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Source: *The American Journal of Economics and Sociology*, Jan., 1980, Vol. 39, No. 1 (Jan., 1980), pp. 23-30

Published by: American Journal of Economics and Sociology, Inc.

Stable URL: <https://www.jstor.org/stable/3486768>

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# The Rise and Fall of Maya Civilization

By RAYMOND E. CRIST and LOUIS A. PAGANINI

ABSTRACT. 'Savages,' as Europeans considered the Americans of ancient times, never built the great Mayan centers. The builders of great cities in *Meso-America* were a well-organized group with an adequate *land base* and a rather sophisticated *technology*. From 300 B.C. to 900 A.D. the *Maya* developed and perfected an agriculture-based *economy* with a well developed commerce, writing, art, science, religion and government, as well as an advanced architecture of monuments, palaces, temples and pyramids. Their *civilization* reached intellectual heights unique in the Western Hemisphere. What conditions caused its decline and fall? Interpreting the geographic and historical record in the light of the relevant social sciences, one can say a complex of circumstances: *ecological abuse, exploitation* of the working population, *mismanagement, militarism, bad weather, famines, and epidemics*.

## I

OVER A CENTURY AGO, John Lloyd Stephens mused as he sat at the base of the great tree-shrouded pyramid at Copán:

We sat down on the very edge of the wall and strove in vain to penetrate the mystery by which we were surrounded. Who were the people that built this city? In the ruined cities of Egypt, even in the long-lost Petra, the stranger knows the story of the people whose vestiges he finds around him. America, say historians, was peopled by savages; but savages never reared these structures, savages never carved these stones. . . . There were no associations connected with this place, none of those stirring recollections which hallow Rome, Athens, and "The world's great mistress on the Egyptian plain." But architecture, sculpture, and painting, all the arts which embellish life, had flourished in the overgrown forest; orators, warriors, and statesmen, beauty, ambition, and glory had lived and passed away, and none knew that such things had been, or could tell of their past existence. Books, the records of knowledge, are silent on this theme.

The city was desolate. No remnant of this race hangs round the ruins, with traditions handed down from father to son and from generation to generation. It lay before us like a shattered bark in the midst of the ocean, her masts gone, her name effaced, her crew perished, and none to tell whence she came, to whom she belonged, how long her voyage, or what caused her destruction—her lost people to be traced only by some fancied resemblance in the construction of the vessel, and, perhaps, never to be known at all. . . . All was mystery, dark, impenetrable mystery, and every circumstance increased it. In

American Journal of Economics and Sociology, Vol. 39, No. 1 (January, 1980).

0002-9246/80/010023-08\$00.75/0

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Egypt the colossal skeletons of gigantic temples stand in unwatered sands in all the nakedness of desolation; but here an immense forest shrouds the ruins, hiding them from sight, heightening the impression and moral effect, and giving an intensity and almost wildness to the interest (1).

The stupendous task of building the great Maya centers, whose ruins still arouse a feeling of awe in the visitor, was perforce achieved by a well organized group of human beings with an adequate land base and a rather sophisticated technology. The forest was cut and burned to make way for the cultivation of that ancient triad of maize, beans, and squash, then as now the basis of the diet. A numerous peasant population could evolve wherever adequate land and water were available; wood and thatch came from the forest nearby, limestone for building was found everywhere and terrestrial and aquatic animals furnished meat, hides, shells, feathers, and carapaces. Priests interpreted the portents of the gods, observed the movements of heavenly bodies, and designated the propitious moment for engaging in agricultural tasks. Warriors maintained domestic order and social cohesion, defended the frontiers against the invasions of enemies, and led expeditions into neighboring territory to bring back booty and captives, for slaves or sacrifice. Under the aegis of priests and warriors was an urban population engaged in designing and building, in handicrafts, and in commerce. The productivity of the soil was such that the well-fed peasantry could support the relatively large professional and commercial classes.

The Maya speaking peoples today, speaking 15 Maya dialects, live in one area, which includes Yucatán, Guatemala, Belize, and parts of the Mexican states of Chiapas and Tabasco. They number perhaps two million and retain a remarkable cohesion in spite of the intrusion of modern technological civilization. The southern highland sector, in many places covered by thick deposits of volcanic ash, is dominated by a volcanic range. The lowland region is made up largely of the limestone shelf of the Petén-Yucatán peninsula. The Yucatán water supply has always been a problem, for the May to October rainy season is followed by a period of very little rainfall. Settlements often grew up around sink holes, or *cenotes*.

Before 1500 B.C., the Maya area, it can be assumed, was inhabited by simple hunters, fishermen, and horticulturalists. From about 1500 B.C. to approximately 150 A.D. village farming made possible the intensive settlement of Mayaland. Villagers along the lagoons, estu-

aries and rivers gathered clams and oysters and trapped turtles and crabs. They also caught iguana lizards, whose flesh and eggs were—and still are—considered a delicacy. In lagoons and rivers they fished for gar, snook, catfish and porgy. Even today garfish, spitted on long sticks and grilled over an open fire, are for sale in some markets. The farmers have always prepared their plots by the slash-and-burn method; probably, before the introduction of metal axes, the larger trees were merely girdled and left to die, as they still are in many plots. This seemingly primitive method is more productive than it would appear at first glance, and each farmer must have been able to produce enough to support the food requirements of 10 to 12 people who would thus be released from agricultural pursuits to engage in the public works program of building monuments, palaces, temples, and pyramids. Perhaps also the development of a highly productive new maize would help account for the great increase in population toward the end of this period when pyramid building and the inscribing of stone monuments were advanced cultural traits.

This great cultural upsurge continued from 150 to 300 A.D. as the Proto-Classic, from 300 to 600 as the Early Classic and from 600 to 900 as the Late Classic periods. From 300 B.C. to 300 A.D. the Maya developed or elaborated a sophisticated calendar—necessary to guide the agricultural and ceremonial year; writing; large-scale public works; temple buildings, and palaces; polychrome pottery; and a very sophisticated art style. During the span of six centuries, from about 300 A.D. to 900 A.D., the Maya from northern Yucatán to the Pacific coast reached intellectual and artistic heights unique in the New World at that time.

This tremendous development was based on an agricultural economy, supplemented by fishing and hunting, plus a rather highly developed commerce. Yucatán was a great producer of salt in the extensive beds along the coast between Campeche and the Isla Mujeres. Slaves, cotton mantles, honey, salt, dried fish, resin of the Copal tree—used as incense—were shipped by sea since land transportation over poor trails was difficult and costly. The sea trade route stretched from Campeche, Xicalango, around the peninsula to Nito near Lake Izabal. This trade was probably increased when the dynamic people of Teotihuacan established an outpost at Acanceh, southeast of Mérida, as early as the 5th century A.D., some five centuries before the great Toltec invasions from the highlands of Mexico.

Columbus encountered Maya traders off the coast of Honduras who were using cacao beans as a form of money for barter. The preferred drink of the ruling classes of Mesoamerica was prepared from this bean, whose Latin name means 'food for the gods'. Cacao trees were planted in the bottoms of filled-in cenotes in Yucatán and on the natural levees of rivers in southern Campeche, Tabasco, and what is now British Honduras (Belize).

The end of the conquest of Yucatán by the Toltecs, an extremely violent, blood-thirsty group, was, according to murals from the Temple of the Warriors of Chichén Itzá, carried out in sea-going war canoes and dugouts against Maya on rafts. Victorious on water, the Toltecs followed up their successes on land by lightning thrusts and pitched battles. The end result was the heart sacrifice of many of the most stubborn Maya leaders and the installation of the new Toltec leaders in the seats of power. By the close of the 10th century these vigorous militarists from the highlands of central Mexico had completed the conquest of Yucatán. The Toltec occupation was marked by a hybridization of Toltec and Maya religions and society, as many of the native priests and princes were incorporated into the new power structure.

The Toltecs seem to have abandoned their great capital of Chichén Itzá by the early 13th century, to be heard from no more, having set the stage for another power take over.

A wild and wretched band of Itzá warriors (probably Mexicanized Choltal-Maya originally from Tabasco) settled as squatters in the desolate town of Chichén, and Maya culture lived on under their uncouth hands. Between 1263 and 1283 the Itzá founded Mayapán, which became the capital of Yucatán and was populated by provincial rulers, their families and retainers. The vassals of fiefs of the native princes held in Mayapán were forced to produce and purvey to the capital the goods and luxuries necessary to maintain their chiefs in the style which they demanded. But these ruthless Itzá rulers and their subservient Maya princes were ousted and put to death about the middle of the 15th century.

## II

MANY SCHOLARS HAVE TRIED to find an explanation for the decline and fall of the Classic Maya civilization. Although descendents of the Maya live on in northern Yucatán, they simply disappeared through-

out most of the Central area, where many of the great centers were deserted by the beginning of the 10th century A.D. Was there an epidemic? Did agriculture cease to be productive? Was the agricultural population scattered so widely as a result of slash-and-burn, or shifting, agriculture that the food supplies and tools could no longer be delivered to the centers? Were thick muck soils, such as those in central Florida, swiftly used up, allowing the bare limestone rocks to show through? Or were there invasions from the highlands followed by forced evacuation?

It has been suggested that one factor in the collapse of the Classic Maya civilization might have been that increased demand for agricultural produce necessitated reductions in the length of swidden, or milpa, fallow periods; to be sure, large sections of the lowlands were stripped of their forest cover, and drainage patterns were altered. The result might have been environmental repercussions to which the Mayan farmer did not have time to adjust; that is, deforestation, shortened periods of forest fallow, loss of soil on even gentle slopes, and the formation of swamps in low lying areas. All these and perhaps other factors and processes could have been instrumental in dislocating a population that formerly made up a closely knit, well-ordered society.

Recent field studies and aerial reconnaissance have revealed large zones of terracing north and south of Route 186, particularly between Becan-Xpujil and Nicolas Bravo on the Escárcega-Chetumal Highway. Examination of relic terraces and raised fields indicates that the Maya in this area were sophisticated, sedentary intensive agriculturalists. They constructed abundant terraces and raised fields, and Turner reports, "devised or adopted numerous methods which allowed a reduction in the fallow period, maintained soil fertility, depth and drainage, and controlled grass invasion. Such measures were accomplished with nothing more than chert and obsidian cutting tools, digging sticks, and baskets" (2). Dr. Turner points out, "Throughout the world, intensive cultivation is associated with specialization in crop as well as in cultivation techniques. Overemphasis on terrace maize production, or on raised-field root crop production, might have left the lowlanders' crop vulnerable to diseases and pests and consequent failures, a less severe problem under swidden cultivation wherein fields are widely scattered" (3).

While investigating the settlements along the Candelaria River, Pro-

fessors Siemens and Puleston discovered evidence of prehistoric ridged field systems and numerous canals in the vicinity of already known Maya sites (4). All indications are that there was a major and intensive occupation of the site between the years 800 to 1200 A.D.; this high density of population may be attributable to the intensification of maize production made possible by sedentary agriculture induced by the ridged field system as against the shifting cropping methods of the milpa system. Further integrated examination of this prehistoric cultural landscape should, in the words of the authors, "provide substance to earlier suggestions of intensive agriculture among preconquest Lowland Maya and enhance our understanding of their still enigmatic relationship to the tropical forest environment" (5).

The effects of a crop failure where the system of monoculture is the rule could be disastrous in a very short time. The results would be region-wide famine, tens of thousands of deaths, and rapid dispersal of the surviving population from densely populated central areas. Such a disaster occurred in Ireland during the 1840s when the potato blight destroyed the one crop on which most of the people depended for food.

These and many other questions are brilliantly and succinctly discussed by the late Professor William R. Bullard, Jr. in "The Collapse of Maya Civilization" (6), the introductory chapter in *Ceremonial Centers of the Maya*, by Roy C. Craven, William R. Bullard, and Michael E. Kampen (7).

All that one can be sure of is that the Classic Maya Civilization did fall. It is well to bear in mind that any highly organized civilization is a very delicate instrument, and the slightest change of economic direction, or partial breakdown of the political and religious hierarchy, will greatly alter the immediate orientation and distant goals of any society. At all events, on the eve of the Spanish Conquest a condition of feudal anarchy existed, with sixteen rival States only too eager to go to war with each other and seize the lands and enslave the populations of any of their rivals. This situation was ideal for the Spaniards, who grasped the opportunity of playing off one faction against the other. In the first flush of the conquest Yucatán was largely spared, as Spaniards sought the riches of highland Mexico. But in 1528 the Spaniards began the conquest of the northern Maya

under Francisco de Montejo. It proved no easy task, for each sector of the country was defended by jungle guerrilla fighters, who set traps, ambushed the invaders under cover of darkness, and then silently disappeared into the wooded wilderness. Not until 1542 was it possible to establish a capital in Mérida, but one revolt after another plagued the Spaniards all during the rest of the 16th century. The struggle against European domination continued even into the Republican period. Violent flare-ups of the Yucatec Maya against their white oppressors are recorded for 1847 and 1860.

### III

WHAT DOES the geographic and historical record, interpreted in the light of the relevant social sciences, tell us about the decline and fall of the Maya civilization? From the beginning Maya society was dominated by an elite class and dependent on the exploitation of its productive classes. Yet in its period of high culture Maya civilization was stable (as far as we know) and from its record in stone which even the encroaching jungle could not destroy, it flowered. Very likely a complex of circumstances were involved in its decline and fall.

There were a number of built-in stresses in Maya society. High population density was coupled with a heavy load of endemic disease, such as yellow fever, syphilis, and Chagas' disease. A rise in malnutrition can cause endemic disease to go epidemic, so that the biological time-bomb carried within the Maya populace could be triggered off by such an event as a crop failure.

As population pressed against the limits of subsistence, the Maya aristocracy was poorly equipped to handle the problems of increasing populations. Indeed, as the elite class increased in size, it would make greater demands for support on the working population. Intensive agriculture might lead to increased crop yields, but with the danger of increasing the possibility of widespread losses as a result of crop disease, the buildup of bird and rodent populations and the periodic outbreak of swarms of locusts. A food crisis might be triggered by a long-term shift in climate; recent studies point to widespread drought around 850 A.D.

Such conditions or stresses, or combinations of them, would encourage organized violence and internecine warfare. The progressive disintegration from west to east was perhaps caused by pressures from militaristic non-Maya groups. Village-level, high chiefdom societies,



oriented toward survival, may have been fused into a State-level society, with emphasis on population growth. The construction of the enormous late Classic buildings required immense manpower reserves and a disregard for the welfare of the workers.

A crop failure might be met with attempts on the part of the elite to propitiate the gods with ever larger monuments, thus taking more manpower out of food production. It is estimated that the Maya population decreased from a high of 3,000,000 about 830 A.D. to 450,000 around the end of the century.

As vast overcultivated areas were abandoned they were overrun with thorny second growth bush, harder to clear than primary forest. A diminished population would thus be called upon to clear vast acreages of heavily overgrown but worn-out soil. This population probably preferred to revert to slash and burn agriculture and live life on a peaceful village level. At all events, "ecological abuse, disease, mismanagement, militarism, famines, epidemics, and bad weather overtook the Maya in various combinations" (8).

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1. *Incidents of Travel in Central America, Chiapas and Yucatan*, (New Brunswick, N.J.: Rutgers University edition, 1949), pp. 80-81.
2. B. L. Turner 2d, "Prehistoric Intensive Agriculture in the Mayan Lowlands," *Science*, Vol. 185 (July 12, 1974), p. 122.
3. *Ibid.*, p. 123.
4. Alfred H. Siemens and Dennis E. Puleston, "Ridged Fields and Associated Features in Southern Campeche: New Perspectives on the Lowland Maya," *American Antiquity*, Vol. 3F, No. 2, April, 1972, pp. 228-39.
5. *Ibid.*, p. 239.
6. *Loc. cit.*, pp. 1-19.
7. Gainesville: Florida Univ. Press, 1974, 152 pp.
8. Richard E. W. Adams, *Prehistoric Meso-America* (Boston: Little Brown & Co., 1977), p. 224.

### *Interracial Cooperation*

AT A TIME when interracial cooperation has ebbed, Rhoda Goldstein Blumberg and Wendell James Roye have produced a book in which they have collected 12 essays illustrating bonds between people of different races and cultures, *Interracial Bonds*. The publisher is General Hall, Inc., 2345 Corporal Kennedy Street, Bayside, N.Y. 11360. The editors, an academic sociologist and a human relations specialist, show that cooperation brought success to efforts to end racism as people joined together with a shared instrumental purpose.

W.L.