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The Population of the Santa Barbara Channel Missions (Alta California), 1813-1832

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THE demographic collapse of the native populations in the Americas in the four centuries following sustained contact with Eurasia has been a major topic of discussion among scholars for decades. Much of the debate has been based on the assumption that epidemics of contagious diseases such as smallpox and measles were the primary causes for the rapid decline of the Indian populations. Yet, few detailed studies have examined Indian demographic collapse using parish registers, censuses, and reports that record vital statistics for Indian populations. One notable exception is the case of the frontier Indian mission communities of Alta California established by Franciscans between 1769 and 1823. The rich data available on the missions, including complete lists of baptisms and burials, and detailed annual and biennial reports, provide the basis for local demographic studies that can test the basic explanations for the causes of Indian demographic collapse.

Sherburne F. Cook pioneered the study of the causes of Indian demographic collapse in the Alta California missions in a series of monographs (Cook 1976a, 1976b; Cook and Borah 1971-1979). Cook's studies not only initiated the discussion of the topic for the Alta California missions, but more importantly, provided an empirical and theoretical framework for subsequent research. Despite Cook's positive contributions to the field of historical demography and California Indian and mission history, his works have increasingly come under attack, especially within the context of the current and controversial campaign to promote the canonization of Franciscan missionary Junipero Serra, O. F. M., architect of the Alta California mission system. Scholars who favor Serra's canonization have systematically attacked those elements of Cook's interpretations, even if substantiated by empirical evidence, that do not reflect well on their own colored view of mission history, the Franciscans, or Serra the man (Lothrop 1989; Hornbeck 1990).

One scholar in particular, who can be considered a strong advocate of Serra's canonization and a sanitized version of Alta California mission history, went so far as to attack the reliability of the sources for the study of the historical demography of the California missions. He did so despite the fact that these sources are the most complete and among the most reliable for colonial Spanish America. Historian Harry Kelsey, who has no practical expertise in the field of historical demography and brings a decidedly Eurocentric view to his interpretation of the history of the California missions, wrote in a footnote in a recent article that discussed the development of the building complex of San Juan Capistrano mission:

> There are no accurate population statistics for the missions. The figures listed in annual reports and mission registers need to be approached with a great deal of caution. There is no modern mission population study based on careful and critical research in the original sources [Kelsey 1987:30 nt. 22].

As substantiation for his statement, Kelsey cited an earlier article (Kelsey 1985:508-511), based almost exclusively on secondary sources, that addresses the question of the validity of estimates of contact population levels, but not the accuracy of the records used to document statistics of the mission populations.

The recent debate over sources and the reliability of Cook's earlier studies of the missions has merely reevaluated old arguments, often with flawed interpretations. No new views of mission history and demography based upon substantial empirical research are offered, polemic being merely disguised as legitimate serious scholarship.

The objective of this study is to test a number of Cook's conclusions on mission demography that previously had been questioned by scholars with little or no expertise in historical demography. The conclusions presented here contribute to a growing body of literature on the demographic collapse of the native peoples of the Americas after 1492, and on the specific subject of the Alta California missions and the fate of the Indian groups congregated into the missions.

The microcomputer program "Populate" was used to calculate the vital statistics of the four missions located on the Santa Barbara Channel for the years 1813-1832. "Populate" produces sophisticated demographic statistics for data bases organized into quinquenniums, using the method of inverse projection developed by Lee (1975, 1985). It analyzes aggregate data of births, deaths, net migration, and total population to document changing patterns of fertility, mortality, and life expectancy. Inverse projection, using raw data, computes a running tally of changes in the population by adding births, subtracting deaths, and accounting for net movement in and out of the community. "Populate" computes several demographic statistics, including (1) the gross reproduction ratio (GRR), a population's

production of children; (2) net reproduction ratio (NRR; NRR = 1.0 indicates that a population reproduces itself every generation, whereas NRR = 0.5 signals a halving of the population); (3) the dependency ratio (DR), the relationship between the young and old and the economically active part of the population; and (4) mean life expectancy at birth (Lee 1975, 1985; McCaa and Perez Brignoli 1989; McCaa and Vaupel 1989).

A 20-year sample of birth, death, and population data, abstracted from extant annual reports housed in the Santa Barbara Mission Archive-Library, was analyzed to document the dynamics of demographic change in the four missions established among the Chumash in the Santa Barbara Channel region. The missions and yearly records chosen for analysis are: San Buenaventura, 1782; Santa Barbara, 1786; La Purísima, 1787; and Santa Inés, 1804. The period 1813-1832 was chosen to show patterns of decline in the years following the most active recruitment and resettlement of Chumash in the missions, and the period of greatest decline in the total mission populations. The viability of the Chumash population, that is, its ability to reproduce itself, can be evaluated without the extreme distortion that would result from large-scale in-migration (Jackson 1983, 1984, 1985, 1987; Langer and Jackson 1988). The fundamental question is whether the Chumash population congregated in the missions was viable, i.e., whether the population was able to remain stable or expand through natural reproduction, independent of in-migration. The findings of this study are important to the current discussion of the reliability of Cook's conclusions on mission demography.

Although they fluctuated, crude birth rates for the Indian populations living in the four missions were moderate to high (Table 1). Indian women living in the missions bore children, but the low net reproduction ratios

Table 1
DEMOGRAPHIC STATISTICS FOR SAN BARBARA CHANNEL MISSIONS, 1815-1830[a]

Year	Population	Crude Birth Rate	Crude Death Rate	GRR	NRR	Life Expectancy
		San Buenaventura Mission				
1815	1,186	29	76	1.62	0.14	6.0
1820	1,127	32	88	1.47	0.04	2.2
1825	865	29	60	1.17	0.15	8.5
1830	726	25	70	0.97	0.09	6.4
		Santa Barbara Mission				
1815	1,240	33	72	1.81	0.21	7.7
1820	1,132	36	89	1.74	0.07	2.9
1825	885	32	69	1.33	0.13	6.5
1830	711	33	86	1.32	0.07	3.9
		La Purísima Mission				
1815	1,019	36	93	1.93	0.09	3.3
1820	840	31	64	1.45	0.16	7.5
1825	564	21	100	0.84	0.01	1.4
1830	413	31	92	1.12	0.02	1.6
		Santa Inés Mission				
1815	636	49	100	2.68	0.15	4.0
1820	635	69	139	3.16	0.06	1.5
1825	500	61	105	2.45	0.11	3.2
1830.[b]	408	48	139	1.73	0.02	1.3

[a]   Sources: San Buenaventura Mission Annual Reports, 1813-1832; Santa Barbara Mission Annual Reports, 1813-1832; La Purísima Mission Annual Reports, 1813-1832; Santa Inés Mission Annual Reports, 1813-1832.
[b]   The data for this quinquennium have been adjusted.

Table 2
SEX RATIOS (FEMALE:MALE) IN THE FOUR SANTA BARBARA
MISSIONS IN SELECTED YEARS[a]

Mission	1796	1798	1810	1832
San Buenaventura	---	1:1.05	1:0.91	1:1.42
Santa Barbara	1:1.01	1:1.07	1:0.91	1:1.20
La Purísima	1:1.03	1:0.95	1:0.96	1:1.57
Santa Inés	---	---	1:0.84	1:1.20

[a]   Sources: San Buenaventura, Santa Barbara, La Purísima, and Santa Inés Mission Annual Reports, 1813-1832.

Table 3
DEPENDENCY RATIOS IN THE FOUR SANTA BARBARA
CHANNEL MISSIONS IN SELECTED YEARS[a]

Mission	1815	1820	1825	1830
San Buenaventura	0.42	0.23	0.14	0.14
Santa Barbara	0.44	0.26	0.16	0.14
La Purísima	0.39	0.25	0.10	0.08
Santa Inés	0.42	0.24	0.15	0.11

[a]   Sources: San Buenaventura, Santa Barbara, La Purísima, and Santa Inés Mission Annual Reports, 1813-1832.

suggest that high rates of infant and child mortality wiped out much of the increase that occurred through natural reproduction. Death rates were consistently higher than birth rates, and were especially higher for children and women. By the 1830s, the mission populations were unbalanced, with a small number of children and more men than women, as shown by the sex ratio (Table 2) and by a low dependency ratio (Table 3). The sex ratio was calculated for girls and adult women, as opposed to the more accepted practice of calculating the ratio only for women of childbearing age, because of the irregular age cohorts indicated in the original documents. In 1832, children under age 9 made up 14% of the population of San Buenaventura, 16% of the population of Santa Barbara, 11% of the population of Santa Inés, and a mere 9% of the population of La Purísima.

The nonviability of the populations of the four missions is further shown by the mean life expectancy at birth for children born at the missions. Mean life expectancy at birth was 5.8 years at San Buenaventura, 5.3 years at Santa Barbara, 3.5 at Santa Inés, and a low of 2.5 years at La Purísima. The statistics on life expectancy produced by Populate substantiate the impression one gets when reading mission burial registers, namely that a large number of young children did not live beyond age ten, and especially beyond the first year of life.

The Indians living in the four missions examined here experienced demographic collapse because of increased death rates that were consistently higher than birth rates, and not because of a decline in birth rates. The increase in death rates was caused by endemic and epidemic disease, including syphilis, and was exacerbated by the poor living conditions in the missions. An example of the latter was the practice of locking single women in unhealthy dormitories at night. In addition, stresses of cultural change cannot be overlooked. However, in contrast to the patterns observed in Baja California, relatively few epidemics attacked the Indian populations living in the missions of the Santa Barbara Channel region. The most important epidemics occurred in 1781-1783, 1802, 1806, and 1827-1828. The high rates of infant and child mortality maintained death rates at chronically high levels.

The Indian populations congregated in the missions were the only groups in colonial Alta California that experienced net population decline. The non-Indian soldier-settler populations of the four presidios (military garrisons) established in Alta California reproduced vigorously and did not experience the same horrific infant and child mortality that characterized the missions (Table 4). For the presidios, mean life expectancy at birth averaged 31.4 years, and the presidio populations grew through natural reproduction.

After 1813, the number of recruits brought into the four missions declined, and the unstable and inviable mission populations could not be replenished by new converts to replace those who died. Since birth rates failed to match death rates, the total number of Indians congregated in the missions declined. There were 4,097 Indians in the four Santa Barbara Channel missions in 1813, 3,734 in 1820, and 2,028 in 1832. The population declined by 51%, with the greatest drop occurring after 1820 (Table 5). The overall decline was greatest among women and children.

Indian populations throughout the Americas experienced similar rates of decline, but the Alta California missions present the worst-case scenario which argues against a strictly biological explanation for depopulation. Few epidemics spread through Alta California, a marked contrast to neighboring regions such as Baja California where periodic

Table 4
COMBINED DEMOGRAPHIC STATISTICS OF THE FOUR ALTA CALIFORNIA PRESIDIOS, 1792-1832[a]

Year	Population[b]	Crude Birth Rate	Crude Death Rate	GRR	NRR	Life Expectancy	DR
1792	788	48	32	3.07	1.54	33.5	0.70
1797	920	46	30	3.09	1.62	34.9	0.76
1802	1,038	43	39	2.92	1.18	26.4	0.74
1807	1,160	39	36	2.52	1.05	27.3	0.65
1812	1,306	54	44	3.28	1.24	24.7	0.64
1817	1,544	40	24	2.41	1.42	39.9	0.68
1822	1,753	40	28	2.47	1.29	34.9	0.72
1827	2,006	51	36	3.31	1.52	30.2	0.73
1832	2,360	53	36	3.51	1.62	30.6	0.77

[a]   Sources: San Diego, San Carlos, San Francisco, and Santa Barbara Mission Annual Reports, 1790-1832.
[b]   Estimated after the first quinquennium.

Table 5
POPULATION OF THE FOUR SANTA BARBARA CHANNEL MISSIONS, 1813-1832[a]

Year	San Buenaventura	Santa Barbara	La Purísima	Santa Inés
1813	1,169	1,269	1,010	607
1814	1,207	1,300	982	588
1815	1,186	1,240	1,019	636
1816	1,328	1,259	1,018	768
1817	1,277	1,226	958	720
1818	1,209	1,199	937	681
1819	1,172	1,159	888	647
1820	1,127	1,132	840	635
1821	1,092	1,039	808	604
1822	973	1,010	764	582
1823	935	962	722	564
1824	908	923	662	516
1825	865	885	564	500
1826	852	867	521	487
1827	833	847	471	477
1828	789	762	445	—
1829	765	737	406	428
1830	726	711	413	408
1831	703	674	404	388
1832	668	628	372	360

[a]   Sources: San Buenaventura, Santa Barbara, La Purísima, and Santa Inés Mission Annual Reports, 1813-1832.

epidemics were perhaps the most important factor contributing to the collapse of the Indian populations. Chronic diseases such as dysentery and syphilis were a major cause of demographic collapse in Alta California, and dehydration killed a large number of infants. However, as suggested above, the unhealthy and over-crowded living conditions aggravated the impact of chronic ailments, and were exacerbated by both the psychological impact of mistreatment in the missions and by cultural dislocation. In contrast, the populations of

the four military garrisons established in Alta California were viable, and experienced growth through natural reproduction. This suggests again that conditions unique to the missions and the program of planned cultural and social change were important factors in the destruction of the Indian populations.

The findings presented here do not challenge, but rather modify, Cook's interpretations of the causes of the demographic collapse of the California Indian populations (Cook 1976a, 1976b; Cook and Borah 1971-1979), and show that the critiques of elements of Cook's interpretation by scholars who support Serra's canonization are not sound. Cook correctly interpreted increased mortality and high rates of infant and child mortality as important factors in demographic collapse. Moreover, Cook's stress on both cultural and biological factors appears to have been correct. Finally, several of Cook's critics are simply wrong in their interpretation of mission demography. Gloria Ricci Lothrop (1989) for example, who, in part, follows archaeologist Clement Meighan (1987), concluded that life expectancy in the missions was around 40 years, and that mortality was not particularly high among women and children. Evidence from mission parish registers and censuses simply does not sustain Lothrop's interpretation of mission demography. Most children born in the missions did not live to adulthood, and by the early 1830s, when no new converts were brought into the missions, young children comprised an extremely small percentage of the total mission populations. Finally, despite Kelsey's warning, the mission parish registers and annual reports do serve to document the collapse of the Indian populations living in the missions, and the interpretations of Cook and other scholars based upon analyses of these sources cannot be so easily dismissed. Objective studies of the missions do not substantiate interpretations tainted by the emotionalism of the Serra canonization campaign, and its inherently ahistorical view of the Alta California missions.

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