CHAPTER 11

South America

IMPORTANT TERMS
El Niño
Slash and burn agriculture
Entrepôt
Plantation
Carrying capacity
Squatter settlements
Frontier migration
Greenhouse effect

CONCEPTS AND ISSUES
- Pressure of frontier settlements in the Amazon lowland on tropical rainforests and native peoples.
- Impact of cocaine production on local or regional economies and cultures.
- Pan-Americanism and the dominance of the United States.
- Rural migration to urban centers and frontier areas.

CHAPTER OUTLINE

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Climate
Vegetation
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Resources

HUMAN ENVIRONMENT
Aboriginal inhabitants
Colonial impacts

Modern Population
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Human Landscape
Regions of South America

SPATIAL CONNECTIVITY
Economic Linkages
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Transportation

Telecommunications
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PROBLEMS AND PROSPECTS
Population Growth
Environmental Degradation
Economic Development
Political Stability
South America is a continent of contrasts in terms of both physical and cultural variation. Glacier-capped mountains nearly 23,000 feet (7000 meters) high in the southern Andes stand in sharp contrast to the lowland pampas of Argentina and the coastal plains of the Guianas. The driest deserts on earth are found along the northern coast of Chile, yet across the Andes are the lush rainforests of the Upper Amazon Basin. While some Amerindian inhabitants of the rainforest have only recently made contact with the outside world, the urbanites of Rio de Janeiro, Sao Paulo, and Buenos Aires look to Paris, Milan, and New York for the latest fashions in attire.

Inhabited on the eve of European discovery by perhaps 15 million aboriginal “Indians,” whose cultures ranged from very traditional to highly developed, South America was quickly divided up between the Iberian countries of Spain and Portugal. Iberian colonists were sent to claim, settle, and exploit the new territories. Many demographic changes soon took place, including the decimation of much of the native population by introduced diseases. Following ill-fated attempts at enslaving the indigenous peoples, a labor supply for the mines and plantations was forcibly imported from Africa. Today a high proportion of the coastal population of the east and north coasts of South America is of African descent. Elsewhere, there was substantial mixing of the European and native populations, which resulted in a large mestizo class that is characteristic of much of highland South America today. European immigration was important in the temperate southern South American countries in the late nineteenth and early twentieth centuries, and today portions of those countries remain quite European in terms of both population and cultural landscape.

South America’s present population of nearly 300 million is distributed rather unevenly among 12 independent countries and the two small foreign “dependencies” (Figure 11.1). Over half the total population is in the Portuguese-speaking country of Brazil, which comprises slightly less than half of the total landmass. With the exceptions of the three sparsely populated Guianas—Guyana (formerly British Guiana), Suriname (formerly Dutch Guiana), and French Guiana (officially a French overseas département)—and the 2000-inhabitant offshore British colony of the Falkland Islands (or Islas Malvinas, as Argentina claims), the rest of the South American countries are Spanish speaking and trace their political roots to the disintegration of the Spanish colonial empire in the 1820s. Argentina, with slightly over 42 million inhabitants, is the most populous of the Spanish-speaking countries, and its northern neighbor Paraguay is the least populous with 4.3 million. Although the overall population density is relatively moderate (41 inhabitants per square mile; 16 inhabitants per square kilometer), South Americans are
unevenly distributed. Many highland and coastal regions are so overcrowded that they are at or near their carrying capacities, at least under present levels of technology and economic development.

Population pressures have led both to the degrada
tion of natural resources, such as agricultural and for
tested land, and to the proliferation of slums, or squatter settlement, in the numerous large cities scattered around the periphery of the continent. Rates of urbanization in several of the countries, especially those sub
tject to high rates of European immigration during the last hundred years, equal or exceed those of most de
developed countries of the world. In the traditionally more agrarian countries—with a higher percentage of Indian inhabitants—there have been a proportionally lower urban and are, in regard to levels of urbanization, more
in line with patterns of developing countries of Asia and Africa.

Although spared the nineteenth-century European co
lonial "scrambles" that characterized Asia and Africa, South America's economic dependency upon the de
developed world has resulted in numerous boom-and-bust cycles. Historically, the economy of South America has been oriented toward demand for its raw materials by Europe and North America, and fluctuations in exports of sugar, gold, silver, tin, copper, rubber, bananas, and coffee have not allowed for the development of very stable economies. In the 1980s, new types of export
interests—drugs, chiefly cocaine and marijuana—have fueled the economies of several South American countries. Commodities other than coffee have led to much antag
onism between the beneficiary South American countries and the developed countries that are the des
tinations of the illicit exports. In recent decades, Common Market—style economic liaisons have stimulated in
ternal economic growth, but the traditional trade linkages with Europe, North America, and now Japan remain as the strong spatial connectivity links today.

PHYSICAL ENVIRONMENT

PHYSIOGRAPHY

Stretching nearly 5000 miles (8000 kilometers) north to south (from about 12° north to 55° south latitude) and over 5000 miles (8000 kilometers) from east to west

from about 55° to 80° west longitude) not counting off
shore islands, the familiar triangular-shaped continent of South America encompasses an area of nearly 7 million square miles (18 million square kilometers), almost twice the size of the United States.

Physiographically, the continent can be divided into three major units: a plateau region on the eastern side, lowland plains in the central portion, and a narrow range of high mountains on the western side (Figure 11.2). The two major plateaus—the Guiana and Bres
lian highlands—are the oldest sections of the conti
ent. They have the appearance of a highly weathered and eroded landscape, partly covered by stratified rocks and lava flows. Except for the looser vegetation cover, the remote Guiana highlands resemble the eroded platea
us of Arizona's Monument Valley. Angel Falls, descending nearly 3900 feet (1200 meters) from a high plateau (tepui) in Venezuela, is the world's highest waterfall. The Brazilian highlands extend quite close to the Atlantic, forming a sharp escarpment, or cliff, at the edge of the narrow coastal plain upon which cities such as Rio de Janeiro and Salvador de Bahia are located. Although quite scenic in appearance, this escarpment historically has served as a barrier to easy colonization of Brazil's interior. The interior low plains of the conti
ent have received many of the sediments eroded from the older highlands, and most of South America's major river systems—including the Orinoco, Amazon, and Para
Par/Paraguayan—are found here.

The third major physical unit is the geologically young Andean cordillera. South America is entirely embedded in a continental plate, and at its western edge, plate collision has forced the subduction of the Pacific continental plate under the South American plate. As a result, deep oceanic trenches lie immediately offshore, and extensive volcanic and earthquake activity has created a mountain chain with over 50 peaks exces
ceeding 20,000 feet (6000 meters) in elevation. The An
dean cordillera, although over 5000 miles (8000 kilo
meters) long, has an average width of only about 200 miles (320 kilometers), except near the Peru-Bolivia border. In this area, the Andes split into an eastern and western chain, and between them lies the Altiplano, a basin 14,000 feet (4200 meters) high within which sev
eral lakes have formed from local mountains. Lake Titi
caca, encompassing 3200 square miles (8300 square kil
ometers), is the largest lake on the continent.

CLIMATE

As much of South America lies within the tropics, trop
cal rainy climates prevail over a large portion of the

A view of the Brazilian Highlands near Petropolis. Petropolis is located slightly north of Rio de Janeiro on the southern edge of the Brazilian Highlands. The highlands are important for agriculture, livestock raising, and mining—particularly iron ore.
Physical Features of South America

VEGETATION

The distribution of vegetation reflects the influence of the prevailing climate, the soils, and the availability of moisture (Figure 11.4). The Amazon Basin is covered with tropical rainforest, or selva, in which the continuous tree canopy precludes sunlight reaching the forest floor. As the climate grades from "tropical wet" to "tropical wet-and-dry" with increasing distance from the equator, evergreen rainforests grade into more deciduous types of tropical forest as well as a variety of savanna (tropical wet-and-dry grassland) associations. Whether these savannas formed naturally or by periodic burning by Indians is debated, although extensive conversion of forest to savanna has been noted in historical times. Several large expanses of savanna, including the llanos of Colombia and Venezuela and the partially wooded campos of Brazil, are important cattle ranching zones. The dry northeastern area of Brazil contains a thorny, drought-resistant woodland known as cerrado, and agricultural colonization in this region is periodically set back by extended droughts. Perhaps the most inhospitable terrain in South America is the Gran Chaco of western Paraguay. Containing a thorn forest somewhat similar to Brazil's caatinga, the Chaco is characterized by extensive dessication of the topsoil during the annual dry season droughts and widespread flood during the summer rainy season. Biogeographically, South America exhibits a southern hemisphere equivalent of temperate North America. In Chile, for example, the vegetation grades from sparse xerophytic scrub in the northern Atacama Desert to evergreen woodlands in the central Mediterranean region to a southern temperate marine west coast forest. These distributions are quite similar to vegetative changes along the Pacific coast from Baja California to British Columbia. As with the Sierra Nevada and Cascade Mountains of the United States, the rain shadow zone east of the southern Andes (Patagonia) consists of steppe and desert vegetation. The humid subtroupes of east central Argentina and Uruguay, similar to the Great...
FIGURE 11.3
Climates of South America

- Tropical Rainy Climates
  - Tropical rainforest
  - Tropical savannas

- Dry Climates
  - Steppe
  - Desert

- Humid Mesothermal Climates
  - Mediterranean subtropical (dry summer)
  - Humid subtropical (with summer)
  - Marine west coast (cool summer)
  - Unidentified highlands

FIGURE 11.4
Vegetation of South America

- Tropical rainforest
- Deciduous rain forest
- Semideciduous subtropical forest
- Temperate forest
- Evergreen scrub woodland
- Savanna with palm forest
- Swamp-palm savanna
- Savanna (tropical grassland)
- Prairie (temperate grassland)
- Xerophytic scrub and desert
- Undifferentiated high mountains
Plains, contain agriculturally fertile grasslands known as pampas. A small amount of tundra vegetation is found at the very southern tip of the continent and in the Falkland Islands, and similar cold-tolerant grasses—locally known as jétermo and penas—occupy higher elevations within the Andes.

SOILS

The soils of South America reflect the influence of several factors, notably climate, vegetation cover, and parent material. From an agricultural standpoint, the richest soils are found in the pampas of Argentina and Uruguay, the narrow and flat coastal plain of Brazil and the Guianas, and intermontane Andean basins. River valleys, coastal plains, and highland basins contain a large amount of rich alluvial soils deposited by streams and rivers, and these are especially conducive to agricultural production. Even the dry river valleys of coastal Peru contain rich alluvial soils that, when irrigated, have proved to be agriculturally productive. The soils of the lush rainforests of the Amazon Basin—oxisols—are deceptively poor for agriculture, however. The abundance of plant life is maintained by an elaborate system of nutrient cycling within the trees and other vegetation, and once the land is cleared for agriculture, the nutrients are leached, or dissolved, out of the upper layers of the soil. Often, this process of laterization leaves behind a hardpan, infertile reddish soil—rich in iron and aluminum, but low in plant nutrients.

RESOURCES

South America has considerable natural resources ranging from minerals and energy resources including petroleum to rivers that, if dammed, could generate hydroelectric power. Fish and forest products are also available, although these, like the other resources, must be well managed if they are to achieve their full potential.

Mineral and Energy Resources

South America is a leading producer of several important minerals and energy resources (Figure 11.5). Peru and Chile account for nearly 20 percent of world copper production. The agriculturally poor, yet mineral-rich oxisols of the humid tropics have benefited Brazil, Venezuela, and the Guianas in terms of bauxite (the raw material for aluminum), iron, and manganese deposits.

Other important mineral deposits include tin and tungsten (Bolivia), uranium (Brazil), and zinc (Argentina, Bolivia, and Peru). Historically, silver mining was important in the Peruvian and Bolivian highlands. Gold and diamond mining is locally significant in the older Brazilian and Guiana highlands. Colombia is also a small producer of gold (derived mainly from placer mining) in addition to being the world’s leading source of emeralds. Coal deposits are found in several of the countries, and although volumes are relatively low by world production standards, they are of local economic importance.

Most of the continent’s petroleum deposits are associated with the interior flanks of the Andean cordillera, although important coastal and offshore fields lie along the Venezuelan and Brazilian coasts. Petroleum exploration dates to the turn of the century when Venezuela’s famous Lake Maracaibo oil fields were discovered. Venezuela and Ecuador are OPEC members, and Peru has also recently joined the list of oil exporters. More populous Argentina, Brazil, and Colombia are also important oil producers, but high internal demand has so far precluded any net exporting.

Water Resources

With ample annual precipitation, and a large interior basin, humid tropical South America is drained by several large river systems (Figure 11.2). The largest is the Amazon River and its tributaries, which drain nearly half of the continent. The 4000-mile (6400-kilometer) long river, only slightly shorter than the Nile yet carrying a volume 11 times greater than the Mississippi, cuts its way from the high Andes to the Atlantic Ocean approximately at the equator between the Guiana and Brazilian highlands. To the north, the Orinoco River drains the llanos (plains) of Colombia and Venezuela. The southern lowlands of South America are drained by the Parana-Paraguay river system, which empties into the Rio de la Plata estuary near Buenos Aires. The Rio Sao Francisco flows to the Atlantic through the eastern Brazilian highlands.

In spite of the extensive network of rivers, their importance historically has been less than that of rivers such as the Mississippi or Nile. The Amazon, although navigable into Peru, flows through what historically has been an undeveloped wilderness. Because of the generally poor soils eroded from the eastern highlands, agriculture only flourished in narrow strips along the lower reaches of the river. The Rio Sao Francisco con-
sian River, the largest power-generating facility in the world, although in other years floods have severely limited its use in the modern era. The greatest resource value of South America's rivers lies in their hydroelectric potential, especially for populous developing nations such as Brazil. The upper Paraná contains 11 major hydroelectric plants, including the famous Itaipu Dam on the Brazil/Paraguay border, the largest power-generating facility in the world. On the western side of the Andes are many short rivers that, if dammed, would both alleviate periodic severe flooding and yield great hydroelectric potential.

**Fisheries and Forestry**

Although subsistence fishing takes place throughout the continent, especially in the rivers of the interior, commercial fishing is largely restricted to the coastal and offshore areas. Shrimping is an important activity on the Atlantic coast of Brazil and the Guianas, and Peru has been a world leader in the harvest of anchovies. Because the west coast of South America is washed by the cold Peru (Humboldt) Current flowing northeast from Antarctic waters, the upwelling (replacement of surface waters with colder water from greater depths) associated with this cold current brings rich bounty of plankton and anchovies close to the sea surface where the latter are easily harvested. In some years, Peru has attained the distinction of being the leading fishing nation in the world, although in other years break warm currents (El Niño, the Christ Child) in winter or overfishing have led to collapses in the industry. A potential for greater commercialization of fishing exists in South America as long as the resources are well managed. Recent progress is apparent in both the commercial development of inland fisheries in the Amazon Basin and the expansion of aquaculture, mainly shrimp farming, in Ecuador.

Because of the high diversity of species and relative inaccessibility, commercial lumbering has been relatively minimal in the vast tropical rainforests. Selective cutting of valuable hardwoods is practiced, and attempts at tree farming have been made, but the economics of large-scale tropical forest lumbering are not favorable. (The rainforest is disappearing at alarming rates, however, but more as a result of conversion to low-intensity agriculture and grazing land.) Commercial forestry is more widespread in the temperate portions of the continent, especially in southern Brazil where extensive stands of softwoods are found.

**HUMAN ENVIRONMENT**

Like the physical environment, the human environment of South America exhibits considerable diversity. Native, voluntary immigrants, involuntary immigrants (slaves) from Africa as well as various mixtures of these groups are all reflected in the population of South America today. Patterns of population density and distribution are similarly diverse; South America is the home of some of the world's largest cities as well as large sparsely populated areas and frontier regions.

**ABORIGINAL INHABITANTS**

Although archaeologists are still in disagreement as to the exact antiquity of humanity in the New World, we do know that the Americas were among the last of the major world regions to become populated. Estimates of earliest settlement range as far back as 30,000 years before the present (B.P.), but recent revisions have lowered this figure to between 12,000 and 15,000 years B.P., or shortly after the last glacial maximum of the Ice Age. By 3,000 years B.P., however, descendants of the pioneering Asiatic forebearers had reached the southern tip of South America (Tierra del Fuego), and over the subsequent millennia, a variety of distinctive native cultures evolved.

At the time of European contact, perhaps 15 million natives of varying culture levels inhabited South America (Figure 11.6). Most of the continent was inhabited by tropical forest farming peoples who lived along the numerous lowland rivers and practiced shifting, slash and burn, agriculture. Cassava (manioc) and sweet potatoes comprised the basic food staples, and protein was derived predominantly from fish but also from wild game and plants. Since these people were river oriented, they traveled considerable distances, notable examples were the Arawaks and Caribs who respectively had migrated, with their Amazon lowland cultures, into the Antilles by the time Columbus "discovered" this New World. Other well-known lowland cultures include the Tupi, Guaraní, and Guianans of eastern and southern Brazil and adjacent Paraguay. A temperate latitude slash and burn culture—the
Araucanians—occupied humid, forested south central Chile, and their agricultural basis was more complex. In addition to adopting food complexes prevalent in Mesoamerica and Andean America (including maize, beans, and squash), the Araucanians domesticated what we now call the feral potato. Geographers and botanists argue that potatoes were introduced into the central Andes—and the rest of the world—from this source area. Hunting and gathering cultures inhabited several of the tropical grasslands (campo) of Brazil, the temperate grasslands (pampa) of Argentina and Uruguay, and the short-grass steppes of Patagonia. Fishing and shell fishing were important supplementary economic activities along most of South America’s shoreline, and along the south coast of Chile and Tierra del Fuego, these activities constituted the dominant method of food supply. Charles Darwin, rounding Cape Horn on the research vessel H.M.S. Beagle in the mid-1800s, commented upon the impoverished appearance of these shellfish gatherers.

Two major civilizations existed in South America at the time of the Europeans’ arrival: the Inca Empire of the central trans-Andes and the Chibcha civilization of contemporary Andean Colombia. Evidence of plant domestication dates to as early as 6000 B.P. along the andean coastal plain, and by 3000 B.P. elaborate irrigation works had been constructed, pottery making had become prevalent, and a temple had been built near Lima. Inca coastal civilizations eventually gave rise to the Moche Culture, which flourished from A.D. 200 until about A.D. 1000. Situated on the coastal plain of contemporary Peru, the Moche fragmented into three coastal kingdoms of Chimu, Chimor, and Chanca, which flourished until about A.D. 1470. All three kingdoms were supported by elaborate irrigation agriculture, and the most famous city was Chan Chan, near present-day Trujillo.

Cities developed in the Andean highlands contemporaneously with the rise of a coastal plain civilization, and contact between the two areas was widespread in spite of the formidable topographic barriers. Several sites, including Kotosh in the north, Tiahuanaco in the south, and the Guazo Valley between the two, became important centers of civilization. Political power within the region was eventually consolidated by the Incas of the Guayo Valley during their empire-building push between 1438 and 1525. Under the family-run Inca Empire, an elaborate road network was established to facilitate transport of people and foodstuffs throughout the elongated territory that now reached from southern Colombia to central Chile. Unlike the extensive trade network of the enterprising Mesoamericans, the marketing infrastructure of the Inca Empire was the result of totalitarian policies. The Inca elite used forced labor in both agriculture and public works projects and instituted a socialistic food distribution system that ensured sufficient food supplies. Quechua, the Inca language, was also forced upon the conquered subjects, and its present distribution closely approximates the maximum extent of the empire. The Incas established a second capital at Quito in the early 1500s, and perhaps empire building would have continued had not the Spanish Pizarro arrived in the region soon thereafter in 1531. At its peak, the Inca Empire continued up to 12 million inhabitants, or about half the size of the population of Mesoamerica.

A second, much smaller Andean civilization was that of the Chibchas of highland Colombia who numbered only 500,000 inhabitants. Although not architecturally as sophisticated as the coastal Andean cultures, the Chibchas formed a rudimentary political state, traded extensively with surrounding Indian peoples of lower elevations, created elaborate gold figurines. The famous myth of El Dorado (the Gilded One), which later led many expeditions to ill-gotten ends in the tropical lowlands, stems from the Ziga (chief) of the Chibchas who annually sprinkled gold dust on his body and went for a swim in the cold Lake Guatavita north of Bogotá. Although the Spanish were well acquainted with this story before their arrival in the Colombian highlands, they had become so exaggerated that they did not recognize the source of the myth when they finally compared the Chibcha in 1536.

COLONIAL IMPACTS

After Columbus's eventful discovery of October 12, 1492, territorial rights to world exploration and trade were divided between Spain and Portugal by papal decree. The 1494 Treaty of Tordesillas established a line of demarcation 370 leagues west of the Cape Verde Islands, or approximately 47°9' west longitude, at what was thought to be a mid-ocean meridian (Figure 11.7). However, a large portion of South America protruded eastward of the line, and while accidentally sailing too far westward on a rounding of the Cape of Good Hope in 1500, the Portuguese discovered that they too had received a slice of the new world. The Spanish launched their explorations in search of mineral wealth from their New World base in Santo

Like the Spanish, the Portuguese were interested in acquiring wealth, and the newly established trade with India and the Orient offered the easiest means to accomplish those aims. Early coastal explorations in the newly discovered territory yielded little evidence of mineral wealth, and the colony of Brazil (named after the dye-yielding brazilwood that constituted an early export) grew slowly. In 1580, an estimated 20,000 Spaniards and Portuguese had settled in the New World—approximately half of the total population of the New World. Spain was relatively wealthy, but its territory was languishing. One reason for the Spanish colony's languid growth was the still producing silver mine of Potosi, near which several settlements were established.

Explorations were launched both northward and southward from Potosi, and settlement loci were established at Quito and Santiago. From these bases, further explorations and expansion took place, including down the Amazon River and across the southern Brazilian Highlands. Buenos Aires had been established in the early 1530s by settlers arriving directly from Spain, but hostile Indians forced an inland relocation to form the Pampa de la Frontera (the Pampa Province). The Paraguay River, the Panuco escarpment. Rio de Janeiro, the closest port to the interior mines, became the capital of Brazil in the 1750s.

**CHAPTER 11: SOUTH AMERICA**

The modern period in South America has seen several developments another influx of European immigrants, dramatic population growth, and various forms of migration. The latter includes both rural-urban migration and movement to the frontier regions of the continent.

**Immigration**

Non-Hispanic European immigration did not become widespread until the nineteenth century. Under Spanish colonial rule, only Spaniards were allowed to immigrate into Spain's American colonies. Following independence from Spain in the early 1800s, many of the newly independent nations felt a need to improve their economies and populations. Immigrants from northern Europe were especially sought after because of their perceived strong work ethic. Britain, Ireland, and Germany became major sources of immigrants, especially for small enclaves in western Colombia and Ecuador, for example. Not only did European immigrants arrive in search of employment and prosperity, but the persistence of slavery in the Spanish colonies also attracted African slaves to augment the declining Indian population. In the Guianas, abolition of slavery in the Caribbean began in the 1800s, but the persistence of slavery until the end of the colonial period in the late 1880s precluded much demand for new sources of labor in the Americas until the early 1900s.

The mixing of the races was another important result of the colonial encounter. Not only were African and Mediterranean European racial strains added to the pre-existing racial groups, but much inter-racial marriage took place, especially in the mining and plantation economies. The latter includes both rural-urban migration and movement to the frontier regions of the continent.

**Modern Population**

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Population Growth and Migration Patterns

The total population of South America is approximately 296 million (1990), of which slightly over half is in Brazil. Since 1950, about 135 million people have been added to the continent’s population. This high rate of increase is largely explained by the demographic transition, which has produced a large decline in the death rate prior to any significant declines in the birth rate. Not including the effects of international immigration and emigration, which have been relatively unimportant since 1950, this signifies that birth rates have been substantially higher than death rates, and a population explosion has been the result.

Although present trends indicate a gradual drop in the birth rates, attributed largely to increasing practices of birth control, the pressures of population growth have led to extensive internal migrations of people. First and foremost, there have been extensive urban migrations. Many of South America’s large cities are growing at rates of 7 or 8 percent per year, well above the national averages. Many traditional areas of settlement in the Andean valleys and along the coasts are at or near their carrying capacities, at least under present technological levels. In these regions, population growth is usually offset by out-migration, most often to the cities where the migrants seek jobs. Many urban problems, such as the difficulty in providing basic services, result from this rapid population influx, and squatter settlements are integral components of most large cities today. São Paulo, Buenos Aires, and Rio de Janeiro are among the most populated urban areas in the world with more than 10 million persons. Lima, Santiago, and Bogotá are also quite large with populations of more than 4 million each.

Other types of population migration include international migration, interregional migration, and frontier migration. Most international migration is restricted to the continent (intraregional, if the whole continent is considered to be one region) and usually entails the movement of citizens of a relatively poorer country to a richer neighbor. Consequently, there are substantial numbers (in the hundreds of thousands) of Colombians in Venezuela, and Bolivians and Paraguayans in Argentina. Because of distance factors, immigration to the United States is less important than for Mexico and Central America, although large Colombian populations may be found in Miami and New York City.
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and at the fringes of the main zones of settlement in a country comprises a frontier zone. In the United States, the earliest frontier was situated westward of the main settlement nodes along the Eastern Seaboard. As pioneering settlers colonized the often lawless frontier, and converted the woodlands and prairies to agriculture fields, the frontier zone was displaced westward. The historian Frederick Jackson Turner believed that the frontier not only offered ever-present opportunities for expanding American population but that it also shaped American culture in general. With the possible exception of Alaska, which advertises itself as "The Last Frontier" on its license plates, the frontier in the United States has long been closed.

In South America, the frontier is very much alive although settlement zones are rapidly encroaching on the empty expanses of land nearby. In southern Chile and southern Argentina, and hardy colonists are continuing to migrate into the region. In Chile, the construction of a road to the southernmost extremities of the country is offering new settlement opportunities. Often frontier areas are only temporarily occupied, perhaps until a valuable natural resource can be sufficiently exploited to make a substantial profit. In that case, the frontier area will function as an empty territory beyond the reach of government and private administration. Only the process of permanent colonization will change the status of the frontier.

The best example of a frontier in South America is the Amazon Basin. By the early eighteenth century, pioneer colonists from the Andean countries had moved into the upper Amazon along the lower eastern slopes of the Andes (the montaña). Much of this movement took place prior to the opening of the road, and the direct stimulus for this spontaneous colonization was the increasing population pressure within the Andean basin settlement core. The respective governments quickly recognized the value of frontier colonization, both in terms of occupying the national peripheral regions as well as relieving overcrowding in the traditional settlement areas. From Venezuela to Bolivia, quite a few penetration roads were built across the Andes to allow settlers to move in and to provide transportation routes for agricultural products to be transported to market. As the eastern slope frontier colonization zones grew and even coalesced, they became linked by crude highways. In 1957, former President Fernando Belaunde of Peru, an architect by training, proposed linking all of the frontier colonization zones by a granoscale 3600-mile (5700-kilometer) long Carretera Marginal de la Selva, or Marginal Forest Highway (Figure 1). Such a road, he felt, would not only open up new lands to settlers but would provide better transport corridors for marketing produce. From Venezuela to Bolivia, approximately two million settlers were expected to occupy this new frontier, and an overall population of nine million inhabitants was projected. Although the project as envisioned by Belaunde was never built and colonization in the montaña number only in the hundreds of thousands, continued spontaneous colonization has led to increased linearity of settlement along the eastern Andean slopes. As the settlement zones become linked together by roads, one day the Carretera Marginal will indeed become a reality.

The lower Amazon Basin is a frontier for Brazil. Although the Amazon lowlands periodically had been exploited for specific high-demand resources such as gold, slaves, and rubber, true frontier colonization has until recently been rather minimal. Politically, the Brazilian government has long perceived the Amazon as a vast unoccupied resource to be developed and populated. This optimistic view toward the interior was reinforced by the inauguration of the capital from Rio de Janeiro to Brasilia in 1960 and the extension of roads northeastward to Belém and southwest through the Meta Grosso do Sul. Violent frontier colonization took place along these roads by both small-scale agriculturalists and corporately financed ranchers (including the King Ranch of Texas). Development and settlement in the Amazon were also envisaged by the growth pole concept, in which industrial or commercial development is initiated and transplanted to an area around it providing the basis for population growth in sparsely inhabited regions. The Amazon region was designated a development zone, and cities such as Manaus experienced minor booms in commercial and manufacturing activity. Also, billionaire Daniel Ludwig was able to acquire a considerable sized piece of property along the Jari River where, following an investment of $500 million, he converted thousands of acres of rice and Gmelina arborea forests into pulpwood plantations, which were supplied pulpwood processing plants for Brazil. Although Ludwig gave up in 1982, the growth pole of Jari is now under Brazilian ownership, and 30,000 settlers live in the region. In 1970, after a major drought in the populated Northeast, the Brazilian government embarked on an ambitious Amazon development program, which was to include extensive road construction, infrastructure building for colonization zones, and industrial growth-pole development similar to Ludwig's Jari. The first step in this program was the construction of the east-west Trans-Amazon Highway, which was to connect the drought-stricken Northeast with the Peruvian border (Figure 1). Along the highway, as well as along the highway to Porto Velho, colonization zones were established and road-fronting lease parcels of 250 acres (100 hectares) were made available to colonists. In addition, larger tracts of land—ranging from 6.7 million acres (2.7 million hectares)—were set aside for private and corporate cattle ranches. It was estimated that one million colonists would be settled by 1980, most from the impossibly...
rhed Northeast. Although much stormy colonization has taken place along the newly opened roads and several of the industrial projects are under construction, the growth forecast by the Brazilian government has not been realized. Many problems have plagued the development process, including labor strikes, political corruption, vast deforestation, lack of agricultural assistance, soil erosion, and depletion of nutrients. By 1980, only 20 percent of the land slated for colonization zones, and only 40 percent were from the North. In the mid-1980s, our scientists were actually extending evaporation. One of the major problems in the Amazon Basin is soil infertility. Through the shallow, species-rich forest is extensive throughout the region, the nutrients are rapidly recycled from the humus, or organic debris on the forest floor, through the shallow root systems of the trees. Clearing the land for agriculture allows nutrients to leach from the topsoil, creating a pattern of tree clearing and nutrient depletion. In the tropics, the rate of tree clearing is very rapid as nutrients are depleted, and the soil fertility declines. The only "success stories" in the Brazilian Amazon have been the vast cattle ranches, established in large part to export beef for the North American fast-food industry and provide much-needed foreign revenues for Brazil. Beef production has increased significantly, but at the expense of widespread environmental destruction.

The environmental implications of inefficient frontier colonization in both Brazil and the Andean countries are tremendous. The tropical forests are disappearing at alarming rates (some worldwide estimates range as high as 40,000 square meters [100,000 square miles] per year), and scientists are concerned about local as well as global impacts. Locally, the lush rain forests are turning into nonproductive red deserts, and the amount of rainfall is decreasing because of reduced evapotranspiration from fewer trees. As forests are cut, we lose potentially valuable species, some of which may have pharmaceutical value (as the bark of the cinchona tree in the treatment of malaria, for example). Also, the soil is nutrient-poor, and fauna rapidly disappearing, but the habitat of aboriginal culture groups is disappearing as well. Globally, rainforests absorb carbon dioxide and produce half of the world's oxygen supply. Removal of the forests may well enhance the greenhouse effect and lead to global warming, thus stimulating the melting of polar ice caps and raising sea levels.

There are signs that rampant destruction of the Amazon is slowing. Of Brazil's frontier policies in 1980 shifted toward greater concern for tropical rainforest resources, and a new domestic government—policies since 1990—has made environmental protection a key aspect of its Amazonian development program. Forest fires are now regularly monitored by satellites, and violators of anti-burning laws are increasingly being prosecuted. Yes, there is a frontier in South America. But the humid tropics comprise a fragile frontier, quite different from the historic frontier of the United States. With proper technology, such as modified versions of aboriginal methods of slash and burn farming and multiphopping, frontier colonization can be viable at some point. It should be seen as the major method of solving the problems of population growth and economic stagnation that may characterize the settlement cores of the respective countries.

Amazon Basin, and pioneer settlement in Brazil and the Andean countries is gradually encroaching into this "last frontier." Often at the expense of the native inhabitants who are forced out or forcibly acculturated.

CULTURE

Many aspects of South American culture including language and religion reflect the impact of the colonial period, although aboriginal languages persist in some areas and elements of native religions have been incorporated into Roman Catholicism. Similarly, the political history of the region has been shaped to a large degree by its colonial experience.

Language

With over 1,000 aboriginal languages, South America exhibits great linguistic diversity. These languages collapse into 118 linguistic stocks falling into three major language groupings. All of the existing and extinct native languages ultimately can be traced to one protolanguage dating back at least 11,000 years. Therefore, it might be suggested that all South American Indians were descended from the same ethnolinguistic stock, and the great linguistic diversity is attributed to a high degree of isolation of the various individual tribes. Some Indian languages became quite widespread, including Quechua, which was forced upon the subjects of the Inca Empire; it is the dominant language of several of the Brazilian highland and interior lowland languages, such as Tupi, Guarani, Carib, and Arawak. Where Indians comprise significant proportions of the total population, native languages are still widely spoken. Notable examples are Quechua in Peru and Ecuador, Aymara in Bolivia, and Guarani in Paraguay.

The colonial imprint on the South American continent has obscured the great diversity of aboriginal languages under an overlay of a few major European languages which have come to dominate. Portuguese is the official language of Brazil, and because of Brazil's large population, it is also the most widely spoken language on the continent. In the Andean nations and Uruguay, Spanish is the official language. Quechua shares official status with Spanish in Peru, however, as does Guarani with Spanish in Paraguay. English is the official language in the Falkland Islands and Goyana, Dutch in Suriname, and French in French Guiana. On a micro-scale, linguistic diversity is greatest in the Guianas because of the great variety of cultures, including African, Amerindian, Hindu, Bengali, Indonesian, and European. This diversity reaches its epicon in Suriname, where the official Dutch is less widely spoken than talkie-talkie (or talk-talk), a lingua franca derived from at least six or seven separate languages.

Religion

Most of South America is nominally Roman Catholic, the aboriginal peoples were profoundly religious: most of the lowland groups were classified as being animistic (possessing spiritual significance to animate or even inanimate objects), although among the Andean civilizations religion was highly organized and contained a pantheon of gods and a priestly class. The introduction of Catholicism, many saints were substituted for indigenous gods, and the elaborate rituals of the new religion were adopted by the Inca emperors for the planting and slave economy of coastal Brazil, elements of animist African religions were incorporated into local versions of Catholicism.

In the non-Latin countries of South America, the earliest introduced Protestant religions such as Anglican in the British colonies have been augmented by numerous other religions. Indentured plantation laborers brought Hinduism and Islam, and these have become dominant in Guyana and Suriname. Missionary efforts, mainly by Protestant sects including Baptists, Methodists, Seventh Day Adventists, and Jehovah's Witnesses, have converted usually those living at the margins of society, in the socially and economically disadvantaged. Some religious groups, including the Mennonites, moved to South America not to make converts but to create a homeland for themselves, usually on the frontier. They have become quite dominant in Paraguay's Chaco region.

Political Characteristics

During the colonial period, settlement took place in several core areas deemed economically important by the colonial powers. These core areas were located in highlands proximate to sources of minerals, gold, silver, and native labor. Three major sources of plantations agriculture or entrepôt cities could be established. Politically, the Spanish colonies were closely
administered from Spain, and colonial administrative capitals were established to control vast hinterlands known as virreinatoles. The three viceregalies of South America were New Granada (comprising roughly modern-day Colombia, Panama, and Ecuador), Peru (parts of Bolivia, and Chile), and Rio de la Plata (Bolivia, Argentina, Paraguay, Uruguay, and the Falkland Islands). The three viceregalies were further subdivided into 23 intendencias and provincias. Viceroyalty typically a capita general administered from Santo Domingo. Independence came in the 1810s to 1820s as the Spanish colonies, undermined by the leadership of liberation fighters such as Simón Bolívar and José de San Martín, endured a long and bitter struggle to remove the yoke of colonialism. In one test of political alliances, the Spanish monarchy had the opportunity to move its capital from Mexico City to Lima, but the new capital was not established. Simón Bolívar in 1826, were largely unsuccessful. Pan-Americanism, an idea promoted by the United States a century ago to establish a special relationship between the North American and Latin American, led to an International Union of American Republics being formed in 1889. The OAS developed out of this organization in cooperation with the United States and other European countries to promote greater unity within Latin America, rather than unity vis-a-vis the United States, although the United States remains a member. Although the members agreed to the expulsion of Cuba in 1962, there remains much resentment against U.S. intervention in Latin America, including the 1982 Bay of Pigs invasion of Cuba, the 1965 military occupation of the Dominican Republic, and the invasion of Panama in 1989. The OAS has had limited success in settling minor disputes among Latin American countries as well as in establishing interregional economic associations. HUMAN LANDSCAPE Like the other features of South America, the human landscape exhibits a variety of patterns. Some have persisted from the age of exploration and conquest: The birth of colonialism, and still others are a product of the modern era. Agriculture With the exceptions of southernmost South America and several expanses of Brazilian savanna, agricultural economies prevailed throughout the continent at the time of European contact. The lowlands of the Amazon Basin supported primarily shifting cultivation, or slash and burn agriculture, and the Andean basins and valleys supported a variety of ancient agricultural technologies. These emerged from slash and burn subsistence farming to the present day.
The shifting cultivation system burns the entire field. The ashes provide natural fertilizer, and at the onset of the rainy season, a locally specialized complex of crops is planted. The famous Mesoamerican trilogy of maize-beans-squash has been adopted along portions of the Andean montaña, but the crops of the Amazon lowlands are primarily root crops such as cassava and sweet potatoes. Because the fertility of the soil lies in the thin, easily leached upper humus layer, the agricultural plot is only productive for one or two seasons. As a new agricultural plot is selected elsewhere in the tropical forest, the old field is abandoned, and perhaps after 20 years or so it again reaches a stage of vegetative maturity and is ripe for renewed slashing and burning. Many of the humid tropical Andean slopes contain better soils, and the fallow time for shifting cultivation may be only 5 years or so.

The inhospitable Paraguayan Chaco and the colder and drier portions of the Andes, including much of the dry Pacific coastal plain, are not suitable for agriculture. Within the intermontane basins and valleys where fertile alluvial and volcanic soils have accumulated, a rudimental sedentary agriculture is practiced. This may be considered a form of subsistence agriculture, although slight surpluses of market crops maybe produced to provide a small amount of income for basic necessities. The staple food crops vary by region and elevation: maize is most important in the northern Andes at intermediate elevations (up to perhaps 8000 feet; 2440 meters), and potatoes dominate in the southern Andes and in the highland basins of Peru and Bolivia (8000-12,000 feet; 2440-3600 meters). Wheat has become an important highland grain, especially in the northern Andes, and specialized grains such as quinoa (which can be grown up to 14,000 feet; 4270 meters) are found in the central Andes.

Commercial agriculture includes plantation agriculture, mechanized grain farming, and specialized crop farming. Plantation agriculture includes the traditional plantation crops such as sugarcane, cotton, and tobacco, as well as newer ones such as coffee (southern Brazil, Colombia); bananas (Costa Rica, Colombia), and rice (the Guianas). Traditional sugar-growing regions along the east and north coasts of South America remain important for plantation agriculture, and new zones have been added in interior locations (e.g., sugarcane in Argentina and Colombia) and along the Pacific coast (e.g., bananas in Ecuador, sugarcane and cotton in the irrigated valleys of Peru). Mechanized grain farming is commercially most important in the pampas of Argentina and Uruguay, where crops such as wheat, sorghum, and alfalfa dominate. Soybeans are also becoming widespread, both in Argentina and in Brazil. Specialized crop farming includes truck farming around urban areas, fruit and vegetable growing, vineyards (especially for the Chilean and Argentine wine industries), and Mediterranean agriculture (dry grain farming, especially wheat).

Floodplain agriculture and relict terraces in Valle de Turco, Peru. Usually, floodplains are quite fertile and, whenever possible, are used for agricultural purposes.
THE COCAINE CONNECTION

The concept of spatial connectivity may be applied to the flow of illicit drugs throughout the world. Increased demand for narcotics has been accompanied by an increased supply of narcotics, and since the major centers of demand and supply are usually widely separated, patterns of international drug flows have become established. The dominant world pattern in 1990 is one in which consumption of drugs is greatest in developed nations and drug cultivation and production is greatest in developing nations. A prime example of this pattern is coca, of which South America is the exclusive source.

Coca is derived from the coca plant (not to be confused with Cacao, from which cocoa and chocolate are made), which grows in the humid tropics. Two species of coca are cultivated in South America: Erythroxylum coca, which grows in the valleys of the eastern Andes and slopes up to 10,000 feet (3000 meters) in elevation, and Erythroxylum novogranatense, which is a harder species more prevalent in lower and often drier environments. When coca leaves are chewed in conjunction with an alkaline substance (such as lycophyta in Bolivia), the narcotic is released, thus providing the user with a mildly euphoric effect. Traditionally, coca chewing was a cultural trait of the highland Indians of Peru and Bolivia, and under the Incan rule only the elite classes were allowed to partake in the custom. After the Spanish crushed the Incan Empire and enslaved the Indians to work in the mines, coca chewing became quite widespread among the Indians in part as a means to escape the realities of their harsh existence. The tradition of coca chewing, or coca chewing, has persisted to the present day, especially among poor male laborers, and only in Peru and Bolivia is the growing of coca legal.

The production of cocaine hydrochloride (HCL) from coca leaves is a laborious two-step process discovered in the 1850s. The first step entails the production of a coca paste by adding sodium carbonate and kerosene. In the second step, the paste is refined into cocaine via the addition of various chemicals; skilled chemists employ seven variations in the production of the final product.

Initially promoted as a medicinal drug in the late nineteenth century when Coca-Cola began as a coca-based "brain tonic" in 1886, cocaine was classified as an illegal drug in the United States in the early 1900s following numerous deaths from overdoses. Its usage was confined largely to a small sector within the entertainment industry until it became popular in the 1960s. By the 1970s, cocaine had become the "recreational drug" of the decade for all social strata in the United States, and estimates of regular users range from 6 to 20 million. At prices of $100 to $500 per gram of cocaine (sold to only about 12 percent purity), upwards of $35 billion are spent on the drug annually within the United States alone.

The increased demand for cocaine since the 1950s has not only significantly boosted production in the traditional coca-growing regions, but has also spawned many changes in the geographic distribution of coca cultivation, cocaine refining, and international marketing. Until the 1970s, virtually all cocaine production took place in Colombia—at refineries located in major cities such as Medellin, Cali, and Bogota and in remote locations such as in the eastern llanos (Figure 2). Coca paste was imported into Colombia from the primary and traditional growing areas—Peru's Upper Huallaga Valley and Bolivia's Yungas and Chapare districts—early on and sent to Europe by air to the United States. and estimates of annual supply to the United States for cocaine alone are in the tens of billions of dollars. The paste was transported—usually by air—to the Colombian refineries, from which cocaine would be shipped to North America. Additional refineries were established in Brazil, and by the 1980s, cocaine was being refined in Brazil as well.

FIGURE 2
Geographical Aspects of Coca and Cocaine

Although the production of specialized crops is partly directed at local markets, exports to North America and Europe are quite significant, especially since the growing season is during the northern hemispheric winter when food prices are highest in those markets. Chilean and Argentine apples, grapes, pears, and plums are commonly found in North American supermarkets during the winter months. Other examples of specialized crops (sometimes even plantation grown) are marijuana and coca, from the land, where coca is refined. The Andean countries of Colombia, Peru, and Bolivia, have gained substantial foreign exchange earnings from the export of these illegal narcotics; coca and marijuana.

Livestock ranching is widespread throughout South America, from Colombia's hot, dry Guajira peninsula to the wet-and-dry Campos and tepuis of Paraguay. In the Falkland Islands and the Falkland Islands (British overseas territory) and the Falkland Islands (UK overseas territory), cattle and sheep are significant, forming the basis of the livestock industry in particular.

In the case of South America, the livestock sector is crucial for agricultural output, providing raw materials for the tannery industry, which produces leather for the shoe and clothing industries. Livestock ranching is the primary source of income for many rural families, and the livestock sector has been a major contributor to the economy of many South American countries. The meat industry is also an important source of foreign exchange earnings for these countries, as the demand for beef and lamb is high in Europe and the United States. The livestock sector plays a significant role in the economic development of many South American countries, providing employment opportunities and contributing to the country's economic growth and stability.
Although Brazil and Argentina have made great strides in manufacturing and industrialization, the remainder of the South American countries still have far to go (Table 11.1). Despite high levels of urbanization, economically many of the countries are still mostly agrarially oriented, and overall income levels are still quite low. Economic trade associations were established in the hope of alleviating the low levels of industrialization in the countries with lower consumer bases, but so far this aim has not been accomplished. A large proportion of South America’s population is engaged in economic activities that may be categorized as an “informal” economic sector, including sidewalk vending, lottery-ticket selling, cab driving, and various forms of legal and illegal hustling.

Urbanization

Unlike most developing nations in Asia and Africa, the South American countries are highly urbanized. Latin America as a whole is 69 percent urban, considerably more than Asia (29 percent) and Africa (31 percent) and only slightly less than Europe (75 percent) and North America (74 percent). Within Latin America, tropical South America is 71 percent urban and temperate South America is 85 percent urban.

This relatively high urban percentage of population may be attributed to the immigrants, both the Iberian immigrants of the colonial era and the European immigrants of the postcolonial period. Although several urban centers existed in aboriginal South America, most were restricted to the Central Andean region, and only a small proportion of the overall Indian population actually lived in cities. The arrival of Iberian colonists reoriented the pattern of settlement toward urban foci. Cities were established as administrative centers, mining centers, and port and entrepôt towns, and most Iberians lived in the cities. These cities also had a distinctive urban morphology, a legacy of the Roman city, in which the city was laid out on a grid orientation (the streets running north-south and east-west) around a central plaza. The plaza represented the central focus of the city, and on its sides were usually located the major government buildings, military barracks, the Catholic church, and perhaps the residence of the top administrator. Unlike in North America, where agricultural pioneers comprised much of the immigrant stock, the Iberian immigrants—especially the Spanish—were urban dwellers who came to exploit the natural resources or to administer. Even those colonists who were granted large pieces of rural real estate tended to maintain their permanent domiciles in urban areas. Censuses taken during the colonial period indicate very few nonurban Spanish settlers. In the Spanish colonies, the rural pop-
Although the largest urban agglomerations are in the southern part of the continent, large cities are found in all countries except Paraguay and the Guianas (Table 11.2). Half of the 20 largest cities are located in Brazil, most of them along the coast. Many of the rest are primary cities, which tend to dominate their respective countries economically and politically. Venezuela, Peru, Chile, Argentina, and Uruguay are prime examples of countries dominated by primary cities. All of the large urban centers are growing quite fast, several at rates of 7 to 8 percent per year. Likewise comprised of poor rural residents in search of jobs in the cities is causing severe strains on municipal services. All of South America’s major cities contain extensive squatter settlements where conditions of housing, nutrition, and health are quite poor. To ease the burden of urban overcrowding, new growth in industry and even government is being encouraged in more remote locations. In addition to the reasons, industrial growth poles already discussed, the moving of Brazil’s sheep industry to Brazil in 1960 is a prime example of redirecting population growth to a relatively sparsely settled area. Argentina is planning a similar relocation of its capital from Buenos Aires to Viedma at the northern boundaries of Patagonia in the future.

### REGIONS OF SOUTH AMERICA

The division of South America into subregions of relatively homogeneous cultural and physical traits provides a useful means for understanding the geographic variability of the continent. Traditional efforts at regionalizing South America usually place the major political units into four or five regional groupings and thereby mask the extensive physical and cultural variables found within even small areas. Peru, for example, contains landscapes of Amazonian rainforest, an eastern Andean agricultural frontier, barren glacier-wrapped Andean highland population intertwinements, and dry and desert coastal desert interrupted by irrigated floodplains. Rather than placing Peru in a broader region of “Andean America,” for example, it would be more accurate to identify several distinctive regions that cut across the political borders of Peru. Accordingly, using a combination of physical (climatic, vegetative, and physiographic) and cultural (economic, ethnic, linguistic, and technological) characteristics, South America can be divided into two dozen subregions (Figure 11.11).

Perhaps the most prominent subregion is the Andean cordillera, which may be subdivided into northern, central, and southern sectors. The intermontane valleys and basins of the northern two-thirds of the Andes contained the major aboriginal centers of population, and these locations also attracted the Spaniards. Because the Northern Andes were flanked by insect-ridden humid tropical lowlands, the Spaniards established their settlements in numerous Andean basins from Calí to Cuzco. This Northern Andean settlement core remains the most populated region in northern South America. The Central Andes, corresponding approximately to the maximum extent of the Inca Empire, likewise comprised a major locus of Spanish colonial settlement, especially following the establishment of mining centers. Yet high densities of Indian populations within valleys and basins, including the Altiplano, are reflected in a distinctive Indian cultural landscape in this region, which extends from southern Colombia to northern Argentina. The Southern Andes, by contrast, remain practically unpopulated because of their adverse physical environment, especially in the north, the narrowness and high elevations of the cordillera, extensive glacia tion (especially toward the south), and an absence of inhabitable basins and valleys have all rendered this region relatively unsuited for human habitation.

The continent’s dry west comprises another subregion, one with a long record of aboriginal and colonial settlement. Although sparse in rainfall and natural vegetation, the Desert Coast of Peru and northern Chile was considered an improvement over the disease-ridden tropical lowlands of northern South America. In Peru much colonial settlement—including the primary city of Lima—focused on the aboriginally irrigated valley floodplains. Today, all of these valleys—mostly in Peru—are irrigated, and several “raices” produce a high proportion of the national agricultural output. The Chilean part of the Desert Coast is drier and contains very little coastal plain, yet several important port cities (notably Antofagasta) are located here, in part to export copper from the Andean hinterland. Chile’s settlement core area, extending north and south from Santiago, may be considered Mediterranean Chile because of its climate and its cultural landscape that has come to resemble the Iberian homeland. The Central Valley of Chile, sometimes compared to California’s Central Valley, is characterized by dry farming, livestock grazing, and vineyards (which produce the highest quality wines of the continent). This region is home to the vast majority of Chileans. The temperate and heavily forested Southern Chile, including the large island of Chiloé, was the traditional homeland of the fiercely independent Araucanian (Mapuche) Indians, who still comprise a significant minority of the population. This region was still a frontier as recently as the late nineteenth century when several
migrant groups, especially Germans, settled there. A very scenic region, similar to southern British Columbia, Southern Chile is the site of several lake resorts that attract domestic and international tourists.

Poleward of the region Chiloé refer to as Southern Chile is the sparsely inhabited modern frontier zone of the Southern Archipelago. Consisting of heavily forested and fog-shrouded islands and Andean ridges separated by fjords, the archipelago wraps southeastward around the tip of the continent. Although lumber resources are extensive, the agricultural potential is limited, and the wet weather and lack of transportation render this region not very desirable for human habitation. The only notable city is the port of Punta Arenas, which lies on the southern margins of this region aside the Strait of Magellan.

East of the Andes, the two loci of early Spanish settlement were Paraguay and the rim of the Río de la Plata estuary. Although Paraguay has witnessed numerous boundary alterations throughout the course of its turbulent history, the portion east of the Paraguay River—along with the small adjacent province of Misiones in Argentina—comprises the subregion of Misiones. This was the heartland of the Guarani Indians, many of whom were resettled in the numerous Jesuit missions that formerly were active. The mostly mestizo inhabitants share this agriculturally fertile region with Guarani-speaking Indians and a small minority of European immigrants, mostly Germans. The land west of the Paraguay River is the agriculturally poor Gran Chaco subregion, a largely thorny, scrubby land subject to prolonged desiccation in the dry season and flooding in the rainy season. Extending into adjacent Bolivia and Argentina, this subregion is relatively devoid of human settlement, with the exception of several mestizo colonies.

The Río de la Plata subregion, extending up the Parana River to Rosario and including the cities of Buenos Aires and Montevideo, contains the majority of the inhabitants of Argentina and Uruguay. Control of the mouth of the river was important during the colonial period, but the great growth in this area resulted from massive immigration during the period of the opening of the agriculturally rich Pampas. Argentinians distinguish between a “Spanish pampa” and a “gaucho pampa” on the basis of chronology of settlement and origins of the settlers. Most of the recent immigrants from Spain and Italy, however, regarded as “gaucho” by the longer established Argentinians of Spanish heritage, worked in the pampas but became urban dwellers. Not only do the major cities of Río de la Plata exhibit an ambience reminiscent of Mediterranean Europe, but a cultural tradition of seaside resorts also blossomed. The northern and southern limits of this subregion are marked by Punta del Este and Mar del Plata, respectively, although scattered smaller resorts occur even farther along the coasts of Uruguay and Argentina.

The twin subregions of Río de la Plata/Pampas, essentially representing an urban core and an agricultural hinterland, are encircled by three other subregions with limitations for human settlement. To the north lies an amorphous subregion we might call Gauchos in honor of the South American “cowboys” (gauchos). Largely a grasslands environment similar to the Pampas but with slightly inferior soils, this subregion—encircling much of northern Argentina, most of Uruguay, and southernmost Brazil—came to be dominated by a ranching economy that persists to this day. The rural gaucho culture, which prevailed in Argentina and Uruguay until the waves of mass immigration, is very maintained in music and literature of the respective countries. Commercial grain agriculture is replacing the traditional ranching economy in parts of this area, especially in Entre Ríos province between the Paraná and Uruguay rivers (which is locally known as the Argentine Mesopotamia). To the west of Pampas and Gauchos lie discontinuous and basins which extend along the inner flanks of the Southern Andes. The earliest settlers in this region crossed the Andes from Chile and established cities such as Mendoza and Tucumán in the numerous Desert Oases. Most of the oases occupy low basins within the eastern Andean piedmont, although the southern reaches—extending all the way from the Andes to the Atlantic Ocean—are characterized by ribbon-like oases within the floodplains of several large rivers. Today, the dozens of urban and agricultural cities are important centers of sugar, fruit, grain, vegetable, and wine production. Sometimes referred to as the “other Argentina,” the Desert Oases represent domination by Buenos Aires within the national political-economic framework. South of the Río Colorado was the home of the fierce Tehuelche Indians (patagón, or big foot), and the steppe lands of Patagonia were not settled until the Indians were forcibly removed in the 1850s. This colder, windsworn, and arid climate (adjectives that also aptly describe the offshore Falkland Islands) southern extension of the Andean piedmont became important mostly for grazing livestock, especially sheep. Spanish populated except for a few coastal ports and a recreational enclave at Bariloche at the base of the Andes, this region is still perceived as a frontier in Argentina.
The semiarid Andean foothills in northwest Argentina, much of the western portion of Argentina lies on the leeward side of the Andes Mountains; consequently, it receives much less precipitation than southern Chile, which is located on the windward side of the Andes and receives more than 60 inches (150 centimeters) of precipitation annually.

The earliest impact on the New World landscape by the Portuguese was along the Brazilian Coast, where the plantation economy first developed and the first African slaves were imported. Although a labor-intensive plantation economy no longer prevails, blacks comprise a large proportion of the total population, and African influences remain strong in music and religion. The core of this subregion extends from about Recife southward to Rio de Janeiro, although Dutch and French influence was great along the north-facing coast during the early colonial era, and architectural vestiges of that era survive to this day. During the present century, this subregion has been extended to Belem, at the mouth of the Amazon River, and much tropical forest has been replaced by agriculture. This area, perhaps epitomized by Carnival in Rio de Janeiro or the Brazilian equivalent, is often the Brazil envisioned by many outsiders.

Inland of the Brazilian Coast lie several distinctive subregions. Formerly these comprised the legendarysertão, an1orphous frontier region romanticized by Brazilians in literature and history. The sertão most often refers to the dry, semi-arid, yet highly populated area that is periodically subject to prolonged droughts. This is the most impoverished region in Brazil, one from which most of the recent settlement in new frontiers such as the Amazon are encouraged by the government.

Between the Northeast and São Paulo lies the highland subregion of Minas Gerais, site of the 1697 gold boom and the rich hinterland of Rio de Janeiro. This region, which includes an area slightly greater than that of Minas Gerais, is characterized by its mines, including gold, diamonds, manganese, and iron ore. Although the original capital of Ouro Preto is now but a scenic colonial tourist attraction, the newer capital of Belo Horizonte—since 1897—has become the seventh largest city in South America. South Brazil, from São Paulo westward to the Rio Parana and southward to the land of the Gauchos, contains most of Brazil’s temperate lands. The urban metropolis of São Paulo is the major industrial center of South America, but the region as a whole is defined on the basis of rich agricultural soils (largely volcanic soils on lava flow plateaux) and a high proportion of inhabitants descended from European immigrants. The northern part of the region comprises essentially the state of São Paulo, which is the Prime coffee-growing area in the country. Toward the southern reaches of the region, the formerly heavily forested landscape supports a large lumber industry as well as a dairy industry. Many pockets of German immigrants, and preserved German culture, are found in Santa Catarina state.

Along the north coast of South America, the Caribbean Basin is an extension of the same subregion that prevails throughout the Andes and the eastern shores of Central America. In many ways quite similar to the Brazilian Coast, the region is marked by a plantation economy and great ethnic and linguistic diversity, and a high proportion of the population is descended from African slaves. Most of the population is concentrated in a narrow coastal plain belt. The Guianas, especially Guyana and Suriname, epitomize this subregion, which extends along the coast, in discontinuous fashion, westward to Central America. Although the north coasts of Colombia and Venezuela were historically less plantation oriented, coastal and Andean foothill plantations of bananas, sugar, coffee, and other products transformed the landscape—especially of coastal Colombia—throughout the present century. The Pacific Lowlands subregion of Colombia and Ecuador may be considered a west coast extension of the Caribbean Rimland. Although the extremely rainy west coast of Colombia is sparsely inhabited by Indians and blacks who place rice for gold in the many streams, southernmost western Colombia and coastal Ecuador have witnessed the development of a banana plantation landscape in the twentieth century.

The remaining humid tropical lowlands of the continent, situated inland of the regions previously discussed, are frontier zones. Those areas subject to a pronounced seasonality of rainfall and naturally supporting a savanna grassland have developed into major cattle-ranching areas where crop agriculture is a secondary economic activity at best. The llanos of Colombia and Venezuela comprise one such area, which accounts for much of the beef production of those countries. Another small cattle-ranching area is the Rímaca Savannahs within the southern Guiana Highlands. A seasonally dry, upland tropical grassland environment, this sparsely settled area supports a small but important beef industry in northern Brazil and adjacent Guyana. Venezuela, with its extensive llanos, has not yet seen a need to develop its beef production potential in this region. A southern arc of savannas and savanna woodlands characterizes the Matos and Campos subregions of eastern Bolivia and what is considered the “interior” of Brazil. Typifying this region is Mato Grosso state in Brazil, one of the major beef production regions in the country. Although this area is an active frontier zone in Brazil bordering on the national capital of Brasilia, its potential for extensive permanent agricultural settlement is limited by less-than-optimal soils. Nevertheless, the government of Brazil is actively promoting infrastructural development and encouraging colonization in this area.

The last of the interior subregions are the humid, forested tropics epitomized by the Amazon Basin lowland. Amazonia consists of a vast network of tributaries and associated floodplains separated by interfluvies (areas between the Northeast and São Paulo lies the highland subregion of Minas Gerais, site of the 1697 gold boom and the rich hinterland of Rio de Janeiro. This region, which includes an area slightly greater than that of Minas Gerais, is characterized by its mines, including gold, diamonds, manganese, and iron ore. Although the original capital of Ouro Preto is now but a scenic colonial tourist attraction, the newer capital of Belo Horizonte—since 1897—has become the seventh largest city in South America. South Brazil, from São Paulo westward to the Rio Parana and southward to the land of the Gauchos, contains most of Brazil’s temperate lands. The urban metropolis of São Paulo is the major industrial center of South America, but the region as a whole is defined on the basis of rich agricultural soils (largely volcanic soils on lava flow plateaux) and a high proportion of inhabitants descended from European immigrants. The northern part of the region comprises essentially the state of São Paulo, which is the prime coffee-growing area in the country. Toward the southern reaches of the region, the formerly heavily forested landscape supports a large lumber industry as well as a dairy industry. Many pockets of German immigrants, and preserved German culture, are found in Santa Catarina state.

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The last of the interior subregions are the humid, forested tropics epitomized by the Amazon Basin lowland. Amazonia consists of a vast network of tributaries and associated floodplains separated by interfluvies (areas
between the streams) of poor soils yet luxuriant vegetation. Traditionally, settlement was along rivers, and shifting agriculture and fishing were—and for the most part still are—the major economic activities. Except for periodic boom-and-bust cycles of named-resource exploitation, human interest in this region was insignificant until the late 1960s. A rubber boom in the late 1920s and early 1930s brought a temporary wave of prosperity to the region, and Amazonian cities such as Manaus and Iquitos briefly flourished. Today, only Brazil is actively trying to develop the Amazon in terms of road building, natural resource exploitation, and agricultural colonization, but the environmental impacts and problems have been great. Fringing Amazonia along the foothills of the Andes is a narrow ribbon of naturally high luxuriant forest ecosystem, the Montaña. This area represents the zone of active frontier colonization for the Andean countries from Colombia to Bolivia. Although environmental and institutional problems are many, the soils are somewhat more conducive to agriculture than those of the lower Amazon (Bolivian). If present trends continue, one day the entire Montaña will be settled and linked by roads. A final humid tropical forest subregion is Guiana, which extends from eastern Venezuela almost to the mouth of the Amazon River in Brazil. Physiographically within the Guiana Highlands, vegetatively most of this region is dense tropical forest and consequently not very attractive for human settlement. The occurrence of gold and diamonds has attracted a variety of adventurers, and bauxite and iron ore mining are locally important at the northern fringes of this area. For the most part, however, Guiana remains among the least inhabited subregions.

Rice farming in the Rio Mayo Valley of northeastern Peru. Rice, together with vegetables, fruits, and wheat, is grown in Peru. Cotton and sugar are important exports.

CHAPTER 11 SOUTH AMERICA

SPATIAL CONNECTIVITY

ECONOMIC LINKAGES

Throughout the colonial period, the economic and trade linkages of Brazil and the Spanish-speaking territories of South America were almost exclusively with the respective mother countries. And although evidence shows a fair amount of trade with pirates and enterprising capitalists from northern European countries, these economic linkages were highly illicit and officially nonexistent.

Beginning in the nineteenth century, South America's economies became more closely tied to the more developed countries—notably the United States and Britain, but also Germany and France. These economic linkages were characterized largely by the export of raw materials and the import of manufactured products. The dependence of South America on the developed nations for both markets for its primary products and sources of manufactured consumer goods eventually led to local efforts at industrialization and economic integration.

Regional economic integration in Latin America in the postcolonial era has largely been dominated by the United States. The South American liberator Simón Bolívar eloquently proposed the formation of a Latin American confederation at the Panama Congress of 1826, but his plans did not materialize. Seeing itself as the "big brother" in the western hemisphere, the United States in the latter part of the century encouraged Pan-Americanism, which culminated in the 1904 formation of the International Union of American Republics (later known as the Pan-American Union), which came to be based in Washington D.C. Recognized as being essentially an instrument of U.S. policy toward Latin America, this inter-American organization was rechristened as the Organization of American States (OAS) in 1948. Only Cuba has been formally barred from the organization, following its official conversion to communism in 1960.

It has been argued that movements for Latin American unity have developed in response to domination by the United States. Trade and economic development were spurred on by the 1948 establishment of the United Nations Economic Commission for Latin America (ECLA), which adopted a policy of industrialization. Also, during the 1950s, intraregional trade dropped significantly while imports from the rest of the world increased. In response, a Latin American common market known as

the Latin American Free Trade Association (LAFTA) was created in 1960. Its signatory members included all 10 South American republics as well as Mexico. As the more industrialized and economically more developed members of LAFTA—Argentina, Brazil, and Mexico—quickly began to dominate regional trade, an Andean subgroup comprised of Bolivia, Chile, Colombia, Ecuador, Peru and Venezuela joined in 1973. More ambitious than just a common market arrangement, this regional alliance promoted common foreign investment policies and planned industrialization, although with only limited success. Meanwhile, the United States tried once again to boost its role in the region through President Kennedy's 1961 Alliance for Progress program, which was stimulated by a desire to promote democracy and prevent Cuba-style conversions to communism. Although much aid and foreign investment resulted from this program, the dominance of the United States in economic and political policies was much reduced. In 1980, LAFTA was disbanded in favor of the similar, but supposedly more powerful Latin American Integration Association (LAIA). Among the changes in the new organization was a shift in emphasis from economic growth to defense of trade, i.e., protective barriers.

Guyana and Suriname, traditionally tied to the Caribbean region, belong to the Caribbean Common Market (CARICOM). Guyana is a full-fledged member, while Suriname maintains observer status.

TRADE

International trade in South America reflects both external (extracontinental) and internal (intraregional) economic linkages. Although internal linkages are much more important than internal markets, in spite of the recent efforts at regional economic integration. As a generalization, although external linkages have increased the bulk of extraregional exports, and manufactured goods make up most intraregional exports. In overall terms, the leading commodities are slowly increasing their shares of exports of manufactured goods (Table 11.6). The only major increase in the export of primary commodities involves the export of oil (the leading export by value); Peru has joined OPEC member countries Ecuador and Venezuela as net exporters. Additional primary exports from South America include coffee, copper, sugar, beef, iron ore, bauxite, cotton, and bananas. In regard to its top 15 primary commodities, South America's share of the world market
amounted to about 16 percent in 1983, a figure that has been steadily declining. Several South American countries have been able to lower their imports of food and other primary commodities by boosting agricultural production (Table 11.5). Efforts at reducing imports of manufactured goods and machinery have been less successful. Furthermore, the push toward industrialization, coupled with world oil price hikes since the early 1970s, has greatly increased the countries' shares of fuel imports. Only the major oil exporters have benefited from increases in world petroleum prices, which rose until 1982, then resumed their upward climb after Iraq's invasion of Kuwait in 1990. In spite of the oil crises, annual trade balances figures appear favorable (Table 11.3). However, these figures mask the extensive borrowing incurred during the 1970s in the push toward industrialization. National debts and interest payments on money borrowed in the past have financially strained some of the most economically promising South American countries. During the 1980s, even the oil exporters experienced economic hardships resulting from the drop in the world market price for oil after 1982. Ecuador has recently announced a suspension of foreign debt payments, and Venezuela has experienced noting over belt-tightening austerity measures.

Examination of South America's trade linkages to the rest of the world reveals a continuation of the traditional strong ties to the developed nations of North America and Europe (Table 11.6). The United States remains the primary source of imports as well as the chief destination for exports. The United Kingdom, former West Germany, and the Netherlands comprise the main European trading partners, although Japan's share of the market has been steadily increasing. In addition, several Middle Eastern and African countries have become dominant fuel exporters to several oil-dependent South American countries. The relatively low importance (by value) of intraregional trade is seen by the paucity of regional trading patterns. Exceptions include Trinidad and To- bago, which is a major trading partner of the Guianas (a reflection of the CARICOM connection), and several member nations of LAIA and the Andean Pact that trade extensively with their immediate neighbors.

### TABLE 11.3

<table>
<thead>
<tr>
<th>South American Imports and Exports (Millions of U.S.$)</th>
<th>TOTAL INTERNATIONAL TRADE, 1987</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Imports</strong></td>
<td><strong>Exports</strong></td>
</tr>
<tr>
<td>Argentina</td>
<td>5,819</td>
</tr>
<tr>
<td>Bolivia</td>
<td>579</td>
</tr>
<tr>
<td>Brazil</td>
<td>16,299</td>
</tr>
<tr>
<td>Chile</td>
<td>4,033</td>
</tr>
<tr>
<td>Colombia</td>
<td>3,907</td>
</tr>
<tr>
<td>Ecuador</td>
<td>2,055</td>
</tr>
<tr>
<td>Guatemala</td>
<td>256</td>
</tr>
<tr>
<td>Paraguay</td>
<td>2,359</td>
</tr>
<tr>
<td>Peru</td>
<td>2,286</td>
</tr>
<tr>
<td>Uruguay</td>
<td>338</td>
</tr>
<tr>
<td>Venezuela</td>
<td>7,951</td>
</tr>
<tr>
<td><strong>Balance</strong></td>
<td></td>
</tr>
</tbody>
</table>


### TABLE 11.4

<table>
<thead>
<tr>
<th>South American Trade Exports (in Percent), 1965 and 1986</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FUELS, MINERALS, AND METALS</strong></td>
</tr>
<tr>
<td><strong>OTHER PRIMARY COMMODITIES</strong></td>
</tr>
<tr>
<td><strong>MANUFACTURED GOODS</strong></td>
</tr>
<tr>
<td><strong>1965</strong></td>
</tr>
<tr>
<td>Argentina</td>
</tr>
<tr>
<td>Brazil</td>
</tr>
<tr>
<td>Chile</td>
</tr>
<tr>
<td>Colombia</td>
</tr>
<tr>
<td>Ecuador</td>
</tr>
<tr>
<td>Paraguay</td>
</tr>
<tr>
<td>Peru</td>
</tr>
<tr>
<td>Uruguay</td>
</tr>
<tr>
<td>Venezuela</td>
</tr>
</tbody>
</table>

* Not including textiles and clothing. 

NOTE: Table may not equal 100 percent due to rounding. 


### TABLE 11.5

<table>
<thead>
<tr>
<th>Structure of South American Merchandise Imports (in Percent), 1965 and 1986</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FUELS</strong></td>
</tr>
<tr>
<td><strong>FOOD AND OTHER PRIMARY COMMODITIES</strong></td>
</tr>
<tr>
<td><strong>MANUFACTURED GOODS AND MACHINERY</strong></td>
</tr>
<tr>
<td><strong>1965</strong></td>
</tr>
<tr>
<td>Argentina</td>
</tr>
<tr>
<td>Bolivia</td>
</tr>
<tr>
<td>Brazil</td>
</tr>
<tr>
<td>Chile</td>
</tr>
<tr>
<td>Colombia</td>
</tr>
<tr>
<td>Ecuador</td>
</tr>
<tr>
<td>Paraguay</td>
</tr>
<tr>
<td>Peru</td>
</tr>
<tr>
<td>Uruguay</td>
</tr>
<tr>
<td>Venezuela</td>
</tr>
</tbody>
</table>

NOTE: Totals may not equal 100 percent due to rounding.


### TRANSPORTATION

Except for the Incan Empire, precolumbian transportation patterns were rather rudimentary. In the lowlands, travel was primarily by canoe through the labyrinth of streams and rivers. In higher and drier lands, simple trails functioned as the conduits for regional connectivity. Within the Incan Empire, two major north-south arteries connected the far reaches of the empire. These roads, one highland and one coastal, were allegedly more elaborate than the roads of Rome. Joined at various points by east-west trans-Andean roads, an extensive Incan high- way network was centered on Cuzco, the Incan capital. During the colonial period, the Spanish expanded upon the Incan highway, extending a carretera real (royal highway) from Lima to Cuzcas. Mountain-flanking roads also ran north-south along the Andean chains in Colombia, and in temperate Argentina, a colonial highway connected the Andean colonies with the port of Buenos Aires. Although these roads were known as cart roads (the Spanish had introduced both the wheel and the mule), a high proportion of trade between the colonies was by ship. In Brazil, road networks also gradually evolved in the hinterlands of the major coastal ports. Roads penetrating the interior of the continent were virtually non-existent, especially in the humid tropical lowlands and the barren steppe lands of Patagonia.

Railroads were the first significant form of mass transportation to penetrate interior portions of the continent.
Although most of South America had achieved independence by the time the Railway Era began in 1850, the construction of rail networks by European and North American interests brought on a new form of "colonialism." Most rail lines in South America were built primarily to facilitate the export of raw materials (foodstuffs and mineral resources) to the rapidly industrialising nations of Europe and North America. In terms of spatial connectivity, the railroads were not very successful, as many were built exclusively to exploit a single resource in the hinterland, such as copper and silver in Chile and Peru. Only in the flat and temperate areas of Argentina, Chile, Uruguay, and southeastern Brazil did extensive rail networks evolve. Here too, the main stimulus for rail development was the opening of agricultural lands such as the Argentine pampas and the coffee lands of the Andes. Today, rail transportation has greatly declined in importance, especially in comparison to highways.

Highway development became an important concern of the South American nations as early as the 1920s. Expansionist countries like Brazil realized the value of providing a highway infrastructure for a rapidly growing population. Unlike the railroads, the highway networks were better planned and intranational spatial interconnectivity was vastly improved. The Pan-American Highway, the major north-south linkage in the Americas, has been essentially complete since the 1940s. Actually consisting of multiple routes in its southern reaches, the Pan-American Highway follows the Andean backbone through Colombia and Ecuador before dropping into the Peruvian coastal plain. The highway continues along the desert coast into Chile, although a branch cuts back into the Andes in southern Peru toward La Paz from there one branch cuts eastward across Bolivia and Brazil toward São Paulo, and another branch cuts southeastward across Argentina to Buenos Aires. Although the proportion of paved highways is still relatively small, most are graded, all-weather roads. Oil-rich Venezuela boasts the highest percentage of paved roads—41 percent of its national total. The number of passenger cars on South American highways increased from 4 to 15 million between 1968 and 1980, a trend that will undoubtedly continue and stimulate both highway improvements and new road construction.

The greatest gaps in the highway network have been in the humid, tropical lowlands such as the vast Amazon Basin. In recent decades, however, road penetration into this territory has been accelerated to promote frontier colonization. A north-south highway built through the Amazon lowlands in 1976 allows one to drive from Manaus on an all-weather road, take a ferry across the Amazon River, and continue on to Rio de Janeiro on paved highway. The east-west Trans-Amazon Highway, though unpaved and lacking bridges, will one day allow automobile traffic between Lima, Peru, and Recife, Brazil.

Air transportation has a long history in South America, a fact partly explained by the difficulty of overland transportation. The Brazilian Santos Dumont was a pioneer aviator before World War I, and commercial services date to soon thereafter. Avianca Airlines of Colombia lays claim to being the oldest commercial airline in the western hemisphere, having begun service in 1919. Prior to World War II, German, French, Italian, and American interests helped many of the individual countries establish national airlines, which came under domestic control by the end of the war. Air service has greatly improved spatial connectivity with remote national hinterlands, neighboring countries, and North America and Europe. Within the continent, the role of air transport has increased even more for freight than for passengers because of the difficulty of providing overland transportation in adverse terrain.

Overall, the development of integrated transportation networks is crucial to economic development, and South America has come far in providing infrastructure for rail, road, and air transport. Nevertheless, the transport system is still far from perfect, especially in overland linkages, and it remains to be seen to what degree a new frontier highway infrastructure will stimulate development and spatial connectivity.

TELECOMMUNICATIONS

Although advances in telecommunications have greatly increased spatial connectivity both within countries and between countries in South America, the levels of participation in the media of mass communications still need improvement (Table 11.7). One measure of newspaper readership is the number of daily newspapers published, and Brazil and Argentina rank quite high using this method of measurement. The less Europeanized Andean and interior countries have the least accessibility to telecommunications, and rates of telephone and television ownership reflect this. Radios are ubiquitous throughout the continent, yet certain countries (Uru­

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**TABLE 11.7**

<table>
<thead>
<tr>
<th>Region</th>
<th>United States</th>
<th>United Kingdom</th>
<th>Canada</th>
<th>Australia</th>
<th>Brazil</th>
<th>Chile</th>
<th>Peru</th>
<th>Argentina</th>
<th>Mexico 1980</th>
<th>Mexico 1986</th>
<th>Mexico 1990</th>
</tr>
</thead>
<tbody>
<tr>
<td>Readership (%)</td>
<td>90</td>
<td>75</td>
<td>90</td>
<td>100</td>
<td>90</td>
<td>60</td>
<td>40</td>
<td>60</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
</tbody>
</table>

*Note: Readership is the number of daily newspapers published.*
relatively low levels of radio ownership. As a generalization, countries with strong historical or present ties to Europe have higher participation rates in telecommunications than the other countries.

TOURISM

The tourism industry is still not extensively developed in South America, and opportunities for greater international connectivity as well as economic development exist. Historically, few scenic or archaeological attractions were developed for tourists, and travel agencies and airlines primarily promoted the major cities of South America as tourist destinations. Now, however, both to attract more international tourists and also to keep their own citizens from spending their vacations abroad, several governments are developing a more complete tourism infrastructure. Statistics from 1985 (Table 11.8) indicate that revenues generated from tourism are important to the respective national economies.

Various types of tourist attractions exist in South America, and some of the opportunities for development are only now slowly being exploited. The north coast of South America is also the southern shore of the Caribbean Sea ("America's Mediterranean"), and a beach resort/cruise port tourist landscape has developed in parts of Colombia and Venezuela. Distance to the United States, the major tourist market area, is not too great for continued "winter playground" tourism development.

A more recent trend in South American tourism has been the development of specialized tourism and eco-tourism. These focus upon archaeological attractions, Indian and colonial cities, exotic natural settings (especially rainforests), seasonal events such as Carnival in Rio or Salvador, seasonal sports activities such as skiing, or remote lands such as Antarctica. Package tours, often focused around specific themes (birdwatching, penguin watching, Incan archaeology), are becoming more popular and are introducing tourists to portions of South America previously relatively untouched.

Domestic tourism is important in the more affluent countries of South America, notably Argentina, Brazil, Chile, Uruguay, and Venezuela. Beach resorts seasonally catering to national tourists line the shores of the countries. Some of these beach resorts also attract citizens on vacations in Vala del Mar, Chile), and the level of intra-regional tourism is significant. Domestic tourism has also been promoted by the establishment of duty-free zones, where consumer items such as televisions, videotape recorders, and automobiles can be purchased relatively tax-free. Although duty technically must be paid upon return to one's domicile, Colombians buy offshore San Andrés Island, Venezuelans to Margarita Island, and Brazilians to Amazonia in search of bargains.

As the savings often exceed the price of travel, this form of tourism may well increase.

PROBLEMS AND PROSPECTS

POPULATION GROWTH

Although advances in provision of education in rural areas and promotion of family planning have led to a general decline in the birth rate in South America, overall high rates of population growth still make it difficult for governments to ensure adequate standards of living. In tropical South America, the average rate of natural increase is 2.3 percent (meaning that the population will double in 33 years), and in countries such as Paraguay the rate is as high as 2.8 percent (doubling time of 25 years). These high rates of growth, although falling in comparison with Asia, Africa, or Middle America, often make it difficult for the respective governments to provide adequate medical care and education. The worst aspect of high population growth is lack of employment opportunities in rural areas (not to mention the threat of food shortages during droughts or other natural cata-
trophes), which in turn stimulates migration to al-
ready overcrowded urban areas. False hopes of rising standards of living in the urban "paradieses" reduce people to living in unsanitary shantytowns and perhaps begging or stealing to make ends meet.

Rural attitudes toward large families paradoxically tend to persist for several generations, and this com-
pounds the problems that governments face. Instead of perceiving children as financial liabilities (more mouths to feed and more clothes to buy), rural migrants to ur-
barn shantytowns often maintain that the more children a family has, the greater the chance that one or more will eventually land a well-paying job. If this unlikely scenario becomes reality, these children will then sup-
port the parents and less fortunate unemployed siblings. These types of rural attitudes toward family size help maintain high birth rates and high unemployment levels in South America's urban centers.

High population growth rates also preclude govern-
ments from making significant gains in increasing food production and stimulating overall economic growth. Extensive borrowing from Western banks in the 1970s has put several South American nations deeply in debt, and belt-tightening measures designed to put the coun-
tries back on course are causing drops in the per capita living standards, not to mention violent demonstrations. Curtailment of high population growth would alleviate at least some of South America's environmental and economic problems. In view of the promising trends established within the last 10 to 15 years, it is quite likely that population growth rates will drop to levels characteristic of North American or European nations.

ENVIRONMENTAL DEGRADATION

Although environmental degradation in South America may be traced back to soil erosion in the days of pre-
Incan civilizations, the greatest destruction in area
ECONOMIC DEVELOPMENT

South America has made great strides in economic development over the past several decades. Among these are the development of manufacturing and industrial facilities, which have accounted for a reduction of the proportion of raw material exports to the developed nations of North America relative to manufactured consumer items. In spite of efforts at economic integration, many nations still maintain closer economic ties to major European or American powers than to their own neighbors. The promotion of stronger intraregional spatial connectivity, facilitated by improvements in avenues of overland transportation, should reduce the percentage of raw material exports even further and strengthen a continental consumer goods industry. Regional imbalances in economic productivity are currently responsible for inequitable distribution of revenues, and incentives must be offered to stimulate both manufacturing infrastructure and market demand.

POLITICAL STABILITY

Except for the Guianas, the countries of South America have been independent republics since the nineteenth century. This long period of independence has not yet created an atmosphere of political stability, however, in part because of a continuing struggle to achieve the perfect balance of free enterprise and social welfare. The legacy of the colonial era can still be seen as local oligarchies whose members-despite concentrated wealth and political power, often at the expense of poor, uneducated Indian and mestizo masses. In the past, political stability was maintained by autocratic military dictatorships, but democracy coupled with social reforms appears to be the popularly desired political path. Socialism and communism have occasionally enjoyed brief periods of success (as in Chile between 1970 and 1973), but popular backlash has caused these regimes to quickly lose favor. Castro's 1960s attempts to export the "Cuban Revolution" to South America via his Argentine lieutenant Che Guevara were also unsuccessful. Colombia and Peru, which had seen some democratically elected members, had democratic governments for three decades, and most remaining South American nations are now following their examples. Guyana and Suriname have recently emerged from under colonial rule and characterized by outdated plantation economies, have experienced much political instability and extensive labor unrest.