emerge should therefore be interpreted as reactions to local conditions rather than as expressions of differences in government policy or its interpretation by administrators.

INDIAN SOCIETIES AND RESOURCES

The demographic history of Indian groups during the colonial period was related to two main factors. The first factor was the nature of Indian societies at the time of Spanish conquest and, related to it, the size of the aboriginal population. This factor influenced the kind of institution and mechanisms that were used to control and exploit the Indians. The second factor was the existence and desirability of resources to be found in the area.

Indian Societies and Spanish Policies

The background of those who came from Spain to conquer and colonize America was essentially feudal, but one in which the crown, supported by the church, played a dominant role. The Spanish had two main aims with respect to the Indians of the New World: to civilize and Christianize them and to exploit them as sources of profit and labor. The *encomienda* was the first attempt at reconciling these conflicting aims. Initially, the *encomienda* was a grant of Indians to an individual who, in return for protecting the Indians and instructing them in the Catholic faith, could levy tribute from them in the form of goods or money. Until 1549 the *encomendero* could also demand labor services. The early years of conquest witnessed the dramatic decline of the Indian population in the Caribbean, however, and demonstrated that few Spaniards could be entrusted with the important tasks of civilizing and Christianizing the Indians. Hence from the mid-sixteenth century, the custodial duties of *encomenderos* were gradually taken over by crown administrators (*corregidores de indios*) and the secular clergy. From that time onward, tribute revenue increasingly entered the royal coffers, rather than the hands of private *encomenderos*, and labor was organized under the *repartimiento*. The latter required each Indian village to make available a quota of its tributary population for approved work for

specified periods and fixed wages. In many areas, the *encomienda* and *repartimiento* were later superseded by free labor. The *encomienda* and *repartimiento* were introduced primarily into the highlands of Middle America and the Andes, where native states and chiefdoms existed. These large sedentary societies were supported by intensive forms of agricultural production and were socially differentiated into hierarchies of classes, with leaders capable of commanding tribute and labor services. The *encomienda* and *repartimiento* were considered appropriate for controlling and exploiting these societies for several reasons.⁴⁴ First, these Indians produced surpluses and they had been subject to tribute payments and labor drafts in the pre-Columbian period, so that although the Spanish modified the systems by which they were exacted, such demands were not considered extraordinary. Second, the hierarchical structure of these societies permitted the Spanish to control and exploit large Indian populations through a relatively small number of native leaders; a closer means of control, such as slavery would have provided, was therefore unnecessary.⁴⁵

The control and exploitation of essentially egalitarian tribes who subsisted on the products of shifting cultivation supplemented by hunting, fishing, and gathering could not be effected so easily by means of the same institutions. These Indians had not paid tribute or provided labor for extracommunal purposes in pre-Columbian times, so that no organizational structure existed for their exaction and the task was made even more difficult by the lack of effective native leadership.⁴⁶ Thus, to impose the *encomienda* and *repartimiento* would have required considerable managerial input. Given that these Indians produced only small surpluses, if any, and constituted only small sources of labor, the task generally was not considered to be worthwhile. Instead, the initial conversion and civilization of tribal Indians was left to the missionary orders who could supply the closer form of supervision required. Theoretically, mission settlements were to be handed over to the secular authorities after ten years, and the Indians were to pay tribute and provide labor in the same way as did those Indians who had been granted in *encomiendas*. In practice, however, mission settlements persisted much longer.

The nomadic hunters, fishers, and gatherers provided even less in terms of surpluses and sources of labor, and they were more difficult to control than tribes, so that little effort was made to bring them under Spanish control. Where the Spanish exploited minerals and lands within the territories of these groups, they tried to persuade and coerce the Indians to work for them, but the Spanish generally relied on imported labor and attempted to control the local Indians by enslavement or extermination only if they harassed Spanish lands and settlements. In fact, Indian slavery was forbidden in 1542, but it continued in remote

parts of the empire, notably in northern Mexico, southern Chile, and Argentina, where the Indians proved exceptionally difficult to control.⁴⁷

Thus despite some exceptions, a fairly high degree of correlation existed between the nature of Indian societies and the institutions and mechanisms used to control and exploit them. These institutions, which directly affected the Indian way of life, were disruptive to varying degrees and thus had different demographic consequences. Their impact will now be discussed in further detail.

The Encomienda, Repartimiento, and Free Labor

Indians in the highlands of Middle America and the Andes generally declined at a slower rate than in other parts of Spanish America because the initial impact of conquest and colonization was less disruptive to their way of life. The Spanish could control and exploit Indians in the highland states and chiefdoms by modifying the existing native institutions. Even though occasional rebellions and revolts occurred during the colonial period, the Spanish could control the Indians through the existing political organization. Conflict and associated population losses were therefore less than among tribes and bands subject to missionary and enslaving expeditions. Similarly, although some Spanish policies such as *congregación* (forced resettlement) directly affected Indian communities, the Spanish generally found it unnecessary to alter fundamentally Indian economic and social structures in order to profit from them. Most of the changes experienced by Indian communities occurred gradually, and they were brought about indirectly by the imposition of institutions such as the *encomienda* or by changes in the patterns of labor and landholding. The control of Indians by the missions or enslavement, however, was more direct and personal, and it resulted in the more immediate and thorough destruction of their culture.⁴⁸

Although Indian groups in the highlands of Middle America and the Andes generally declined at a slower rate than in other parts of Spanish America, they did not decline to an equal degree. Many differences in their rates of decline and recovery can be attributed to variations in demands on Indian lands, production, and labor. Variations in demands on Indian lands were largely related to the ability of different areas to produce the types of agricultural products that were required both in European and domestic markets, and they will be discussed more appropriately in the section on resources. Variations in demands on Indian production and labor were also related to these factors, but the size of the Indian population was important in determining the forms by which they were exacted, and those forms had different cultural and demographic consequences. Although economic factors were

not the only ones responsible for variations in Indian demographic trends, they had a pervasive influence on the Indian way of life, and they therefore provide a useful window through which broader cultural and demographic changes can be viewed.

There were many variations in demands on Indian production that are likely to have indirectly influenced demographic changes during the colonial period. Temporal and spatial variations occurred in the amount and kind of tribute demanded, variations that would have imposed considerably different burdens on Indian production, particularly given variations in the physical environment and in native subsistence patterns.⁴⁹ Variations also occurred in other types of demands on Indian production. Indians were often forced by Spanish officials and the clergy to buy and sell goods, and they were required to pay ecclesiastical and judicial fees. Most of these payments, including the payment of tribute, were increasingly made in cash. Although the Indians preferred this method of payment because it was less open to fraud, a major consequence was that acquiring money forced them to enter the market economy, either by selling their produce in the marketplace or more commonly by seeking work as wage laborers.⁵⁰ In many cases, therefore, the burdens placed on Indian production contributed to the emergence of free labor, the cultural and demographic consequences of which will be discussed later.

The history of labor in colonial Spanish America is a history of attempts to reconcile humanitarian attitudes toward the Indians with the practical needs of empire. The *encomienda* was the first attempt to reconcile these virtually irreconcilable aims; the remainder of the colonial period was characterized by the crown attempting to establish a free labor market. Changes in Indian labor systems in different areas, however, emerged as much as the result of economic conditions in those areas as from crown legislation, which tended to support and confirm changes that were already taking place. Hence the abolition of personal service under the *encomienda* in 1549 resulted not only from the crown's desire to assume control over native labor but was necessitated by the near extinction of the native population in the Caribbean as well as by demands for access to Indian labor by non-*encomenderos*. In most areas, the abolition of personal service under the *encomienda* was replaced by a system of forced labor, the *repartimiento*. But in remote parts of the empire, such as Paraguay, Chile, and Venezuela, where official surveillance was minimal and Indian economic production was inadequate to provide a reasonable income for *encomenderos* through tribute, personal service continued.⁵¹

In most areas, personal service under the *encomienda* was replaced by a system of forced labor; interim attempts to establish a free labor market failed because the Indians refused to work voluntarily. At

that time, the Indians still possessed their lands and therefore a means of subsistence and consequently were not attracted by wage labor. It was not until later in the colonial period, as pressure on land rose and demands on Indian production increased, that Indians were forced to turn to wage labor for survival. Under the repartimiento, each Indian community, whether or not it paid tribute to the crown or to an encomendero, was obliged to make available a quota of its population for hire to work in public service for fixed periods of time at fixed wages.⁵² The activities in which the Indians were employed, the quota of the population involved at any one time, and the wages and periods for which they were employed varied from area to area. The repartimiento functioned best in Mexico and Peru, where it was more closely supervised and where large numbers of Indians were concentrated who could provide a labor force of reasonable size. By the beginning of the seventeenth century, certain weaknesses in the system had emerged. Problems of administering the system developed, paid time was wasted in moving the Indians to and from their homes and places of work, and the work force provided was generally unskilled and poorly disciplined. Although many Indian groups had been required to provide labor on a similar rotational basis in pre-Columbian times, its social and religious meaning was destroyed in the colonial period, and as a result, Indians worked reluctantly. Also, the decline in the Indian population severely limited the numbers that such a quota system could provide. In order to secure labor in times of labor shortage and to improve the reliability and quality of the work force, employers began to encourage Indians to work for them as free laborers by offering potential employees higher wages than those paid to Indians working under the repartimiento. At the end of the colonial period, free laborers in the Mexican silver mines were paid about eight times the wages of forced laborers.⁵³

The ability of employers to attract free laborers depended on the profitability of the enterprises in which they were to be employed and the availability of other sources of labor. Where profits were high and labor was short, free laborers could demand the highest wages. In areas of acute labor shortage, employers were forced to offer employees advances of money and goods, or other incentives such as a share of the produce or satisfaction of tribute debts or other obligations. In some cases, Indian employees fell into debt, but most of the evidence suggests that the debts that were incurred were relatively small and did not restrict the mobility of workers.⁵⁴ In areas where profits were low, employers were unable to pay the high wages or advances necessary to attract free labor; instead, they dispensed with the element of wages necessary to maintain laborers by providing them with plots of land on which subsistence crops could be cultivated.⁵⁵ The ability of employers to attract labor, however, depended not only on the incentives offered

by employers but also on the necessity of Indians to earn wages. The necessity for Indians to become wage laborers was encouraged by their inability to meet official and unofficial demands from Spanish administrators, the clergy, and their own community leaders,⁵⁶ and by the alienation of their lands.⁵⁷ The worst conditions for free workers appear to have developed from the eighteenth century onward, as the market economy expanded and the population increased, resulting in increased pressure on Indian lands and an increase in the supply of landless labor. As a result, any bargaining power that free laborers may have possessed over wages and conditions was transferred to employers. Because the Indians generally lacked any alternative means of subsistence, employers no longer needed to tie Indians to estates by debts or plots of land, and they could pay lower wages, introduce or raise money rents for plots, or both. As a result, rural living standards deteriorated.⁵⁸

It would appear that during the colonial period, the change from personal service under the *encomienda* to forced labor under the *repartimiento* and finally to free labor as the dominant labor system was a progressive adjustment to the shrinking labor supply,⁵⁹ although only where the demand for commercial products produced profits high enough to support the higher wages that were required to attract free labor. It is significant that in Chile, Venezuela, and Paraguay, where demands for labor were low, personal service under the *encomienda* continued throughout much of the colonial period. In contrast, free labor in Mexico appears to have emerged as the dominant labor system in the middle of the seventeenth century. It had actually begun in the sixteenth century in those activities, such as textile manufacture, that were seldom allocated Indians under the *repartimiento*⁶⁰ and in the mines of the north that were located in areas of sparse Indian population.⁶¹ In contrast, the *mita* persisted as the dominant source of labor in the silver mines of Potosí, which were located in an area of relatively dense Indian population and drew on a wider, but equally densely populated, hinterland. At its height, the *mita* supplied thirteen thousand *mitayos* a year for the mines, and although by the end of the eighteenth century that number had decreased to three thousand (mainly due to population decline), the *mita* remained the dominant source of labor. The *mita* constituted a large, cheap, dependable source of labor compared to free labor, which was poorly disciplined and difficult to attract.⁶² The emergence of free labor in the *audiencia* of Quito appears to have occurred even later, with the *mita* continuing throughout the colonial period.⁶³ In Colombia the small size of the Indian population at the time of contact and its rapid decline during the sixteenth century meant that the *repartimiento* could not meet the demand for labor. Consequently, the sequestering of Indian labor began in the early seventeenth

century, although forced labor was not finally abolished until 1740.⁶⁴ In Honduras and Nicaragua, free labor grew gradually during the colonial period and existed alongside the repartimiento, which was not abolished until the nineteenth century.⁶⁵

This account of labor systems has been prolonged because it is relevant to understanding the demographic changes that occurred during the colonial period. The *encomienda* and the *repartimiento* resulted in the overwork and ill-treatment of the Indians, mainly because in both cases the employers lacked any incentive to preserve the labor supply that was only available for limited periods. Personal service under the early *encomienda* was largely unregulated, and as a result, the Indians in the Caribbean were exploited almost to extinction. The employment of Indians under the *repartimiento* was later regulated by codes banning the employment of Indians in many arduous and unhealthy tasks, such as sugar milling, textile manufacture, pearl fishing, operating hand pumps in the mines, and acting as porters, but the *repartimiento* remained an onerous institution. Indians were often ill-treated, overworked, and poorly fed to such an extent that they became susceptible to disease and fell ill or died. The silver mines of Potosí earned the reputation of being "devourers of *mitayos*"; in 1609 a contemporary observer reported that in each district where the Indians had been compelled to work in the mines, the population had been reduced to one-half or one-third of what it had been in 1581.⁶⁶ The appalling conditions in the textile workshops of highland Ecuador are also well known. Apart from the impact of harsh working conditions, Indians also became ill, some terminally, as a result of being employed in areas to which they were not acclimatized. Conditions may have been better in agriculture, where the work was normally more local and less arduous and where the periods of employment were often shorter. On the other hand, where agriculture was highly seasonal, the demand for labor under the *repartimiento* was at its height at the same time that Indians were required to clear lands and harvest crops in their own communities; in such cases, the *repartimiento* for mining might have conformed better to the needs of subsistence production. The impact of the *repartimiento* also varied according to the character of subsistence production. Particularly vulnerable were groups heavily dependent on the time-consuming activities of hunting, fishing, and gathering, as well as those groups based on the private ownership and cultivation of lands in which no formal community organization existed to cover the temporary or prolonged absence of individuals or to foster community cohesion.

The *repartimiento* often operated against a background of population decline, land encroachment, and increased demands on production. Although declining Indian populations initially may have pro-

vided the survivors with greater access to the best agricultural land, their lands were also those most sought after by Spaniards, especially since they came with a labor force in situ. Furthermore, as tribute and other community obligations increased, these lands were often sold or rented to discharge debts. Shortages of labor and land at times when increased extracommunal demands on Indian communities led to food shortages and even famines. These situations resulted not only in acute starvation in some cases but also in malnutrition, which increased the susceptibility of Indians to illness and disease and probably reduced the effective birthrate through maternal malnutrition during pregnancy and lactation.⁶⁷

The repartimiento also affected the social organization of Indian communities, although its effects depended to a certain degree on community cohesion, which would have been greater where the communities had suffered smaller losses in population. The repartimiento required the absence of individuals, which over extended periods strained marriages and kinship ties. In addition, the burden it imposed often encouraged more permanent absences. In Peru men tried to escape from the mita either by fleeing to the eastern lowlands or by settling as *forasteros* in other villages, where they were legally exempt from the mita and in practice exempt from tribute payment. Others who had worked in Potosí as mitayos stayed on there as free laborers.⁶⁸ Similarly, in Mexico the burdens of tribute payment and the repartimiento drove Indians to work as free laborers in the towns, on the estates, or in the mines, or where possible to flee into the interior. Even if the social changes in Indian communities precipitated by the temporary or permanent absence of individuals may not have significantly affected the fertility rate, the burden of work imposed on the Indians, to which the repartimiento contributed substantially, may well have encouraged limiting family size.⁶⁹ The repartimiento depended on the perpetuation of village communities for the reproduction and provision of labor, as well as for its support during periods of employment. These conditions were fostered by Spanish legislation, but as indicated, they were undermined by the labor system itself. As will be shown, however, the repartimiento as compared to free labor, which often required a permanent change of residence, was less destructive of Indian communities.

In order to attract free labor, employers clearly had to provide better wages and often improved working and living conditions. This necessity was particularly true in areas of acute labor shortage and in those areas where potential workers possessed alternative means of subsistence. As free laborers, workers often enjoyed a higher standard of living in terms of better food, clothing, accommodation, and even rudimentary medical care, as well as access to sources of credit and sometimes to land. The material and social security that free laborers

enjoyed was particularly apparent in times of crisis. These improved conditions initially encouraged the Indian population to increase, but its growth was restricted by the parallel expansion in the population of *castas* (mixed races). In terms of Indian survival, the main disadvantage of free labor was that it often resulted in the extended or permanent absence of Indians from their communities. This trend not only weakened community ties but resulted in Indians being brought into sustained contact with other races, so that they lost their cultural identity and eventually, through miscegenation, their racial distinctiveness. In cases where Indians worked either on a daily or seasonal basis, free labor was probably less disruptive to Indian communities, and it may even have helped to sustain them.⁷⁰ Elsewhere, however, the replacement of various forms of forced labor by free labor encouraged the breakup of Indian communities and the growth of the mixed races. Although improved conditions for free workers initially encouraged the Indian population to grow, as miscegenation increased and the conditions for rural workers deteriorated, particularly in the nineteenth century, the growth could not be sustained.⁷¹

The preceding account has attempted to indicate that variations in the nature and level of demand on Indian labor and production had different cultural and demographic consequences for the Indians. Unfortunately, their precise impact on native communities has not been studied comparatively. Thus generalizations about broad regional variations are to a large degree hypothetical. In full realization of the limitations of taking such a perspective, I would like to suggest that the following generalizations may prove to have some validity. In Paraguay and Venezuela, the *encomienda* providing labor service persisted due to the relative lack of demand for labor, and it resulted in sustained contact between the races but without the excessive exploitation that characterized the early colonial period in the Caribbean. In Paraguay the *encomienda* resulted in the replacement of the Indian population by one that was essentially mestizo, whereas in Venezuela the Indian population continued to decline and was eventually replaced by Negro slaves. In a more controversial vein, the labor chronologies of the highlands of central Mexico and Peru partially explain their differing demographic histories. The precipitous decline in the Indian population in central Mexico in the sixteenth century and the high demand for labor to produce commercial goods not only for export but also for the domestic market together created shortages of labor that could not be met by the *repartimiento*. This development led to the early emergence of free labor, which brought with it improved conditions for workers that resulted in an early increase in the Indian population. But the close contact between the races that was fostered by free labor also encouraged growth in the mestizo population. In contrast, the less rapid de-

cline of the Indian population in highland Peru, particularly in the sixteenth century, and the localized demand for labor, which focused largely on the mining industry, enabled the mita to remain the dominant labor system until the end of the colonial period. As suggested, forced labor was characterized by poor working and living conditions, and its persistence in the Viceroyalty of Peru may partially explain the continued decline of its Indian population into the eighteenth century; at the same time, the later development of free labor probably meant that the Indian population was reduced less through miscegenation.

The demand for Indian labor and lands was clearly related to the profitability of Spanish commercial enterprises as well as to the size of the labor force. But before discussing their influences on cultural and demographic changes among Indians who were originally granted in *encomiendas*, it is preferable to examine the impact of the missions and slavery on tribal and band societies.

Missions

Spanish authorities envisaged that Indians from tribes and bands would eventually provide tribute and labor in the same way as those who comprised the chiefdoms and states. Because tribes and bands produced small, if any, surpluses and could provide only limited sources of labor, however, they could not be satisfactorily allocated in *encomiendas*, and their incorporation into the Spanish empire was not considered to be so urgent. As a result, the preliminary conversion and civilization of these Indians was left to the missionary orders. The intention was that eventually the mission villages would be secularized and the Indians would be made liable to pay tribute and provide labor in the same way as Indians who had been granted in *encomiendas*. But the impact of the missions on the Indian population and its way of life was so dramatic that many Indian groups failed to survive as identifiable cultural entities following secularization.

At first the missionaries tried converting the Indians in their native villages but found it impossible to discipline them in their numerous scattered settlements.⁷² As a result, they established missions and attempted to attract the Indians to them by persuasion. In many cases, however, the Indians were reluctant to move into the missions, and when force was employed, Indians were often killed. S. F. Cook has estimated that 6.3 percent of the decline in the Indian population of central and northern California between 1770 and 1848 may be attributed to death in raids and campaigns, with losses as high as 40.5 percent in the case of one particular band.⁷³ It should be noted, however, that this period covers the secularization of the missions, when the expeditions changed from being clerical and propagandist in character

to being military and punitive, with a consequent increase in casualties. Nevertheless, casualties were common during the missionizing process. Although the situation differed in Paraguay, where the Indians fled into the missions to escape the slaving raids of the Paulistas, the missions themselves later became prey for these raids, which resulted in tens of thousands of Indians being lost.⁷⁴

Initially, Indians in the missions were supplied with food imported by the missionaries, but the missionaries' aim was to educate the Indians in agricultural and craft techniques. In some cases, this effort resulted in the complete destruction of the Indians' economy and in other cases, in the adoption of unfamiliar crops and animals that were unsuited to the new environment. For example, hunters, fishers, and gatherers in the central desert of Baja California were grouped into sedentary communities where they were taught agricultural practices that were inappropriate for the local ecological conditions.⁷⁵ The result was low productivity, poor diets, and malnutrition. These conditions encouraged the spread of disease, as did the policy of concentrating the Indians in large sedentary settlements. In other areas, however, agriculture was fairly productive; the Guaraní missions produced sufficient cotton, yerba maté, and hides to export them, and the Caroní missions developed prosperous pastoral economies.⁷⁶

The labor that Indians provided for mission activities does not appear to have been particularly onerous,⁷⁷ and it is doubtful that ill-treatment contributed significantly to the decline in the Indian population. Perhaps the most hazardous employment was that of the Guaraní Indians, who collected yerba maté in expeditions lasting three to four months, during which time they were exposed to the slaving raids of Paulistas.⁷⁸ Although labor in the missions was not excessive, it may have seemed so to Indians formerly accustomed to working shorter hours to meet subsistence needs, particularly because it had no ceremonial or ritual significance. In some missions, rigorous routines were established and punishment was meted out for shortcomings. This approach created resentment and encouraged the Indians to escape. Fugitive Indians were often hunted down like criminals and brought back to the missions for punishment, a process that fostered further resentment and provided added incentive to flee. S. F. Cook has estimated that 10 percent of the decline of the Indian population in the California missions may be accounted for by fugitivism.⁷⁹

Fugitivism was made possible by the weak social organization that existed in the missions. The missionaries often gathered together remnants of small bands or tribes that had already been depopulated as a result of contact. S. F. Cook noted that some of the missions in Baja California contained representatives of up to thirty bands,⁸⁰ and Me-traux recorded that in 1715 one Guaraní mission contained fifty-seven

Indian leaders.⁸¹ The latter also noted that in missions along the Marañón River, pitched battles often broke out among hostile groups that had been congregated. Any social organization that may have remained among the Indians when they were brought into the missions was soon broken down and replaced by rules imposed by the missionaries, who severely punished any infringements. They strictly regulated contacts between the sexes and imposed monogamy regardless of native marriage rules. Aschmann observed that the completeness of mission control destroyed the social structure and denied the Indians any opportunity to regulate their own social lives to such an extent that they were afflicted with "profound melancholy."⁸² As a result, abortion and infanticide were practiced, and the fertility rate fell.⁸³

The missionaries thus failed to create viable communities, with the result being that when they left, as S. F. Cook observes, "the entire mission system went to pieces with terrific rapidity."⁸⁴ Some individuals returned to their native communities, where they still existed, but the majority became free laborers on local estates or in the towns, where they lost their racial identity as they were rapidly assimilated into colonial society.⁸⁵ Although the Indians were probably treated better in the missions than under the *encomienda* and *repartimiento*, Indian groups subject to missionization suffered greater population losses because the mission system required the complete destruction of their way of life. Under the *encomienda* and the *repartimiento*, the destruction was more gradual, and the greater similarities between the conquering and conquered societies meant that the degree of change required by the Spanish was smaller and could be accommodated with greater ease.

Slavery

Although Indian slavery was banned under the New Laws in 1542, it persisted throughout the colonial period in northern Mexico and southern Chile, where the Indians waged a constant war against the Spanish. It was also applied at various times to particular hostile Indian groups such as the Caribs in Venezuela and the Pijaos of Popayán.⁸⁶

In northern Mexico, the Spanish faced the practical problem of dealing with the captives they had taken during wars with the Chichimec Indians. In 1569 a junta called to study the problem reached a compromise whereby male captives were obliged to serve their captors for ten years, while women and children were to be freed. In the same way that slaves could be bought and sold, so could the "service" of captives. This new form of slavery passed through alternating periods

of approval and disapproval throughout the colonial period, and it was extended to other hostile groups, notably the Apaches and Mecos, whom the Spanish encountered as they pushed the frontier northward.⁸⁷

In Chile hostilities between the Spanish and Araucanians were stimulated by the shortage of labor in the area and by the desire of the Indians to avoid personal service. The continued refusal of the Araucanian Indians to submit to Spanish authority persuaded the crown in 1608 to allow the enslavement of all male Indians over the age of ten and one-half and women over the age of nine and one-half who had been captured in war. This order did little more than give license to soldiers to enslave the Indians, and it did not result in their pacification. As a result, the order was suspended four years later, and personal service was replaced by tribute in the form of goods or money. Because the Indians were forced to pay tribute out of what they earned from their employers, the abolition of slavery was more apparent than real.⁸⁸ In 1622, however, the enslavement of all Indians over the age of fourteen who had attacked Spaniards was legalized; males could be bought and sold outside Chile, but women were to be placed under the authority of the *audiencia*. During the latter part of the seventeenth century, general orders were issued reiterating the ban on the enslavement of Indians in peace or war, but certain groups, including the Araucanians, were excepted. The enslavement of Indians continued throughout the colonial period but with decreasing intensity as miscegenation led to a weakening of Araucanian resistance.⁸⁹

The demographic effects of enslavement were disastrous for many Indian groups. If they survived the process of enslavement, they were unlikely to survive acculturation or racial assimilation. No evidence exists as to the numbers of Araucanian and Chichimec Indians killed in conflict, but the death toll probably resembled that noted for Indian groups who were subject to missionary raids. Although it might be expected that the humanitarian attitudes of the missionaries would have favored protecting Indian lives during raids, soldiers were equally motivated toward restraint by the desire to make profits from the sale of slaves. No study to date has revealed the numbers of Indians who were enslaved in frontier regions; however, the harsh treatment and atrocities inflicted on Indian slaves in the Caribbean were not repeated in the frontier regions where labor shortages encouraged owners to treat their slaves more kindly. Like Indians subject to the missions, those enslaved experienced the certain destruction of their culture. Many Indians who were captured were exported: Araucanian Indians were shipped to Peru, and as early as the 1580s, Chichimec Indians were being sold in Mexico City.⁹⁰ Once isolated from their native communities and

brought into contact with other races, Indian slaves underwent rapid acculturation and assimilation. In fact, many soldiers married Araucanian women whom they had captured.

But enslavement affected not only those Indians who were enslaved but also the communities from which they were drawn. Because many of these communities were small in size, the enslavement of even a small number of Indians would probably have reduced many groups below the critical size necessary to maintain and reproduce their culture.

Resources

The differential decline in the Indian population was also related to the intensity of contact between Indians and non-Indians. Initially, the distribution of the Spanish population was related to the distribution of minerals and the Indian population, which reflected the desires of conquistadors and colonists for immediate wealth and the type of overlordship that had characterized the feudal estates of Castile. Although the Spanish acquired land during the first half of the sixteenth century, only subsequently was it viewed as a potential source of wealth. One reason given for the growing interest in land was the decline in the Indian population, which not only reduced the income available from tribute but also resulted in a decline in Indian production at a time when the domestic market for agricultural products was expanding. It has also been suggested that outlets were needed for surplus capital that had been accumulated from tribute and mining in earlier periods.⁹¹

The nature and distribution of commercial agricultural production was strongly influenced by the demand for particular products and by the physical ability of areas to produce them. The demand in Europe was mainly for tropical crops such as sugar, cacao, and dyestuffs (particularly indigo and cochineal), whereas the domestic market required food (especially wheat and maize) as well as hides, tallow, and mules for use in the mining industry. The lack of demand for temperate products at this time meant that production in Uruguay, Argentina, and Chile was essentially oriented toward the domestic market, which remained small. But demand was not the only factor. Commercial production also depended on the availability of labor, although in areas where labor was scarce but agriculture highly profitable (for example, in the case of sugar produced in the Greater Antilles), the high cost of importing Negro slave labor could be sustained. Another factor was distance. The production of bulky products in more distant Spanish American provinces was limited by transport costs, so that sugar produced in Mexico and Peru could not compete in European markets with

that grown in the Caribbean. Hence although Peru did export some agricultural products such as wine and cacao to Mexico and Central America, agricultural production in the viceroyalty centered on the domestic market primarily located in and around the mining center of Potosí. The district obtained food, wine, and brandy from the coastal oases and from Chile, coca from the eastern lowlands of Peru and Bolivia, and livestock and animal products from northwest Argentina. Other estates developed to supply wheat, maize, and livestock to the major cities, ports, and lesser mining centers on the South American mainland. The high Andean basins of Peru provided these products for the mines of Cerro de Pasco and Huancavelica, as well as Lima, while the highlands around Quito and Bogotá supplied the local mining industries in Zaruma and in Antioquia and the Upper Cauca valley, respectively. In the viceroyalty of New Spain, agricultural production was more diversified. The Greater Antilles exported sugar to Spain; Mexico and Central America exported some tropical products, such as cacao, indigo, and cochineal, and also supplied the domestic market in the towns and mining areas. Food production first developed to supply the increasing population of the towns of central Mexico following the decline of the Indian population and the food it supplied; then food production spread rapidly in the Bajío and in the valley of Guadalajara with the opening of the silver mines to the north.⁹²

In areas that could produce commercial agricultural products, Indian communities came under the greatest pressure to relinquish their lands and provide labor. The complete proletarianization of the Indian population was restricted, however, because the monopoly control of land by the Spanish was limited to a degree by crown legislation aimed at protecting Indian rights to their lands. Also, in some cases, landowners offered Indians plots of land to encourage them to work as free laborers, which meant that they were effectively paid in wages and land.⁹³ Nevertheless, the profitability of agriculture undermined the native subsistence base and encouraged the growth of free labor, with all the cultural and demographic consequences that have been outlined.

Although commercial agricultural production made definite demands on Indian lands and labor, its impact varied with the nature of production. Tropical crop production for export probably made the heaviest demands, contributing significantly to the more rapid decline of the Indian population in parts of the Caribbean and in the tropical lowlands of Middle America, although in the Caribbean gold placer mining also took its toll. But not all tropical crops were equally demanding. The most demanding was sugar: its profitability stimulated the rapid acquisition of suitable lands, and although the employment of Indians in sugar milling was banned from an early date, sugar production made heavy demands on Indian labor, particularly at harvest time.

Cacao production was also a labor-intensive activity, but it remained the domain of the Indians from whom the Spanish obtained cacao through tribute or trade. Although indigo production was less demanding of labor, the Indians employed in it often worked illegally in the unhealthy process of manufacturing the dye. At the other end of the spectrum was ranching. While Indian lands were often overrun by straying livestock, ranching often occupied grasslands that had been underutilized in pre-Columbian times because the Indians had lacked appropriate tools to effect their cultivation and suitable domesticated animals to raise. Furthermore, ranching was less demanding of labor than other forms of production, and feral cattle eventually provided some Indians with an alternative source of food. Although further research is needed to make definite conclusions, it is possible that such variations in the demands that different types of production made on Indian lands and labor could produce variations in demographic trends, albeit slight ones, between regions concentrating on the production of different kinds of crops or livestock.⁹⁴

In addition to spatial variations in the profitability and nature of commercial enterprises, temporal variations also occurred, which in some cases were critical for the survival of Indian communities. For example, in the sixteenth century, relatively few Spaniards settled in Oaxaca, with the result being that the Indians largely retained control of those lands for which they could provide evidence of ownership during the colonial period. They were later able to use this evidence to defend their rights through the Spanish judicial system. But in many other areas, Indian lands were alienated before the judicial system was developed and Indians became experienced in manipulating it.⁹⁵ In more general terms, during the colonial period, large stretches of temperate South America were not attractive to European settlers because these areas lacked large Indian populations and the temperate agricultural products they could have produced had no markets in Europe. As a result, the few Spaniards who settled there made relatively small demands on Indian lands and labor. This situation changed in the nineteenth century, when the industrial revolution altered the nature of European demands to nonprecious minerals and temperate food products, stimulating European immigration and economic expansion in areas that were formerly sparsely settled.

Changes in the Indian way of life brought about by demands on Indian lands and labor, as well as by miscegenation, were clearly more profound in areas of greatest profitability. The growth of haciendas in particular brought about the disintegration of Indian communities, at least to the point where diminished resources forced villagers into the labor market.⁹⁶ Conversely, the lack of profitability of commercial enterprises created smaller demands on Indian communities, allowing

changes to occur more slowly, which meant that much of their culture was retained and modified, rather than destroyed. The greater preservation of Indian culture was reflected in the greater degree of survival of the population. Hence in the remote parts of Colombia where economic and social disruption was small due to the limited economic opportunities, childless families were fewer and family sizes larger.⁹⁷

The distribution of mining activities was ultimately defined by the location of minerals, but spatial and temporal variations in the demand for Indian labor occurred that were largely related to the profitability of the mines. The first minerals to be exploited were the alluvial gold deposits of the Antilles, but their value was never comparable to that produced by the silver mines of Zacatecas and Guanajuato in Mexico and Potosí in Upper Peru. During the colonial period, the major gold placers worked were to be found in Colombia. Some of these mines were located in areas of dense Indian population and could be worked by repartimiento labor, but those of northern Mexico, which were located in areas of sparse Indian population, had to rely on free labor. In Colombia the rapid decline in the Indian population created a shortage of labor that was met by importing Negro slaves. It is worth noting that the influence of both mining and agriculture on Indian communities often extended beyond the area in which production took place.

Not only did the profitability of commercial agricultural and mining enterprises create demands on Indian lands and labor, but it also resulted in a concentration of Europeans and other non-Indians in those areas, increasing the likelihood of miscegenation. Many authors have noted that miscegenation was most common in the capital cities, estates, and mining areas.⁹⁸ For example, Jiménez Moreno writing on Mexico has observed that "en los reales de minas no solo almagaron los metales, sino tambien se mezclaron las razas."⁹⁹

SUMMARY

The pattern of demographic change in Spanish America during the colonial period is complex and cannot be understood by reference to a single factor such as the differential impact of disease or the systematic killing, overwork, and ill-treatment of the Indians. While these factors were probably the most important in contributing to the decline of the Indian population, they alone cannot explain its differential survival. Important variables in understanding the complex pattern are: first, the nature of Indian societies and the size of their populations at the time of Spanish conquest because these factors influenced the kind of institution used to control and exploit the Indians; and second, the kinds and profitability of resources to be found in the areas in which

the Indians lived. Indians in the highlands of Middle America and the Andes survived to a greater degree than other Indian groups, but the variations in their levels of survival were related to the nature, profitability, and distribution of resources stimulating different demands on Indian lands and labor. Hence Indians in southern Mexico and much of highland Peru survived to a greater degree than in central Mexico, where the growth of haciendas began to undermine Indian communities from an early date. But in all these areas, the rate of Indian survival exceeded that among Indians organized in tribes and bands, for whom the more drastic modifications of their way of life meant severe depopulation, if not extinction.

NOTES

1. For attempts at distinguishing broad racial and cultural areas in Latin America, see E. R. Service, "Indian-European Relations in Colonial Latin America," *American Anthropologist* 57 (1955):411-25; M. Harris, *Patterns of Race in the Americas* (New York: Walker, 1964), 1-2; C. Wagley, *The Latin American Tradition* (New York: Columbia, 1968), 30-37; and D. Ribeiro, "The Culture-Historical Configurations of the American Peoples," *Current Anthropology* 11 (1970):403-34. For Middle America, see J. P. Augelli, "The Rimland-Mainland Concept of Culture Areas in Middle America," *Annals of the Association of American Geographers* 52 (1962):119-29.
2. A few exceptions are the pioneering works of S. F. Cook and W. Borah on Mexico found in *Essays in Population History*, 3 vols. (Berkeley and Los Angeles: University of California Press, 1971-1979); and the regional studies of the Colombian scholars J. Friede, G. Colmenares, and J. A. and J. E. Villamarín (see notes 29 and 30). Regional studies have also been made of parts of Central America, for example, those of T. T. Veblen and W. G. Lovell (see n. 18).
3. A. L. Kroeber, *Cultural and Natural Areas in Native North America*, University of California Publications in Archaeology and Ethnology no. 38 (Berkeley and Los Angeles: University of California Press, 1939):166; H. F. Dobyns, "Estimating Aboriginal American Population: An Appraisal of Techniques with a New Hemispheric Estimate," *Current Anthropology* 7 (1966):415.
4. For example, W. Borah, "The Historical Demography of Latin America: Sources, Techniques, Controversies, and Yields," in *Population and Economics: Proceedings of Section V of the International Economic History Association*, edited by P. Deprez (Winnipeg: University of Manitoba, 1970), 173-205; and "The Historical Demography of Aboriginal and Colonial America: An Attempt at Perspective," in *The Native Population of the Americas in 1492*, edited by W. M. Denevan (Madison: University of Wisconsin Press, 1976), 13-34. See also P. Chaunu and H. Chaunu, "La Population de l'Amérique Indienne (Nouvelles Recherches)," *Revue Hispanique* 29 (1964):111-18; Denevan, *Native Population*, 1-12, 35-42, 77-84, 151-56, 235-42, 289-92; Dobyns, "Estimating Aboriginal American Population," 395-416; W. R. Jacobs, "The Tip of the Iceberg: Pre-Columbian Indian Demography and Some Implications for Revisionism," *William and Mary Quarterly* 31 (1974):123-32; A. Lipshutz, "La despoblación de las Indias después de la conquista," *América Indígena* 26, no. 3 (1966):229-47; A. Rosenblat, *La población de América en 1492: viejos y nuevos cálculos* (Mexico City: Colegio de Mexico, 1967); N. Sánchez-Albornoz, *The Population of Latin America: A History* (Berkeley and Los Angeles: University of California Press, 1974), 32-36; and C. Verlinden, "La Population de l'Amérique précolombienne: une question de methode," in *Méthodologie de l'Histoire et des Sciences Humaines: Mélanges en l'honneur de Fernand Braudel* (Toulouse: Privat, 1973):453-62.
5. During the last decade, numerous demographic studies, particularly of Mexico, have been based on evidence from parish registers. Other studies of the eighteenth

- century based on tribute records, censuses, and other civil materials take a broader view, for example: G. Vollmer, *Bevölkerungspolitik und Bevölkerungsstruktur im Vizekönigreich Peru zu Ende der Kolonialzeit, 1741–1821* (Berlin: Verlag Gehlen, 1967); Cook and Borah, *Essays* 2:180–269; and J. V. Lombardi, *People and Places in Colonial Venezuela* (Bloomington: Indiana University Press, 1976).
6. Dobyns, "Estimating Aboriginal American Population," 415. Depopulation ratios are an unsatisfactory means of measuring decline because they cannot be calculated in cases where the population has become extinct. They have nevertheless been used in this article because the variability and availability of information on which this research is based makes the application of more sophisticated techniques difficult. Where possible, population trends have been calculated over equivalent periods of time in order to facilitate comparisons. Although this procedure has not been possible in some cases, the dates over which the changes have taken place are indicated in all cases.
 7. C. T. Smith, "Depopulation in the Central Andes in the Sixteenth Century," *Current Anthropology* 11 (1970):453–64, see 459. The same order of decline for the Peruvian coast has been suggested by R. G. Keith, who has estimated that the decline in the tributary population of the central coastal valleys between 1525 and 1600 was about 53:1. See Keith, *Conquest and Agrarian Change: The Emergence of the Hacienda System on the Peruvian Coast* (Cambridge: Harvard University Press, 1976), 42.
 8. N. D. Cook, *Demographic Collapse: Indian Peru, 1520–1620* (Cambridge: Cambridge University Press, 1981), 94.
 9. *Ibid.*, 114. N. D. Cook provides a number of alternative estimates for the population of Peru in 1520, but his conclusion proposes the general estimate of nine million without providing a breakdown between the sierra and the coast (74–114).
 10. Kroeber, *Cultural and Natural Areas*, 166; D. E. Shea, "A Defense of Small Population Estimates for the Central Andes," in *Native Population*, ed. by Denevan, 157–80; Dobyns, "Estimating Aboriginal American Population," 415.
 11. S. F. Cook and W. Borah, *The Indian Population of Central Mexico, 1531–1610*, Ibero-Americana no. 44 (Berkeley and Los Angeles: University of California Press, 1960), 48.
 12. W. Borah and S. F. Cook, "Conquest and Population: A Demographic Approach to Mexican History," *Proceedings of the American Philosophical Society* 113, no. 2 (1969): 181.
 13. Dobyns, "Estimating Aboriginal American Population," 412; W. T. Sanders, "The Population of the Central Mexican Symbiotic Region, the Basin of Mexico, and the Teotihuacán Valley in the Sixteenth Century," in *Native Population*, ed. by Denevan, 130–31; R. A. Zambardino, "Mexico's Population in the Sixteenth Century," *Journal of Interdisciplinary History* 11 (1980):22; A. Rosenblat, *La población indígena y el mestizaje en América*, 2 vols. (Buenos Aires: Editorial Nova, 1954), 1:102; Rosenblat, *Población de América*, 23–81. Sanders estimates 2.6 to 3 million for the Central Mexican symbiotic region in *Native Population*, 130–31. If his estimates are applied to the area studied by Cook and Borah, then the equivalent estimate for the aboriginal population would be 11.4 million, although this figure takes no account of differences in ecology, the size of the population, or rates of population decline between the highlands and the coast. See Denevan, *Native Population*, 81. Elsewhere Sanders and Price estimate that Mesoamerica, including northern Central America, had an aboriginal population of 12 to 15 million. See W. T. Sanders and B. J. Price, *Mesoamerica: The Evolution of a Civilization* (New York: Random House, 1967), 77. Denevan suggests an aboriginal population of 18.3 million for Mexico in *Native Population*, 291.
 14. Cook and Borah, *Essays* 2:176–79.
 15. J. Miranda, "La población indígena de México en el Siglo XVII," *Historia Mexicana* 12 (1963):184–85.
 16. Borah and Cook, "Conquest and Population," 180; S. F. Cook and W. Borah, *The Population of Mixteca Alta*, Ibero-Americana no. 50 (Berkeley and Los Angeles: University of California Press, 1968), 38, 57; Cook and Borah, *Essays* 1:355, 2:176–78. For an account of some variations in population movements, see G. Kubler, "Population Movements in Mexico, 1520–1600," *Hispanic American Historical Review* 22 (1942):606–43.

17. Vollmer, *Bevölkerungspolitik und Bevölkerungsstruktur*, 280–91, 367–69; Sánchez-Albornoz, *Population of Latin America*, 110–14; N. D. Cook, "La población indígena en el Perú colonial," *Anuario del Instituto de Investigaciones Históricas* (Rosario) 8 (1965):93.
18. T. T. Veblen, "Native Population Decline in Totonicapán, Guatemala," *Annals of the Association of American Geographers* 67 (1977):484–99; W. G. Lovell, "The Historical Demography of the Cuchumatán Highlands, Guatemala, 1500–1821," in *Studies in Spanish American Population History*, edited by D. J. Robinson (Boulder, Colo.: Westview Press, 1981), 195–216.
19. R. C. Watson, conversation with the author, July 1983. The picture for Chiapas differs from other areas in that a period of stability at the beginning of the seventeenth century was followed by a sharp decline at the end of the century. Other writers would place the nadir at 1720, when the Indian population had declined 50,000 from an estimated contact population of 275,000, a depopulation ratio of 5.5:1. P. Gerhard, *The Southeast Frontier* (Princeton: Princeton University Press, 1979), 158–62; M. J. MacLeod, "An Outline of Central American Colonial Demographics: Sources, Yields, and Possibilities," in *The Historical Demography of Highland Guatemala*, edited by R. M. Carmack, J. Early, and C. Lutz (Albany: State University of New York, 1982), 8–9.
20. M. J. MacLeod, *Spanish Central America: A Socioeconomic History, 1520–1720* (Berkeley and Los Angeles: University of California Press, 1973), 71, 77–78; MacLeod, "Central American Demographics," 7. Gerhard suggests an aboriginal population of 80,000 for Soconusco, which fell to 1,800 tributaries in 1569 and to 800 in 1684. See his *Southeast Frontier*, 169–70.
21. L. A. Newson, "Demographic Catastrophe in Sixteenth-Century Honduras," in *Spanish American Population*, ed. by Robinson, 227–28; and Newson, "The Depopulation of Nicaragua in the Sixteenth Century," *Journal of Latin American Studies* 14 (1982):284.
22. R. Barón Castro, "El desarrollo de la población hispanoamericana (1492–1950)," *Journal of World History* 5 (1959):335; H. E. Daugherty, "Man-Induced Ecologic Change in El Salvador," Ph.D. diss., University of California, Los Angeles, 120.
23. MacLeod, *Spanish Central America*, 19–20, 105–6.
24. *Ibid.*, 77–78; Veblen, "Population Decline in Totonicapán," 497–99; Lovell, "Demography of the Cuchumatán Highlands," 240. My own research (as yet unpublished) on Honduras and Nicaragua confirms the same pattern. An exception is Lutz's study of the Quinizilapa Valley near Antigua in Guatemala, which suggests that the population began to increase in the 1620s and 1630s. The study focuses on six villages, but to what extent the increase was typical of a broader area is unknown. See C. Lutz, "Population Change in the Quinizilapa Valley, Guatemala, 1530–1770," in *Spanish Population History*, ed. by Robinson, 187.
25. N. Sánchez-Albornoz, *Indios y tributos en el Alto Perú* (Lima: Instituto de Estudios Peruanos, 1978), 30–34; Shea, "Defense of Small Population Estimates," 170–72.
26. Sánchez-Albornoz, *Indios y tributos*, 161.
27. R. B. Tyrer, "The Demographic and Economic History of the Audiencia of Quito: Indian Population and the Textile Industry, 1600–1800," Ph.D. diss., University of California, Berkeley, 1976, 81.
28. For general accounts of demographic changes, see A. Rosenblat, *Población indígena* 1:102 and tables 2–5; J. A. Villamarín and J. E. Villamarín, *Indian Labor in Mainland Colonial Spanish America* (Newark: University of Delaware, 1975), 96–98, 106–7, 113–14. For Costa Rica, Thiel estimated that the Indian population fell from 27,200 at the time of conquest to 8,281 in 1801. See B. A. Thiel, "Monografía de la población de la república de Costa Rica en el Siglo XIX," *Revista de Estudios y Estadísticas* no. 8, *Serie Demográfica* no. 5 (1967):83. The decline was undoubtedly greater because Thiel's estimate for 1522 is very conservative. Denevan suggests an aboriginal population of 400,000 for Costa Rica in *Native Population*, 291. For Venezuela, see F. Brito-Figueroa, *Historia económica y social de Venezuela*, 2 vols. (Caracas: Universidad Central de Venezuela, 1966), 1:21–35, 123–35, 160; and E. Arcila Fariás, *La encomienda en Venezuela* (Caracas: Universidad Central de Venezuela, 1966), 64–70. For the La Plata region,

- see C. M. Fein, "Las poblaciones indígenas del Río de la Plata a comienzos del Siglo XVI y su evolución después," *Thirty-Fifth International Congress of Americanists*, 3 vols. (1964), 3:393-96; H. A. Difrieri, "Población indígena y colonial," in F. de Aparicio and H. A. Difrieri, *La Argentina, suma de geografía*, 10 vols. (Buenos Aires: Ediciones Peuser, 1961), 7:3-88; and J. Comadrán Ruiz, *Evolución demográfica argentina durante el período hispano, 1535-1810* (Buenos Aires: Editorial Universitaria, 1969). For Paraguay, see J. Mora, *Historia Social de Paraguay, 1600-1650* (Sevilla: Escuela de Estudios Hispanoamericanos, 1973), 47-67. For Chile, see R. Mellafe, *La introducción de la esclavitud negra en Chile, tráfico y rutas* (Santiago: Universidad de Chile, 1959), 211-26; M. Carmagnani, "Colonial Latin American Demography: The Growth of the Chilean Population, 1700-1830," *Journal of Social History* 1 (1967):179-91.
29. J. Friede, "Algunas consideraciones sobre la evolución demográfica de la provincia de Tunja," *Anuario Colombiano de Historia Social y de la Cultura* 2 (1965):5-19, see 13; and Villamarín and Villamarín, *Indian Labor*, 83-84.
 30. G. Colmenares, *Encomienda y población en la provincia de Pamplona, 1549-1650* (Bogotá: Universidad de los Andes, 1969), 47; J. Friede, *Los Quimbayas bajo la dominación española: estudio documental (1539-1810)* (Bogotá: Banco de la República, 1963), 253; and J. Friede, *Los Andakí: historia de la aculturación de una triba selvática* (Mexico and Buenos Aires: Fondo de Cultura Económica, 1953), 188-89.
 31. Cook and Borah, *Essays* 1:411-29.
 32. Denevan, *Native Population*, 234; and J. Hemming, *Red Gold: The Conquest of the Brazilian Indians* (London: Macmillan, 1978), 490-92.
 33. W. M. Denevan, comment on "Estimating Aboriginal American Population: An Appraisal of Techniques with a New Hemispheric Estimate" by H. F. Dobyns, *Current Anthropology* 7 (1966):429; and W. M. Denevan, "The Aboriginal Population of Tropical America: Problems and Methods of Estimation," in *Population and Economics*, ed. by Deprez, 252-53.
 34. P. Chaunu and H. Chaunu, *Séville et l'Atlantique*, 8 vols. (Paris: SEVPEN, 1959), 8, pt. 1:495-510; Cook and Borah, *Essays* 1:408; Rosenblat, *Población de América*, 9-23; and Verlinden, "Population de l'Amérique précolumbienne," 459. For criticisms of Cook and Borah's estimate, see D. Henige, "On the Contact Population of Hispaniola: History as Higher Mathematics," *Hispanic American Historical Review* 58 (1978):217-37; R. A. Zambardino, "Critique of David Henige's 'On the Contact Population of Hispaniola: History as Higher Mathematics'," *Hispanic American Historical Review* 58 (1978):700-708. For the Caribbean area in general, see Dobyns, "Estimating Aboriginal American Population," 409; Denevan, "Aboriginal Population of Tropical America," 253; Denevan, *Native Population*, 41; and MacLeod, *Spanish Central America*, 19. For Panama, see C. M. M. Carranza Alba, *Etnología y población histórica de Panamá* (Panama: Imprenta Nacional, 1928), 5-11, 14-18; C. O. Sauer, *Early Spanish Main* (Berkeley and Los Angeles: University of California Press, 1966), 284-85; and C. F. Bennett, *Human Influences on the Zoogeography of Panama*, Ibero-Americana no. 51 (Berkeley and Los Angeles: University of California Press, 1968), 36-38, 51.
 35. S. F. Cook, "The Demographic Consequences of European Contact with Primitive Peoples," *Annals of the American Academy of Political and Social Science* 237 (1945):108-9; J. Vellard, "Causas biológicas de la desaparición de los indios americanos," *Boletín del Instituto Riva-Agüero* 2 (1956):77-93; H. F. Dobyns, "An Outline of Andean Epidemic History to 1720," *Bulletin of the History of Medicine* 37 (1963):493-515; W. Borah, "America as Model: The Demographic Impact of European Expansion upon the Non-European World," *Thirty-Fifth International Congress of Americanists*, 3 vols. (1964), 3:379-87; Dobyns, "Estimating Aboriginal American Population," 410-11; A. W. Crosby, "Conquistador y pestilencia: The First New World Pandemic and the Fall of the Great Indian Empires," *Hispanic American Historical Review* 47 (1967):321-37; Jacobs, "Tip of the Iceberg," 123-32; Sánchez-Albornoz, *Population of Latin America*, 60; A. W. Crosby, "Virgin Soil Epidemics as a Factor in the Depopulation of America," *William and Mary Quarterly* 33 (1976):289-99; Denevan, *Native Population*, 4-6; and Dobyns, *Native American Historical Demography: A Critical Bibliography* (Bloomington: Indiana University Press, 1976), 22-25.

36. Dobyns, "Estimating Aboriginal American Population," 410–11; Jacobs, "Tip of the Iceberg," 130–32; Dobyns, *Native American Historical Demography*, 25–34; and W. H. MacNeill, *Plagues and Peoples* (Oxford: Blackwell, 1976), 204–5.
37. Denevan, "Population of Tropical America," 252; J. E. S. Thompson, *Maya History and Religion* (Norman: University of Oklahoma Press, 1970), 56–57, 71; Cook and Borah, *Essays* 1:412–29, 2:176–79; and Denevan, *Native Population*, 41.
38. P. M. Ashburn, *The Ranks of Death: A Medical History of the Conquest of America* (New York: Coward-McCann, 1947), 130–34; J. Vivó Escoto, "Weather and Climate of Mexico and Central America," in *Handbook of Middle American Indians* 1, edited by R. C. West (Austin: University of Texas Press, 1964), 213–14; F. L. Dunn, "On the Antiquity of Malaria in the New World," *Human Biology* 37 (1965):385–93; Sauer, *Early Spanish Main*, 279; Thompson, *Maya History and Religion*, 54–55; J. Duffy, *Epidemics in Colonial America* (Port Washington and London: Kennikat Press, 1972), 140; C. S. Wood, "New Evidence for a Late Introduction of Malaria into the New World," *Current Anthropology* 16 (1975):93–104; and MacNeill, *Plagues and Peoples*, 213.
39. Denevan, *Native Population*, 5; A. W. A. Brown, "Yellow Fever, Dengue, and Dengue Haemorrhagic Fever," in *A World Geography of Human Diseases*, edited by G. M. Howe (London: Academic Press, 1977), 390; and M. E. Bustamante, "La fiebre amarilla en México y su origen en América," in *Ensayos sobre la historia de las epidemias en México*, 2 vols., edited by E. Florescano and E. Malvido (Mexico City: Instituto Mexicano de Seguro Social, 1982), 1:28.
40. These diseases may have included typhoid, paratyphoid, bacillary and amoebic dysentery, hookworm, and other helminthic infections, most of which are water-borne and more prevalent in the humid tropics. See G. Sangster, "Diarrhoeal Diseases," in *Geography of Human Diseases*, edited by Howe, 145–74.
41. On smallpox, see C. W. Dixon, *Smallpox* (London: Churchill, 1962), 313; Z. Deutschmann, "The Ecology of Smallpox," in *Studies in Disease Ecology*, edited by J. May (New York: Hafner, 1961), 7–8; and Crosby, "Conquistador y pestilencia," 333. On plague, see P. H. Manson-Bahr, *Manson's Tropical Diseases* (London: Cassell, 1948), 261; R. Pollitzer, *Plague* (Geneva: World Health Organization, 1954), 256–57, 418, 451; J. F. Shrewsbury, *A History of Bubonic Plague in the British Isles* (Cambridge: Cambridge University Press, 1970), 1–6; and MacLeod, *Spanish Central America*, 8–9. On typhus, see Ashburn, *Ranks of Death*, 81, 95–96.
42. F. L. Black, "Infectious Diseases in Primitive Societies," *Science* 187 (1975):515–18; and Shea, "Defense of Small Population Estimates," 159–61.
43. Shea, "Defense of Small Population Estimates," 160–61. The differential impact of disease is clearly demonstrated by M. M. Swann, "The Demographic Impact of Disease and Famine in Late Colonial Northern Mexico," in *Geoscience and Man* vol. 21, *Historical Geography of Latin America*, edited by W. V. Davidson and J. J. Parsons (Baton Rouge: Louisiana State University, 1980):97–109; and E. Malvido, "Efectos de las epidemias y hambrunas en la población colonial de México," in *Historia de las epidemias*, edited by Florescano and Malvido, 179–97.
44. S. Zavala, *New Viewpoints on the Spanish Colonization of America* (Philadelphia: University of Pennsylvania Press, 1943), 68; Service, "Indian-European Relations," 413–14; Harris, *Patterns of Race*, 3–13; and Villamarín and Villamarín, *Indian Labor*, 24–30.
45. For example, C. Gibson, *The Aztecs under Spanish Rule* (Stanford: Stanford University Press, 1964), 220–21; C. Furtado, *Economic Development of Latin America: A Survey from Colonial Times to the Cuban Revolution* (Cambridge: Cambridge University Press, 1970), 10; M. Lucena Salmoral, "El indofeudalismo Chibcha como explicación de la fácil conquista quesadista," in *Estudios sobre política indigenista española en América*, 3 vols. (Valladolid: Universidad de Valladolid, 1975), 1:111–60; Villamarín and Villamarín, *Indian Labor*, 29; M. Godelier, "The Concept of 'Social and Economic Formation': The Inca Example," in *Perspectives in Marxist Anthropology*, M. Godelier (Cambridge: Cambridge University Press, 1977), 68–69; I. Wallerstein, *Mercantilism and the Consolidation of the European World Economy, 1600–1750* (New York and London: Academic Press, 1980), 174; and S. J. Stern, *Peru's Indian Peoples and the Challenge of Spanish Conquest: Huamanga to 1640* (Madison: University of Wisconsin Press, 1982), 27–50.
46. H. E. Bolton, "The Mission as a Frontier Institution," *American Historical Review* 23

- (1917):45; and R. Benedict, "Two Patterns of Indian Acculturation," *American Anthropologist* 45 (1943):207-12.
47. See Service, "Indian-European Relations," 418; and Harris, *Patterns of Race*, 10-11. Slavery here means the right to dispose of an individual as a piece of property, not a condition of ill-treatment or limited freedom of action.
48. F. Tannenbaum, "Discussion of Acculturation Studies in Latin America: Some Needs and Problems," *American Anthropologist* 45 (1943):204-6; J. H. Steward, "Levels of Sociocultural Integration: An Operational Concept," *Southwestern Journal of Anthropology* 7 (1951):374-90; Service, "Indian-European Relations," 416-17.
49. See for example, M. Góngora, *Studies in the Colonial History of Spanish America* (Cambridge: Cambridge University Press, 1975), 131-40.
50. K. Spalding, *De indio a campesino: cambios en la estructura social del Perú colonial* (Lima: Instituto de Estudios Peruanos, 1974), 137-46.
51. The nature and consequences of personal service in Paraguay are described by E. R. Service in "The Encomienda in Paraguay," *Hispanic American Historical Review* 21 (1951):230-52; and in *Spanish-Guarani Relations in Early Colonial Paraguay* (Ann Arbor: University of Michigan Press, 1954). In Chile personal service was finally banned in 1635, but it continued illegally until encomiendas were finally abolished in 1791. See E. H. Korth, *Spanish Policy in Colonial Chile* (Stanford: Stanford University Press, 1968), 170, 208. According to Arcila Farias, personal service under the encomienda persisted in Venezuela until 1687. See *Encomienda en Venezuela*, 287-90. For more general comments on personal service and the encomienda, see R. K. Barber, *Indian Labor in the Spanish Colonies*, Historical Society of New Mexico Publications in History no. 6 (Albuquerque: University of New Mexico Press, 1932), 78; R. G. Keith, "Encomienda, Hacienda, and Corregimiento in Spanish America: A Structural Analysis," *Hispanic American Historical Review* 51 (1971):433-37; and Góngora, *Studies in Colonial History*, 131-43.
52. For comments on the repartimiento or mita see, L. B. Simpson, *The Repartimiento System of Native Labor in New Spain and Guatemala*, vol. 3 of *Studies in the Administration of New Spain*, Ibero-Americana 13 (Berkeley and Los Angeles: University of California Press, 1938):12-13, 17; G. Kubler, "The Quechua in the Colonial World," *Handbook of South American Indians*, vol. 2, edited by J. H. Steward, Smithsonian Institution, Bureau of American Ethnology no. 143 (Washington, D.C.: U. S. Government, 1946), 371; A. R. Pérez, *Las mitas en la Real Audiencia de Quito* (Quito: Ministerio del Tesoro, 1947), 65-299; J. H. Rowe, "The Incas under Spanish Colonial Institutions," *Hispanic American Historical Review* 37 (1957):172; J. L. Phelan, "Free versus Compulsory Labor: Mexico and the Philippines, 1540-1648," *Comparative Studies in Society and History* 1 (1959):189-201; Villamarín and Villamarín, *Indian Labor*, 86-88; E. Tandeter, "Forced and Free Labour in Late Colonial Potosí," *Past and Present* 93 (1981):101-26; and Stern, *Peru's Indian Peoples*, 84-89.
53. L. B. Simpson, *Many Mexicos* (Berkeley and Los Angeles: University of California Press, 1966), 22-23.
54. The extent of indebtedness and degree of control that debts exercised over workers has been discussed recently by A. J. Bauer, "Rural Workers in Spanish America: Problems of Peonage and Oppression," *Hispanic American Historical Review* 53 (1979):35-48; W. Borah, *New Spain's Century of Depression*, Ibero-Americana no. 35 (Berkeley and Los Angeles: University of California Press, 1951), 36-44; D. Brading, "Estructura de la producción agrícola en el Bajío, 1700-1850," in *Haciendas, latifundios y plantaciones en América Latina*, edited by E. Florescano (Mexico City: Siglo Veintiuno, 1975), 112, 114; F. Chevalier, *Land and Society in Colonial Mexico* (Berkeley and Los Angeles: University of California Press, 1963), 280-88; Gibson, *Aztecs*, 252-56; Góngora, *Studies in Colonial History*, 149-54; M. Mörner, "The Spanish American Hacienda: A Survey of Recent Research and Debate," *Hispanic American Historical Review* 53 (1973):199-203; Tandeter, "Forced and Free Labour," 131-35; W. B. Taylor, "Haciendas coloniales en el Valle de Oaxaca," in *Haciendas, latifundios y plantaciones*, ed. by Florescano, 91-93; E. Van Young, *Hacienda and Market in Eighteenth-Century Mexico: The Rural Economy of the Guadalajara Region, 1675-1820* (Berkeley and Los Angeles: University of California Press, 1981), 248-63; and "Mexican Rural History

- since Chevalier: The Historiography of the Colonial Hacienda," *Latin American Research Review* 18, no. 3 (1983):22-24.
55. K. Spalding, "Hacienda-Village Relations in Andean Society," *Latin American Perspectives* 2 (1975):114; H. Klein, "The State and the Labor Market in Rural Bolivia in the Colonial and Early Republican Periods," in *Essays in the Political, Economic, and Social History of Colonial Latin America*, edited by K. Spalding (Newark: University of Delaware Press, 1982), 101.
56. For the relationship of these exactions to free labor, see three studies by K. Spalding: "Tratos mercantiles del Corregidor de Indios y la formación de la hacienda serrana en el Peru," *América Indígena* 30 (1970):595-608; *De indio a campesino*, 127-46; and "Hacienda-Village Relations," 110.
57. Chevalier, *Land and Society*, 215, 285; M. González, *El resguardo en el Nuevo Reino de Granada* (Bogotá: Universidad Nacional de Colombia, 1970), 57-59; Keith, "Encomienda, Hacienda, and Corregimiento," 437-38; A. G. Frank, *Mexican Agriculture, 1521-1630: Transformation of the Mode of Production* (Cambridge: Cambridge University Press, 1979), 67-71; and E. P. Grieshaber, "Hacienda-Community Relations and Indian Acculturation," *Latin American Research Review* 14, no. 3 (1979):111-12, 124.
58. Bauer, "Rural Workers in Spanish America," 43-45, 48; D. Brading, *Haciendas and Ranchos in the Mexican Bajío, 1700-1860* (Cambridge: Cambridge University Press, 1978), 197-200; and Van Young, *Hacienda and Market*, 268-69, and "Mexican Rural History," 23-24, 27-28.
59. Borah, *Century of Depression*, 36; Gibson, *Aztecs*, 245-46; and Frank, *Mexican Agriculture*, 72.
60. Simpson, *Many Mexicos*, 124-26.
61. R. C. West, *The Mining Community of Northern New Spain: The Parral District, Ibero-Americana* no. 30 (Berkeley and Los Angeles: University of California Press, 1949), 47-49; P. J. Bakewell, *Silver Mining and Society in Colonial Mexico: Zacatecas, 1546-1700* (Cambridge: Cambridge University Press, 1971), 124-80; and D. Brading and H. E. Cross, "Colonial Silver Mining: Mexico and Peru," *Hispanic American Historical Review* 52 (1972):557-60.
62. Tandeter, "Forced and Free Labour," 134-36.
63. J. L. Phelan, *The Kingdom of Quito in the Seventeenth Century* (Madison: University of Wisconsin Press, 1967), 63.
64. J. Friede, *Los Quimbayas*, 196-98; and Villamarín and Villamarín, *Indian Labor*, 88-89.
65. For example, L. A. Newson, "Labour in the Colonial Mining Industry of Honduras," *The Americas* 39 (1982):185-203.
66. Barber, *Indian Labor*, 105.
67. S. F. Cook, "Demographic Consequences of European Contact," 109.
68. Kubler, "Quechua," 373; Rowe, "Incas under Spanish Colonial Institutions," 175; Tandeter, "Forced and Free Labour," 131; Spalding, "Hacienda-Village Relations," 111; and Stern, *Peru's Indian Peoples*, 127, 153-55.
69. Sánchez-Albornoz, *Population of Latin America*, 54-56; and N. Wachtel, *The Vision of the Vanquished* (Hassocks, Sussex: Harvester Press, 1977), 90-93.
70. W. B. Taylor, "Land and Society in New Spain: A View from the South," *Hispanic American Historical Review* 54 (1974):398; and H. Favre, "The Dynamics of Indian Peasant Society and Migration to Coastal Plantations in Central Peru," in *Land and Labour in Latin America*, edited by K. Duncan and I. Rutledge (Cambridge: Cambridge University Press, 1977), 253-68.
71. Van Young, *Hacienda and Market*, 273.
72. Bolton, "Mission as a Frontier Institution," 53-54; and S. F. Cook, *The Indian versus the Spanish Mission*, vol. 1 of *The Conflict between the Californian Indian and White Civilization*, Ibero-Americana 21 (Berkeley and Los Angeles: University of California Press, 1943), 86-87.
73. S. F. Cook, *Californian Indian and White Civilization*, 2-11.
74. A. Metraux, "Jesuit Missions in South America," in *Handbook of South American Indians* vol. 5, edited by J. H. Steward, Smithsonian Institution, Bureau of American Ethnology Bulletin no. 143 (Washington, D.C.: U.S. Government, 1950), 646; M.

- Mörner, *The Political and Economic Activities of the Jesuits in the La Plata Region* (Stockholm: Institute of Ibero-American Studies, 1953), 89–91; and Service, "Indian-European Relations," 418.
75. H. Aschmann, *The Central Desert of Baja California*, Ibero-Americana no. 42 (Berkeley and Los Angeles: University of California Press, 1949), 209. For the introduction of agricultural and craft techniques, see Bolton, "Mission as a Frontier Institution," 57–60; Metraux, "Jesuit Missions," 649–52; and R. Ricard, *The Spiritual Conquest of Mexico* (Berkeley and Los Angeles: University of California Press, 1956), 142–46, 151.
76. Metraux, "Jesuit Missions," 652; D. J. Robinson, "The Syndicate System of the Catalan Capuchins in the Caroní Mission Field," *Revista de Historia* 79 (1975):63–76.
77. S. F. Cook, *Californian Indian and White Civilization*, 94; Mörner, *Jesuits in the La Plata Region*, 204; and O. Popescu, *Sistema económico en las misiones jesuitas* (Barcelona: Ariel, 1967), 110–22.
78. Metraux, "Jesuit Missions," 651.
79. S. F. Cook, *Californian Indian and White Civilization*, 61.
80. S. F. Cook, *The Extent and Significance of Disease among the Indians of Baja California from 1697 to 1773*, Ibero-Americana no. 12 (Berkeley and Los Angeles: University of California Press, 1937), 5.
81. Metraux, "Jesuit Missions," 647.
82. Aschmann, *Central Desert of Baja California*, 242.
83. S. F. Cook, *Californian Indian and White Civilization*, 111–12.
84. *Ibid.*, 63. See also P. Meigs, *The Dominican Mission Frontier in Lower California*, University of California Publications in Geography no. 7 (Berkeley and Los Angeles: University of California, 1935), 155–56.
85. S. F. Cook, *Californian Indian and White Civilization*, 100; Service, "Indian-European Relations," 422–23; J. M. Mariluz Urquilo, "Los guaraníes después de la expulsión de los jesuitas," *Estudios Americanos* 6 (1953): 324–25; W. M. Denevan, *The Aboriginal Cultural Geography of the Llanos de Mojos of Bolivia*, Ibero-Americana no. 48 (Berkeley and Los Angeles: University of California Press, 1966), 33.
86. Góngora, *Studies in Colonial History*, 130.
87. P. W. Powell, *Soldiers, Indians, and Silver: The Northward Advance of New Spain, 1550–1600* (Berkeley and Los Angeles: University of California Press, 1952); and S. A. Zavala, *Los esclavos indios en Nueva España* (Mexico City: El Colegio Nacional, 1967), 65–67.
88. Korth, *Spanish Policy in Colonial Chile*, 111.
89. A. Rosenblat, *Población indígena* 2:122; J. M. Cooper, "The Araucanians," in *Handbook of South American Indians* vol. 2, edited by J. H. Steward, Smithsonian Institution Bureau of American Ethnology Bulletin no. 143 (Washington, D.C.: U.S. Government, 1946), 697; Korth, *Spanish Policy in Colonial Chile*, 188–208.
90. C. H. Haring, *The Spanish Empire in America* (New York: Harcourt, Brace, and World, 1947), 63; and Zavala, *Esclavos indios*, 81.
91. Borah, *Century of Depression*, 32–33; Chevalier, *Land and Society*, 55; J. Lang, *Conquest and Commerce: Spain and England in the Americas* (New York: Academic Press, 1975), 61–62; and Frank, *Mexican Agriculture*, 21.
92. Frank, *Mexican Agriculture*, 21; and E. Florescano, "El abasto y la legislación de granos en el Siglo XVI," *Historia Mexicana* 14 (1965):586–92.
93. Duncan and Rutledge, *Land and Labour*, 5.
94. M. J. MacLeod, "Ethnic Relations and Indian Society in the Province of Guatemala ca. 1620–ca. 1800," in *Spaniards and Indians in Southeastern Mesoamerica: Essays on the History of Ethnic Relations*, edited by M. J. MacLeod and R. Wasserstrom (Lincoln: University of Nebraska Press, 1983), 197–205.
95. Taylor, "View from the South," 404–9; W. S. Osborn makes the same point for Metztitlán in "Indian Land Retention in Colonial Metztitlán," *Hispanic American Historical Review* 53 (1973):234–35.
96. Keith, "Encomienda, Hacienda, and Corregimiento," 438; Bauer, "Rural Workers in Spanish America," 57; and Grieshaber, "Hacienda-Community Relations," 107, 124.
97. J. Jaramillo Uribe, "La población indígena de Colombia en el momento de la con-

- quista y sus transformaciones posteriores," *Anuario Colombiano de Historia Social y de la Cultura* 1, no. 2 (1964):282–83.
98. For example, Gibson, *Aztecs*, 144; F. Cámara Barbachano, "El mestizaje en México," *Revista de Indias* 24 (1964):34; and W. Jiménez Moreno, "El mestizaje y la transculturación en Mexiamérica," in *El mestizaje en la historia de Ibero-América* (Mexico City: Panamericano de Geografía e Historia, 1961), 81.
99. Jiménez Moreno, "El mestizaje y la transculturación," 83.