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How Many Nephites?: The Book of Mormon at the Bar of Demography

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CHAPTER 10

HOW MANY NEPHITES? THE BOOK OF MORMON AT THE BAR OF DEMOGRAPHY

James E. Smith

A traditional line of argument against the historicity of the Book of Mormon is to find some supposedly serious flaw in the book's historical details that disqualifies it as a genuine ancient document. Recently, this type of criticism has come from the unlikely direction of historical demography. According to this criticism, the Book of Mormon reports "unrealistically large population sizes" for the Nephites and other groups, thus suggesting that "some of the details of events in the Book of Mormon are not literally historical"; furthermore, according to this criticism, the population problem in the text "challenges many assumptions Mormons have about the Book of Mormon, including its historicity, its geography, the ancestry of Native Americans, and [Joseph Smith's] method of translation."¹ In other words, the Book of Mormon stands before the bar of demography accused of

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errors in its demographic reporting and is nearly laughed out of court.

This demographic denial of the historicity of the Book of Mormon is based on fundamental misunderstandings about historical demography, combined with questionable methods of scriptural interpretation and numerically wrong calculations of expected population sizes. While the Book of Mormon hardly needs extended defense against poorly supported charges, there is an important lesson to be learned from this case: The historical content of the Book of Mormon should not be taken for granted. Like the Bible, the Book of Mormon is a rich repository of historical information that cannot be fully understood or appreciated if we restrict ourselves to unexamined assumptions about its historical content. If the Book of Mormon is indeed an authentic ancient historical record, it will bear scrutiny from any historical perspective, including historical demography.

The place to start a demographic investigation of the Book of Mormon is with the Nephites. The Nephites were the keepers of the original records, or in the case of the Jaredite record, the Nephites were the translators and abridgers. Mormon himself was a Nephite and also a literal descendant of the first Nephi. Since the Book of Mormon is everywhere written from the Nephite point of view, we expect it to report reliable historical information about the Nephites more than any other people. The purpose of this chapter is to see if this is the case with regard to Nephite population sizes.

Ancient Records and Demographic Facts

The Book of Mormon was written for religious purposes, so it is fortuitous if the text reports historical details like population sizes at all. In fact, the book does not present

any rigorous or systematic demographic information—not even a total population count is given. Of course, historical demographers have long recognized that for any period prior to the nineteenth century, they must “rely on the use of sources not collected with the demographer in mind.”² This is particularly true of ancient records where population figures are seldom reported, and if they are, they cannot be taken at face value without careful examination. Ancient writers did not adhere to the same goal of objectivity that motivates most modern historians, and the ancients certainly did not have access to population statistics meeting modern standards of accuracy and completeness.³

There is no better example of the challenge of interpreting ancient demographic data than in the book of Numbers in the Old Testament. Our English name for the book derives from the ancient Greek (*Septuagint*) and Latin translations, which call it “Numbers” because it contains two Mosaic censuses taken of the Israelites in the wilderness.⁴ The first (Numbers 1:20–47) counts about 600,000 men of military age. This implies a total Israelite male and female population of between two and three million people. It has been noted many times by biblical historians that this number is problematically large. It implies a huge population of Israelites involved in the exodus from Egypt a few decades earlier and a very large population moving through the desert. If there had been this many Israelites, they would have easily outstripped the surrounding nations in numbers and military strength. For these and other reasons, the large Israelite population reported in Numbers does not square with historical expectations, archaeological data, historical information from surrounding cultures, or some other scriptural passages about the Israelites at the time. It appears that the only reasonable conclusion is that either

the census count is an exaggeration or the text comes to us in a corrupted form.⁵

Ironically, this issue concerning population counts in Numbers does not challenge the ancient origin of the biblical text as much as it supports it. If there is any hallmark of ancient historical records, it is their strong tendency to present puzzling, unrealistic, and inconsistent population figures. For example, the two main sources for the population of Roman Egypt are Diodorus Siculus (late first century B.C.) and Josephus (late first century A.D.), who report 3 million and 7.5 million, respectively. The debate continues as to which ancient observer was closer to the truth.⁶ Concerning ancient historians' reports of army strength, an important source of demographic estimates for Greece and Rome, there are numerous examples of "how easily and to what a great extent false strengths become established in the historical accounts."⁷ For example, Herodotus reported 4.2 million men in Xerxes' army—an army that, with its troops and supply trains, would have formed a column two thousand miles long!⁸

What, then, is the serious student to do when looking for demographic facts in ancient records? In facing this difficult task for ancient Rome, historian Tim Parkin advises that "we cannot believe precisely everything an ancient author tells us about population sizes and trends." Parkin then goes on to warn that this is not a license for us to become "subjective and arbitrary" and to start "picking and choosing among the literary references to find one that 'sounds about right.'"⁹ Rather, the serious student should rely upon "both the critical use of the sources and on a certain degree of demographic sense, to decide what is plausible or improbable."¹⁰ This means that instead of trying to find precise statistics in ancient sources, we should develop an "awareness of the way populations work" in order to more effectively

interpret the partial, unreliable, and often contradictory population data that are inevitably found in these texts.¹¹ In particular, Parkin recommends that historians make more use of demographic models to make “conjectural calculations—or, better, plausible conjectures—based on what is demographically probable.”¹²

This approach to the demographic study of ancient texts is compatible with recent trends in the study of scriptural history. These trends are moving away from attempting to prove or disprove this or that individual historical fact reported in scripture and toward a focus on the broader historical context of the historical events reported in scripture. For the Bible, William Dever, a prominent archaeologist and critic of traditional biblical proof archaeology, argues that archaeological findings cannot “‘prove’ the Bible in any sense—either by demonstrating that the events . . . actually happened, much less by validating the theological inferences that are drawn from these events.”¹³ Therefore, rather than trying to find this or that artifact or site that proves specific scriptural passages, the biblical archaeologist-historian should be offering “a knowledge of the larger context in which the Bible emerged, both physical and cultural, without which it cannot be fully understood.”¹⁴ Such knowledge can illuminate “the background against which the Bible can be portrayed so as to give it a credibility—an immediate, vivid, flesh-and-blood reality—that it cannot possibly have when read solely as Scripture, or as a long-lost literature isolated from its origins.”¹⁵

An important example of this “flesh-and-blood reality” approach to the Book of Mormon is John Sorenson’s *An Ancient American Setting for the Book of Mormon*. In this book Sorenson breaks away from the tradition of attempting to prove the Book of Mormon from archaeological or other evidence. Instead, he proposes “contextual knowledge,” a

“realistic setting,” and a “plausible” model for Book of Mormon events within an ancient Mesoamerican setting, taking into account a broad picture of historical peoples, places, cultures, geography, and history in that region. Thus, Sorenson’s goal is to identify real historical places and times in which Book of Mormon events were likely to have occurred, realizing that this is not the same thing as “somehow ‘proving’ that those events did happen.”¹⁶

Traditional Interpretations

From Joseph Smith’s day to now, there have been historical interpretations of the Book of Mormon that have tried to situate its peoples in actual historical settings. Almost as soon as the plates were out of the ground, it was assumed that the hill in New York where Joseph Smith found Moroni’s buried record was the ancient Hill Cumorah of Mormon’s day.¹⁷ Believers applied the term *Lamanite* to American Indians generally, implying that the Israelite Lehi was the ancestor of all Native Americans.¹⁸ In addition, the Book of Mormon “land southward,” “land northward,” and “narrow neck of land” were interpreted to mean South America, North America, and the Isthmus of Darién (Panama), respectively, implying a hemispheric scope for Book of Mormon geography and history. And amidst popular nineteenth-century speculations and so little scientific knowledge about the origin and fate of former New World civilizations like the Mound Builders and the Maya, believers at one time or another identified Book of Mormon peoples with most, if not all, ancient American civilizations and archaeological artifacts.¹⁹

Throughout the nineteenth century the most influential view of Book of Mormon history was expressed by Orson Pratt. In an 1840 British missionary tract, he wrote matter-

of-factly that Lehi crossed the “Pacific Ocean and landed on the western coast of South America.”²⁰ The Nephites colonized the “northern parts of South America” and expanded into North America as well, while the Lamanites possessed the “middle and southern parts” of South America. After Jesus visited the Nephites, “the Nephites and Lamanites were all converted unto the Lord, both in South and North America.”²¹ By the fourth century, the Nephites were in North America and the Lamanites in South America, with wars between them at the Isthmus of Darién. These wars pushed the Nephites northward until they were finally exterminated at a great battle in what is now New York State. Some thirty years after he first published them, Pratt was still preaching these views in the Salt Lake Tabernacle, and they became incorporated into his footnotes for the 1879 LDS edition of the Book of Mormon.²² Although the historical footnotes were not an official Church interpretation of the book, they represented and reinforced what had become the prevalent hemispheric view of Book of Mormon history.

In the decade after the 1879 edition was published, there were lively discussions about Book of Mormon geography, but the Church did not offer any official interpretation.²³ However, in 1890 George Q. Cannon, then a counselor in the First Presidency, wrote in a Church periodical that the First Presidency would not issue an official statement on Book of Mormon geography since “the word of the Lord or the translation of other ancient records is required to clear up many points now so obscure.”²⁴ In preparing for the next edition of the Book of Mormon, a Church committee heard different views on Book of Mormon geography but apparently did not find any position so compelling as to warrant inclusion in the book.²⁵ When the new edition of the Book of Mormon was published in 1920, it omitted historical and geographical footnotes—a practice that has continued since.

Although never adopted as an official Church interpretation of Book of Mormon history, the hemispheric interpretation seems to remain the most commonly held view among the general readership of the book. One implication of this view is that all pre-Columbian inhabitants of the Americas, including all of the populations of the Olmec, Maya, Inca, Aztec, and all other North and South American native populations, must have arisen from one or more of the three immigrant groups identified in the Book of Mormon. However, it is doubtful whether most Book of Mormon readers give careful thought to all of the historical and archaeological implications of this view, since the central religious message of the book in no way depends upon this historical interpretation.

Changing Interpretations

In considering the hemispheric view of Book of Mormon history, B. H. Roberts noted how it implies “an empty America three thousand years B.C. . . . into which a colony [the Jaredites] may come.” After the Jaredite destruction, the “American continents [were] again without human inhabitants” so that “into these second time empty American continents—empty of human population—we want the evidence of the coming of two small colonies about 600 B.C., which shall be the ancestors of all native American races as we know them.” Recognizing the historical difficulties in this view, Roberts asked: “How shall we answer the questions that arise from these considerations of American archeology? Can we successfully overturn the evidences presented by archeologists for the great antiquity of man in America, and his continuous occupancy of it. . . . Can we successfully maintain the Book of Mormon’s comparatively recent advent of man in America?”²⁶

Not long after B. H. Roberts was writing these words (which remained unpublished until recently), others were publishing new interpretations that made allowance for “non–Book of Mormon” populations in the ancient Americas. By 1927 Janne Sjordahl wrote that “students of the Book of Mormon should be cautioned against the error of supposing that all the American Indians are the descendants of Lehi, Mulek, and their companions.”²⁷ Sjordahl believed that the Jaredite population may not have been completely wiped out, and also that it was “not improbable that America has received other immigrants from Asia and other parts of the globe.”²⁸ In 1938 a Church Department of Education study guide for the Book of Mormon told students that “the Book of Mormon deals only with the history and expansion of three small colonies which came to America, and it does not deny or disprove the possibility of other immigrations, which probably would be unknown to its writers.”²⁹ The study guide further noted that “all the Book of Mormon text requires” is a “Hebrew origin for at least a part of Indian ancestry.”³⁰

At mid-century Hugh Nibley was saying that other populations unknown to Book of Mormon peoples could have lived in the Americas. Thus, “once we have admitted that all pre-Columbian remains do not have to belong to Book of Mormon people . . . , the problem of the Book of Mormon archaeologist, when such appears, will be to find in America things that might have some bearing on the Book of Mormon, *not* to prove that anything and everything that turns up is certain evidence for that book.”³¹ In 1967 Nibley again argued that “the Book of Mormon offers no objections . . . to the arrival of whatever other bands may have occupied the hemisphere without its knowledge.”³² In 1980 Nibley continued teaching that it is a “simplistic reading of the book . . . [to] assume that the only people permitted in the

hemisphere before Columbus were either descendants of Lehi or of Jared and his brother.”³³

John Sorenson has summarized more than fifty published statements on Book of Mormon geography from the 1830s to the present.³⁴ He shows that until the early twentieth century, the traditional hemispheric interpretation dominated, but by the mid-twentieth century, most authors believed Book of Mormon history took place primarily within the more limited confines of Central America. Today almost all writers on Book of Mormon geography agree that Lehi’s landing place, the narrow neck of land, the lands northward and southward, and Mormon’s Hill Cumorah were situated somewhere in Central America. Recently Sorenson has proposed a fairly specific Mesoamerican setting that puts most Book of Mormon history in a geographic area reaching only a few hundred miles in each direction.³⁵

Once the action for the Book of Mormon is situated in an area that is more localized than the entire Western Hemisphere, we are compelled to ask, as Sorenson has, “When Lehi’s party arrived in the land, did they find others there?” Sorenson answers that it is “inescapable that there were substantial [non-Book of Mormon] populations in the ‘promised land’ throughout the period of the Nephite record, and probably in the Jaredite era also.”³⁶ Furthermore, he finds nothing in the Book of Mormon precluding Nephites and Lamanites from interacting with and assimilating other populations, perhaps from among surviving Jaredites or perhaps from other indigenous people. Consistent with this view, Sorenson believes that the term *Nephite* was primarily a sociopolitical designation that was not restricted to literal descendants of Lehi, that there could have been “lingering” Jaredite populations after the great Jaredite destruction, and that “the early Lamanites had to have included, or to have dominated, other people.”³⁷

What Is a Nephite?

Naturally, the question, What is a Nephite? is of fundamental importance in the study of Nephite population size. The first rule of any demographic study is to define the population being studied. Little but confusion results from discussions about populations where the populations are not defined. Although modern demographers use geographic boundaries, citizenship, residence, ethnicity, gender, age, and so on, to define populations, for populations in the past, particularly the distant past, there is no such statistical rigor, and we are left to guess about precisely what an ancient author meant when referring to a population such as the “Nephites.”

A comprehensive definition of *Nephite* for each time and place in which the term is used in the Book of Mormon would require more space than can be given here.³⁸ But it should be noted that the terms *Nephite* and *Lamanite* are the most common names of peoples in the book, being used hundreds of times throughout a thousand years of history. Perusal of the term *Nephite* in the text suggests a number of variant meanings, beginning with Jacob, who used the term to mean all “who are friendly to Nephi [the king of the Nephites]” (Jacob 1:13–14). Later, *Nephite* described a religious community including certain converted Lamanites (3 Nephi 2:14). Still later, *Nephite* referred to a specific smaller population emerging from a larger population in which all former “-ites” had apparently mixed together (4 Nephi 1:17, 36). The presence of such different definitions for the term *Nephite* in the text demonstrates that we cannot assume that throughout all times and places the Nephite population was only made up of literal descendants of the first Nephi or his founding group.

This kind of variation and perhaps ambiguity in the

definition of a population does not detract from the historicity of the text. Quite the contrary: Given the struggles of modern demographers to define modern ethnic and national population groups in meaningful ways, it would be suspiciously neat and ring historically untrue to have a single pat definition of *Nephite* in the Book of Mormon.

There is an interesting parallel case in biblical history. The terms *Israel* or *children of Israel* can be interpreted in a strictly genealogical sense to mean only literal descendants of Jacob, who was called "Israel." However, as true as this may have been for some of the Israelites, studies in biblical interpretation and biblical history, along with demographic considerations, amply demonstrate that a strictly genealogical definition is too narrow to cover all the people whom the Bible refers to as "Israel." Thus, the Israelites included literal descendants of Jacob along with other lineages and populations that were conquered or assimilated over time.³⁹ Similarly, it is reasonable to suppose that the Nephite population included literal descendants of the first Nephi, like Mormon, along with whomever else was assimilated into Nephite society over time.

Population Growth in the Past

If there is any overall theme about Nephite population in the Book of Mormon, it is that this population experienced significant growth followed by total collapse. At first glance the modern reader might suppose that rapid population growth in the Book of Mormon is an anachronism—a misplaced modern idea in a supposedly ancient text.⁴⁰ On the surface this supposition seems to be confirmed by simple textbook diagrams of world population growth that show a long, almost-flat line representing world population size for thousands of years, followed by rapidly increasing popula-

tion only in modern times. This type of schematic diagram might seem to suggest that whoever wrote the Book of Mormon “laid a demographic egg” by describing rapid population growth among the ancient Nephites.

But to interpret simple textbook diagrams of world population growth in this way is wrong. Such diagrams obscure actual population dynamics in the past where fluctuation and change were the rule rather than the exception. In reality, populations in the past sometimes grew rapidly, sometimes remained fairly stationary, and sometimes declined precipitously,⁴¹ and the pattern of population change was far from smooth or sluggish (see fig. 1).

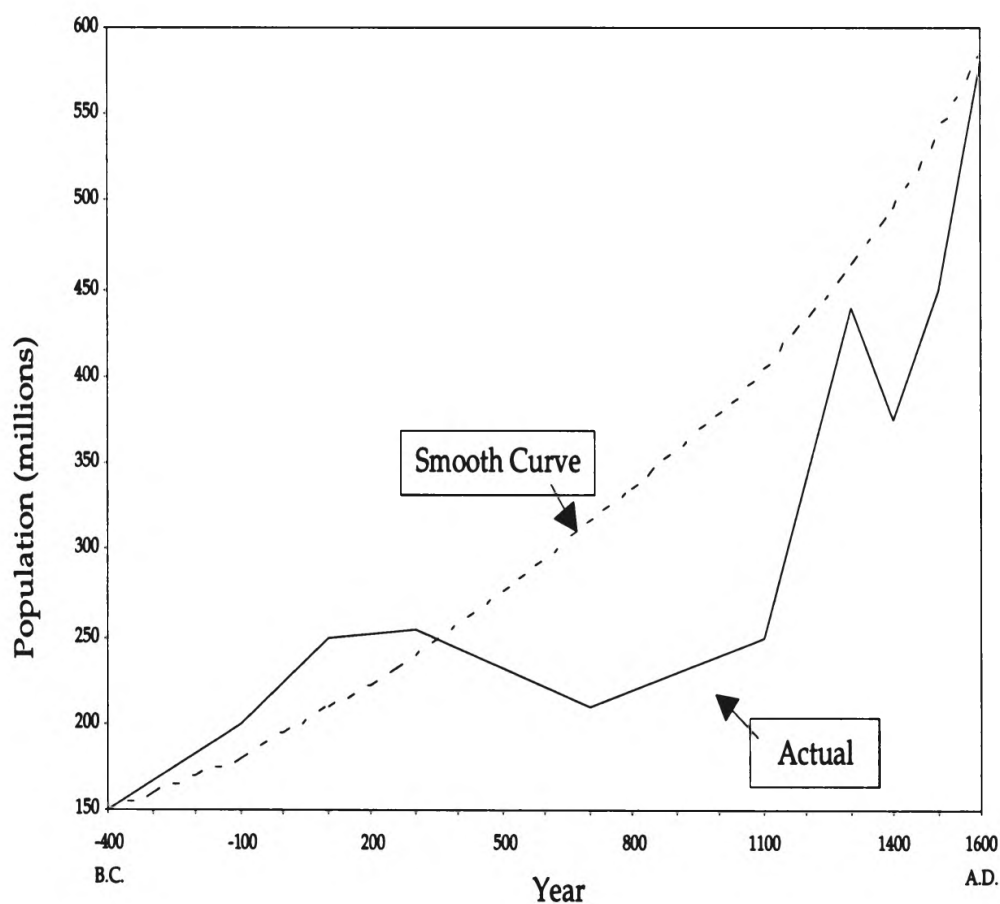


Figure 1. World Population, 400 B.C. to A.D. 1600, in M. Livi-Bacci, *A Concise History of World Population* (Oxford: Blackwell, 1992), 31.

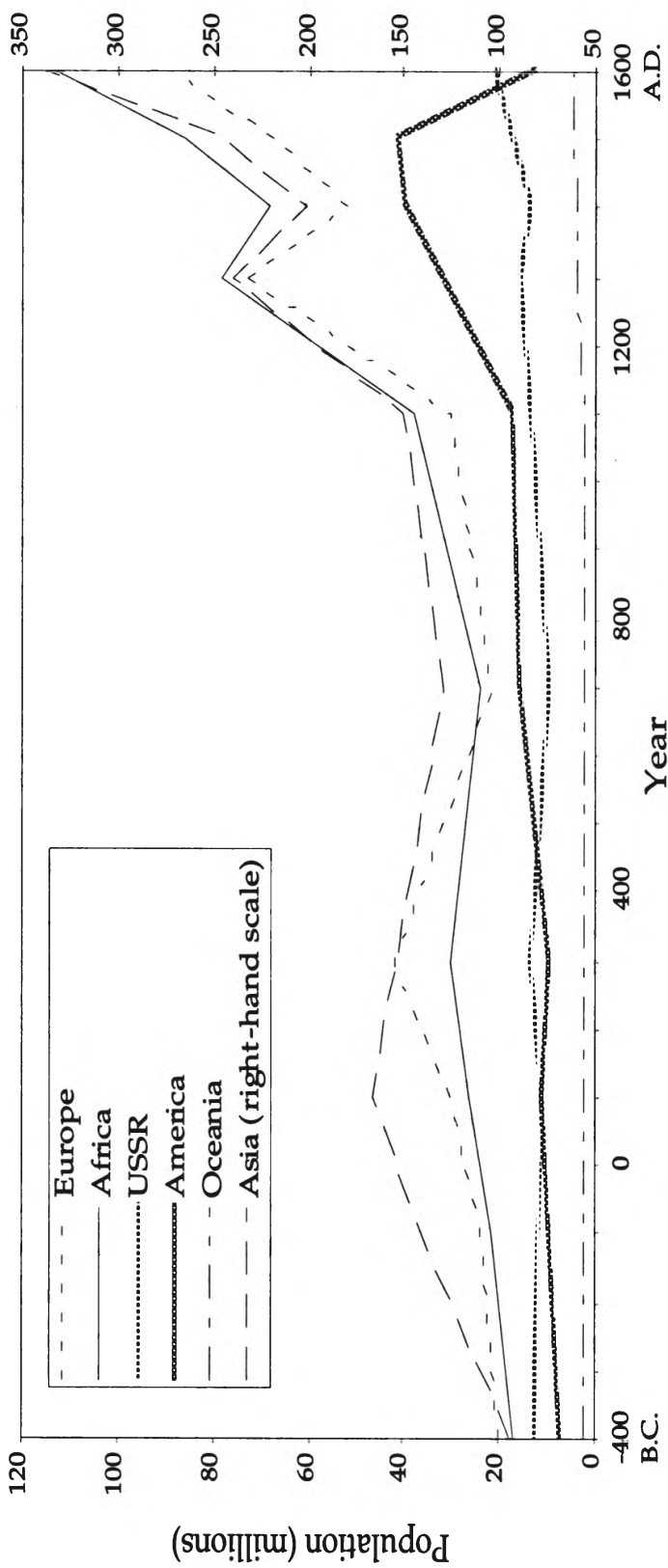


Figure 2. World Regional Populations, 400 B.C. to A.D. 1600, in M. Livi-Bacci, *A Concise History of World Population* (Oxford: Blackwell, 1992), 31.

Looking at population trends at a regional level also reveals uneven patterns of population growth and decline (see fig. 2). The European region shows an especially dramatic roller-coaster pattern of population growth change throughout its history. As historical demographer Massimo Livi-Bacci explains, “The tripling of population between the birth of Christ and the eighteenth century did not occur gradually, but was the result of successive waves of expansion and crisis: crisis during the late Roman Empire and the Justinian era as a result of barbarian invasions and disease; expansion in the twelfth and thirteenth centuries; crisis again as a result of recurring and devastating bouts of the plague

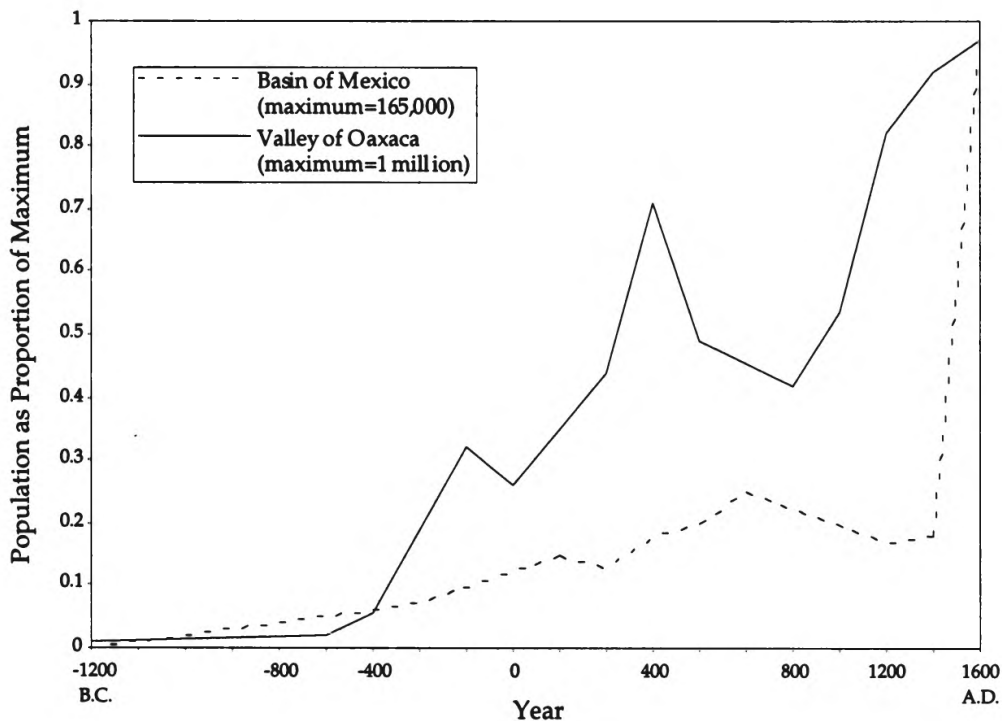


Figure 3. Highland Mexico Populations, redrawn from R. S. Santley, “Demographic Archaeology in the Maya Lowlands,” in T. S. Culbert and D. S. Rice, *Pre Columbian Population History in the Maya Lowlands* (Albuquerque: University of New Mexico Press, 1990), 341.

beginning in the mid-fifteenth to the end of the sixteenth century; and crisis or stagnation until the beginning of the eighteenth century."⁴²

Smaller regional and local populations also had jagged patterns of population growth, leveling, and decline. For example, Robert Santley refers to the sawtooth pattern of population growth and decline in the Valley of Oaxaca, and there is a similar but moderated pattern in the Basin of Mexico (see fig. 3).⁴³ Moving down to smaller and more localized areas or villages, we see that populations in the past also experienced ups and downs, sometimes rapidly increasing and sometimes rapidly decreasing in numbers. In these smaller populations, migration (in or out) often played a major part in population change. With these historical patterns of population change in mind, we should not be surprised to find indications of population change, including periods of rapid growth, in the Book of Mormon.

War and Population Growth

War is a major theme in the Book of Mormon. Since the Nephites and other populations were engaged in many wars, would this have prevented them from growing in numbers? It is true that wars, with their attendant famine and disease, were responsible for periods of population stagnation or decline in the past. But in order for certain populations to thrive over long periods of time, as Book of Mormon populations apparently did, while engaging in recurring wars, which they also did, these populations must have had the reproductive capacity to offset the human costs of war.

The ancient Greeks were no strangers to protracted wars, and they were also well aware of their population's tendency to grow. Plato realized that to maintain ideal city-state populations at 5,040 citizens would require fertility control

through infanticide, exposure, abortion, and also colonization to siphon off excess population.⁴⁴ For the Greeks these were not just utopian speculations. In the seventh century B.C. "in Argos and especially in Athens there appears to have been a population explosion."⁴⁵ In Corinth, Pheidon found it necessary to limit population growth between wars when it increased rapidly, and "the Cretans considered it a necessity to hold population in check by law."⁴⁶ In ancient Athens during peacetime, "population naturally increased rapidly [and] when population increased too rapidly the ordinary recourse was to colonization."⁴⁷ Sometimes the Athenian population grew despite colonization: "We are reasonably sure of a considerable increase in the citizen-population between 480 and 430 [B.C.], in spite of much emigration, and of some increase in the fourth century till 320."⁴⁸ In short, "the Greeks were perfectly familiar with the idea of growth of population" yet "nothing that we know . . . would suggest that the death-rate would be low by modern standards," thus leaving only "a comparatively high birth-rate" to explain the increase.⁴⁹

The actual course of population history involves complex patterns of growth and decline, all occurring against a background of mortality that was high by modern standards, but also with generally high fertility if the population was to survive, and sometimes with sufficiently high fertility to cause population growth. Unless we imagine that Book of Mormon populations were exceptional, they too must have experienced boom and bust cycles of population change, and they too had the capacity for growth. While wars may have contributed to their periods of slow growth, or even to periods of population decline, the successful continuation and expansion of these populations reported in the Book of Mormon suggests there would have been periods of population growth that compensated for

wartime losses. From the standpoint of historical demography, there is nothing unusual or unique in this.

Early Nephite Population Size

Three families were represented in Lehi's group as it fled Jerusalem. Lehi and Ishmael took their immediate families, and Zoram went as a servant who later married a daughter of Ishmael. Sometime between 588 and 570 B.C. Lehi died (2 Nephi 4:12), and his son Nephi fled with four other named individuals (Zoram, Sam, Jacob, Joseph), their families, his unnamed sisters, "and all those who would go with [him]" into the wilderness (2 Nephi 5:5–6). According to the Book of Mormon, "all those who would go with [him]" consisted of religious believers who accepted the word of God through Nephi (v. 6).

Calling their new homeland "Nephi" and calling themselves "the people of Nephi" (2 Nephi 5:8–9), Nephi's followers began to prosper materially, "to multiply in the land" (v. 13), and to prepare to defend themselves against "the people who were now called Lamanites" (v. 14). One reading of the latter phrase is that "Lamanites" is a new name for the family and followers of Laman, Nephi's brother-enemy from whom Nephi fled. Another possible reading is that some people not previously called "Lamanites" were now so called, presumably because of Laman's affiliation with them.

Although it is unclear exactly when Nephi departed for the wilderness with his followers, it was sometime before 569 B.C. (2 Nephi 5:5, 28–32). When creating his record on the small plates in this year, Nephi emphasizes that "we had already had wars and contentions with our brethren" (v. 34), presumably meaning the Lamanites. For another fifteen years Nephi ruled his people, finally appointing a king to

succeed him. After Nephi's death the term "Nephite" appears for the first time in the historical record.⁵⁰ Whatever previous meanings the term had, Jacob decides to define it this way: "Now the people which were not Lamanites were Nephites" (Jacob 1:13). He remarks somewhat ambiguously that "they" (Lamanites and Nephites?) "were called Nephites, Jacobites, Josephites, Zoramites, Lamanites, Lemuelites, and Ishmaelites" (v. 13), but Jacob's intent is to refer to these various peoples (tribes?) according to a simple we/them, friend/enemy scheme. He will "call them Lamanites that seek to destroy the people of Nephi" and "those who are friendly to [King?] Nephi [he] shall call Nephites, or the people of Nephi, according to the reigns of the kings" (Jacob 1:14). Jacob's mention of various "-ites" and his mention of a Nephite king, a temple, significant wealth, and the Nephite penchant for polygyny (Jacob 1:9–18), may suggest to the casual reader a fairly large population living in a fairly complex society. But there is a hint that this may not be the case when Jacob reports that the Nephites have only two "priests and teachers" (v. 18).

Some demographic considerations also raise questions about how large the Nephite population could have been in Jacob's day. Since the founding families who followed Nephi into the wilderness are at least partially enumerated in the text, we can roughly estimate how many descendants this founding group might have produced over time. For this purpose I have used the CAMSIM demographic simulation model to estimate the number of living descendants that a group of five founding families might produce at sixty years from the births of the founders.⁵¹ The simulation assumes a nearly zero overall population growth rate of .01 percent and allows for realistic levels of chance variation (stochasticity) in fertility and mortality among individuals and families. We choose sixty years from the births of the founders as the

target date for measuring the size of the population because Nephi probably was born sometime a decade or so before 600 B.C., making it sixty years from his birth to the time he handed over the plates to Jacob around 550 B.C.⁵² The other founders were probably born later and earlier than Nephi, so we are supposing that on average they were about the same age as Nephi when the founding group was formed.

From the results of the demographic simulation (see fig. 4), it is evident that there is a range of plausible population sizes for these early Nephites. It is most likely that there were between twenty-five and thirty-five descendants of the founding group alive near the time of Nephi's death. But

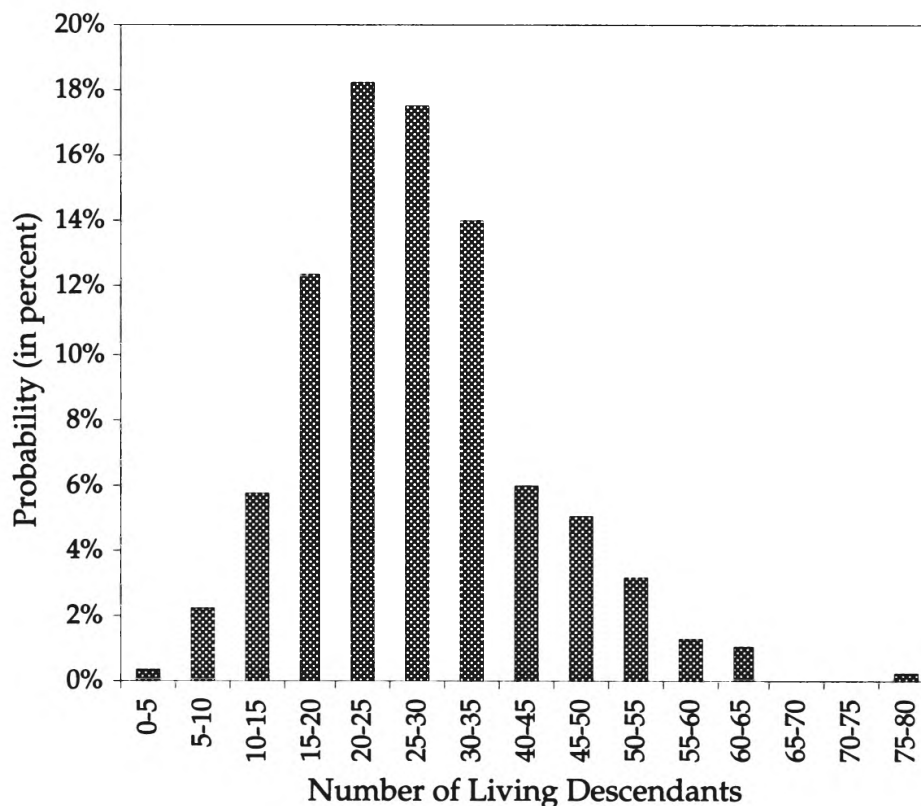


Figure 4. Simulated Descent Group Size: Five Founders, After 60 Years, Camsim computers simulation model.

there is a reasonably high chance (about a five percent chance) that the number of descendants could have been greater, say between fifty and sixty-five people. To get some perspective on this level of probability, consider that a five percent probability is about the same chance that in a family of four children, all are female—not an entirely commonplace event, but one that is not terribly surprising or improbable either.

With these demographic results, we see that the Nephite population at the time of Nephi's death and during Jacob's ministry would have been small, measured in dozens and not hundreds of people. The key demographic assumptions in this exercise are that the Nephites lived under conditions of generally zero population growth, that the founders were born around 610 B.C., and that there were about five founding families. Since these are conservative assumptions, they can be questioned and modified to yield larger estimates of Nephite population size; however, it would take very large and probably unrealistic changes in these assumptions to make much difference in the order of magnitude of the resulting population sizes. For, even if the simulations were low by a factor of five, we would only end up computing a few hundred Nephites, rather than a few dozen, in about 550 B.C. Our demographic exercise strongly suggests that the various "-ites" enumerated by Jacob were small familial and tribal groups rather than full-scale populations and societies. Perhaps Jacob saw it as splitting hairs to continually refer to such small groups individually, and perhaps that is one reason he wanted to talk of his people as one—the people of Nephi, or simply "Nephites."

By about 400 B.C., two hundred years after Lehi left Jerusalem, the recorder Jarom writes that the "people of Nephi" had "multiplied exceedingly, and spread upon the

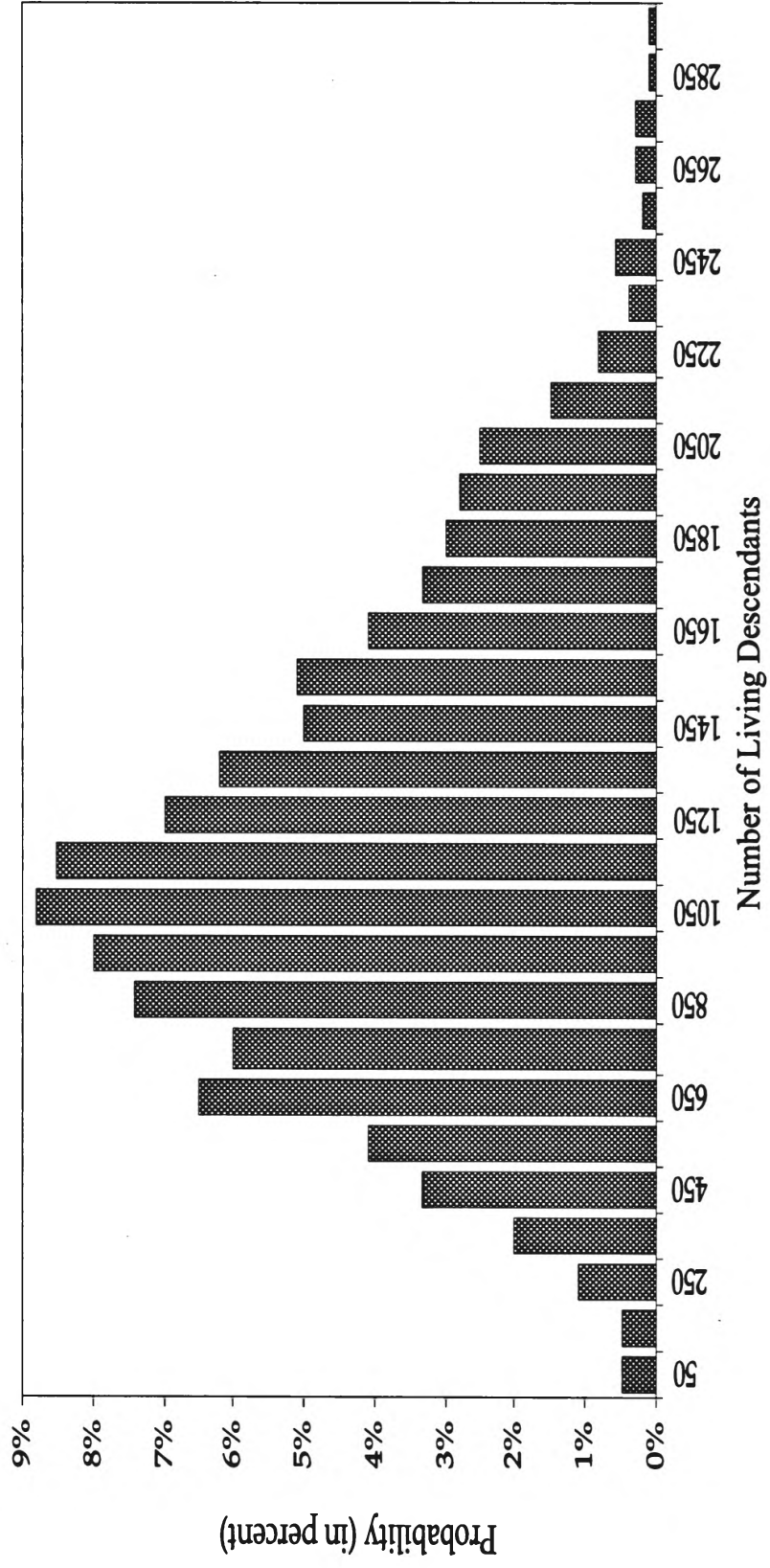


Figure 5. Simulated Descent Group Size: Five Founders, after 200 Years, CAMSIM Computer Simulated Model.

face of the land” (Jarom 1:5, 8). Along with Nephites, the Lamanites also were “scattered upon much of the face of the land,” but they were “exceedingly more numerous” than the Nephites (v. 6). How many descendants might our founding group have had at this two hundred–year mark? The simulation results (see fig. 5) suggest it is most likely that the Nephites reached a population size of a thousand or a little more by this time. However, there are substantial chances that the population could have been smaller or larger than this, and there is about a ten percent chance that there were some two thousand Nephites at this time.

As a point of comparison and as a check on our demographic model, it is useful to note some historical examples of small population expansion. In the case of preindustrial China, where mortality conditions were severe, the male population of the Hsiao-shan Hsu clan grew from about 50 to about 800 over the 170 years from 1680 to 1850 (and similarly grew for the female population).⁵³ This growth pattern is within the high-likelihood range of our simulations, as are similar growth patterns for other Chinese clans reported by the same researchers. In China, periodic occurrences of drought, famine, floods, crop failures, and war had visible effects on the growth of clan populations, eventually causing them to decline from their peak numbers. This raises the question whether New World populations like the Nephites may have experienced similarly severe mortality conditions. We certainly have no reason to believe that New World conditions were any worse than Old World conditions, suggesting that the demographic simulations used here are a good approximation to a possible worst-case (i.e., slow growth) scenario for early Nephite population growth.

Another point of comparison is the French Canadian pioneers of the St. Lawrence Valley in the seventeenth century. This population is remarkable for its genealogical

records that have been exploited by historical demographers. Most of today's six million French Canadians descend from about five thousand immigrant pioneers of the seventeenth century. A particularly interesting feature of these pioneers and their descendants is their very high fertility, and this, coupled with generally favorable mortality conditions, caused rapid population growth. As we would expect, even in this population some pioneers left few or no descendants, such as the explorer Samuel de Champlain, who left none. Others, however, were prolific, such as Jean Guyon and Mathurine Robin, who had over two thousand descendants a century or so after they arrived.⁵⁴ Our simulations of Nephite population growth assume lower fertility than the French Canadians and significantly higher mortality, indicating that the simulations do not exceed realistic levels of population growth obtained for other historical pioneer populations.

The Nephite population estimates put forward here—perhaps dozens of Nephites at about 550 B.C. and perhaps two thousand at 400 B.C.—are intended as reasonable conjectures that are demographically feasible without requiring special pleading or strained assumptions. Indeed, the estimates are based on conservative assumptions that could be changed to allow for higher Nephite fertility or more favorable mortality conditions, both of which are historical possibilities. Or there may have been more founding families than the five assumed here. But even if our conservative demographic assumptions were to be modified to allow for somewhat more rapid Nephite population growth, the same general conclusion would hold: The size of the Nephite population at its two-century mark was not likely to have exceeded a few thousand people.

The Nephite Population of Zarahemla

The second major historical epoch in the Book of Mormon begins in about 130 B.C. By this time there had been a major change in the situation of the Nephites. Sometime in the third or second century B.C., a Nephite named Mosiah fled from his people with “as many as would hearken unto the voice of the Lord” (Omni 1:12). His party discovered the land of Zarahemla, ruled by King Zarahemla, who was a descendant of the same Mulek who left Jerusalem after Lehi (Mosiah 25:2). The people of Zarahemla were “exceedingly numerous” (Omni 1:17), and they apparently willingly accepted Mosiah the Nephite as their next king. The Book of Mormon reports many fewer Nephites than people of Zarahemla and many fewer Nephites and people of Zarahemla combined than there were Lamanites (Mosiah 25:2–6). With their new Nephite king, the people of Zarahemla apparently became known as Nephites, and the kingship passed down Mosiah’s lineage to his son Benjamin and then to his grandson Mosiah.

It was upon the death of the latter Mosiah that a new form of government called Judges came into existence. Soon thereafter the Amlicite insurrection yields numerical data concerning battle casualties.⁵⁵ We are told that in a civil war battle in about 87 B.C. between the Amlicite and the loyalist armies, 12,572 Amlicites and 6,562 loyalists were killed. With these figures we can estimate population size using a stable population model. This model allows features of a population’s age structure to be calculated given an assumed mortality level and population growth rate. The calculations are complex, but their results are presented in published reference tables.⁵⁶ Using these tables we find that a population having a high level of mortality and a zero population growth rate would have about twenty-five percent of its numbers

in the ages between fifteen and thirty. Thus, if we know the number of fifteen- to thirty-year-olds in such a population, we can multiply by four to roughly estimate the total population size.

One guess would be that the battle casualties during the Amlicite insurrection were heavy, perhaps accounting for fifty percent of the fighting men. A much lower casualty rate, say ten percent, could be taken as the other conjectured extreme. Under the heavy-casualty assumption, the 19,000 combined Amlicite-Nephite casualties would imply an army size of 38,000. If all fifteen- to thirty-year-old males were enlisted in the army, the total number of Nephite and Amlicite males would be 38,000 times 4, or about 152,000, resulting in a total male and female population of about 300,000.⁵⁷ Assuming only a ten percent battle casualty rate, by the same method, we calculate a total Zarahemla population of about 1.5 million.

The assumptions underlying these estimates can be questioned from a number of angles, but probably the most uncertain assumptions concern casualty rates. Since fighting continued after this particular battle, it is unlikely that the decimation of either army could have been much over fifty percent, which is a high mortality rate for any army that survives to fight again. However, the decimation of the Amlicites may have been greater than that of the loyalists. Soon after the battle, the Amlicites joined up with outside Lamanite forces, perhaps indicating their desperate need for a strengthening alliance. Various combinations of assumptions about battle casualties in the ten to fifty percent range, including assumed differences in Nephite and Amlicite mortality, would yield total population estimates for Zarahemla somewhere between a low of 300,000 and a high of 1.5 million people.

With an estimated total Nephite population in 400 B.C. of between several hundred and 2,000 people, and with an estimated population in Zarahemla in 87 B.C. of between 300,000 and 1.5 million people, what are we to make of Nephite population history between these two years? First, we must remember that the definitions of *Nephite* at the earlier and later times were different. In the earlier time, *Nephites* may have been only descendants of the founding group, whereas in the later time, *Nephites* were those who went with Mosiah combined with the people of Zarahemla whom they joined and who were at least doubly numerous. Thus, an appropriate way to compute population increase is to compare, say, 2,000 Nephites in 400 B.C. with the 100,000 or so Nephites who descended from them and were part of the 300,000 people in Zarahemla. This figure of 100,000 Nephites in Zarahemla is a guess. All we have from the text is the statement made a few decades earlier that “there were not so many of the children of Nephi, or so many of those who were descendants of Nephi, as there were of the people of Zarahemla, who was a descendant of Mulek, and those who came with him into the wilderness” (Mosiah 25:2).

For the Nephites to expand from 2,000 to 100,000 people between 400 B.C. and 87 B.C. would imply an average annual growth rate of about 1.25 percent. With high mortality, say an average life expectancy of twenty-five years, this population growth rate would require Nephite fertility on the order of 7.2 live births on average for women completing their fertility (and proportionately less for those dying sooner). This is unusually high fertility, but not impossible, being above most so-called natural fertility levels that have been observed by historical demographers. Perhaps a more realistic scenario would place Nephite life expectancy at about thirty years, a level still realistic among high-mortality populations of the past. This mortality level combined with

fertility on the order of 6.0 average births would also result in a population growth rate of 1.25 percent.

While, in the short term, the high fertility needed for a 1.25 percent population growth rate would be very achievable, it would be difficult for a large population to maintain this fertility level continuously for three centuries. As an alternative scenario, the same population growth rate would result from somewhat lower fertility combined with more favorable mortality. But in any case, our analysis indicates that Nephite fertility and population growth rates must have been high, perhaps at levels comparable to other natural (i.e., high) fertility populations of the past, like the Hutterites, the French Canadians, or the Mormons.⁵⁸ The possibility of high Nephite fertility and a high population growth rate seems consistent with the text where Nephi comments that his people “began to prosper exceedingly, and to multiply in the land” (2 Nephi 5:13).

Caution is in order before this or any other demographic scenario is taken as a historical reality. The information in the Book of Mormon is sparse, and our interpretations of the text are tentative. In light of this, the term “plausible conjecture” best describes our results. We are in the company of other historical demographers of the ancient world when we produce such conjectures to set a demographic context for an ancient historical record. There is the possibility that these conjectures will prove wrong, but the possibility also exists that they will be sustained upon further study. Not surprisingly, there are unanswered questions suggested by these demographic explorations. For example, is it reasonable to think there were as many as 200,000 people of Zarahemla when the Nephites arrived? Who were the Lamanites who seem to have existed in such large numbers, and why did the Nephites perceive them as racially distinct? These topics in Book of Mormon population studies await

careful consideration. The historical investigation of ancient scripture promises no quick or easy answers.

Nephite Population Collapse

Mormon himself recounts the brief and tragic history of the Nephites in the fourth century. As a military leader who fights and strategizes to keep his people alive, Mormon not surprisingly records several details about the size of Nephite armies. But who were these Nephites whose armies Mormon led? He makes the point that he was a literal descendant of Nephi who was appointed to keep the records, indicating a strong sense of continuity with the original founding group of Nephites and with Nephi, son of Lehi, himself. But it would be far too simplistic, and unsupported by the text of the Book of Mormon, to assume that all those called “Nephites” in Mormon’s day were literal descendants of the ancient Nephi or his founding group. Indeed, Mormon’s explicit remark that he was a literal descendant of the first Nephi hints that not all Nephites were. Moreover, there were many more people of Zarahemla than Nephites when the groups joined in earlier times, and subsequent centuries saw Lamanite conversions and consolidation with the Nephites in large numbers. Ultimately, in the first and second centuries A.D., there was such a mixing of peoples that “-ites” were no longer distinguished, and it was from this population that Nephites, Lamanites, and other “-ites” emerged again in the early third century A.D. (4 Nephi 1:17, 20, 25, 35–38). In Mormon’s four-page summary of the three centuries of history from Christ down to his own day, there is only a brief and tantalizing reference to this potentially complex social, political, economic, and perhaps demographic mixing of populations.

From a demographic perspective, it is not hard to

imagine a significant population of Nephites in Mormon's day even if we make the narrow assumption that all of Mormon's Nephites were literal descendants of the population of Zarahemla. With a moderate population growth rate of one-tenth (0.1) percent per year, 300,000 people in Zarahemla in 87 B.C. could expand to a population of 450,000 in Mormon's day. Proceeding with this line of reasoning, the stable population model estimates that about twenty-eight percent of the Nephites would have been between fifteen and thirty years old. This implies about 63,000 males of fighting age (450,000 times 0.28 times 0.5 to get males only). Mormon reports armies of 40,000 (Mormon 2:9) and 30,000 (Mormon 2:25) men in the years 331 A.D. and 346 A.D., numbers easily attainable, according to our demographic speculations.

It may be, as Hugh Nibley has suggested, that Mormon's armies represented only a part of the Nephite population for which Mormon was the military commander.⁵⁹ This could explain why a much larger army of 230,000 is reported at the final battle of Cumorah later in the fourth century. If this large army included all of the fifteen- to thirty-year-old males in the Nephite population, the total population size would have been on the order of 1.6 million people. Since we have favored the 300,000 number for Zarahemla's population in 87 B.C., and natural increase alone probably would not allow for their numbers to grow to 1.6 million by Mormon's day,⁶⁰ where did all the additional people come from? One strong possibility is that over the centuries, other populations became assimilated under the rubric "Nephite," since various types of assimilation and mixing have already been noted. A more speculative possibility is that during Mormon's earlier military movements northward, he may have conquered or enlisted other populations under Nephite rule. And then when he moved northward for the final battle, his troops

could have been enrolled from these provincial Nephite populations. Although further textual analysis is needed, these and other historical hypotheses might account for a large Nephite population in Mormon's day but nevertheless, a population that, in relative terms, was small enough to be decimated by its foes.

It is also interesting to consider alternative interpretations involving smaller numbers of Nephites. A half century prior to Cumorah, Mormon attempted to gather the Nephite people together "in one body" for self-preservation (Mormon 2:7, 20–21), leading to an eventual treaty with the Lamanites that removed the Nephites from their southern lands (Mormon 2:28–29) and gathered them toward the North. Thus, when Mormon promised the Lamanite king he would "gather together [his] people unto the land of Cumorah, by a hill which was called Cumorah" (Mormon 6:2) some fifty years later, he was only continuing a strategy that had been exercised before. Mormon notes that the gathering to Cumorah included "all the remainder of our people" and that it "gathered in all our people in one" (Mormon 6:5–6) into "a land of many waters, rivers, and fountains" around the Hill Cumorah (v. 4). As the Lamanite armies advanced on these gathered Nephites, the wives and children were filled with "awful fear" and as the battle began "every [Nephite] soul was filled with terror" (Mormon 6:7–8). As the slaughter progressed, Mormon notes that his men, meaning presumably his cohort of "ten thousand," were slain (v. 10). Later he elaborates that "a few" escaped southward and "a few" deserted to the Lamanites. He declares that except for these groups, "all my people, save it were those twenty and four who were with me" were killed (v. 15).

This account of the gathering of all the Nephite people in the lands around Cumorah and Mormon's references to women and children, men, and people somewhat

interchangeably introduces some ambiguity into the record. Could it have been that in their last-ditch effort at survival, preparing as they were for a pre-arranged great battle, Mormon and the twenty-two other leaders divided the whole Nephite people, rather than just the armies, into contingents of ten thousand? If so, the victims of the slaughter at Cumorah were 230,000 men, women, and children, or in other words, all of the Nephite population except for a few deserters or escapees. If 230,000 was the size of the total Nephite population at this time, what would have been the size of the Nephite army at Cumorah? Our stable population model, which places twenty-eight percent of the population in the ages fifteen to thirty, estimates 32,200 men in these fighting ages (i.e., 230,000 times 0.28 to get fifteen- to thirty-year-olds, times 0.5 to get males). This is strikingly similar to the number of Nephite troops Mormon reported leading a half century earlier.

Any attempt to estimate fourth-century Nephite population size must take into account Mormon's reports of twenty-three contingents of "ten thousand" each at the last battle. But it may be that these numbers cannot be taken as literal counts of troops or people. Like the military unit called a "century" in the Roman army, which literally means "one hundred" but did not literally contain a hundred men, Mormon's "ten thousand" may have been the name of a unit of military organization that was large but did not necessarily contain ten thousand men. If so, the number 230,000 would be a high estimate for the numbers assembled at Cumorah.

Whether there were hundreds of thousands of Nephites in Mormon's day or a million or two, the text makes it clear that this population was militarily and culturally exterminated. Thus, what began a thousand years earlier as a small

band calling itself the “people of Nephi” ended up a thousand years later as a national population that collapsed. In between, there is no simple story of Nephite population history because the history of real populations is not simple. But a picture that emerges, if only dimly, from this exercise in Nephite demographic history is that of a population of Nephites relatively small in numbers and immersed in a sea of other peoples, much like the ancient Israelites in the Old World.

Conclusion

Had Joseph Smith contrived the Book of Mormon, he could not have made a worse decision than to write a long text containing a complicated historical story and many details. With his limited education and only a few months to write, he surely would have produced a text with many historical blunders and inconsistencies, not the least of which would be demographic laughs. On the other hand, if by some stroke of literary genius, Joseph Smith could have produced a book with studied perfection in its historical details, his text would have looked suspiciously like polished fiction reflecting his own culture and knowledge but without the subtle clues of an ancient historical record.

Neither of these situations arises when the Book of Mormon is brought before the bar of demography. Like other ancient texts, the Book of Mormon presents sparse and incomplete data regarding population sizes. Not all the questions are answered, and much remains to be done if we are to expand our understanding of the history reported in this remarkable book; nevertheless, some plausible demographic inferences can be made, and the picture of Nephite population history that emerges is a realistic one.

Notes

1. John C. Kunich, "Multiply Exceedingly: Book of Mormon Population Sizes," in *New Approaches to the Book of Mormon*, ed. Brent Lee Metcalfe (Salt Lake City: Signature Books, 1993), 231–67; see also essentially the same article under the same title in *Sunstone* 14 (June 1990): 27–44.

2. Roland Pressat with Christopher Wilson, *The Dictionary of Demography* (Oxford: Blackwell, 1985), 95.

3. Regarding objectivity in historical writing, see Peter Novick, *That Noble Dream: The 'Objectivity Question' and the American Historical Profession* (Cambridge: Cambridge University Press, 1988); concerning ancient historiography, see Arnaldo Momigliano, *The Classical Foundations of Modern Historiography* (Berkeley: University of California Press, 1990), especially pp. 5–28.

4. For a useful discussion of this and other censuses in the Bible, see A. Madansky, "On Biblical Censuses," *Journal of Official Statistics* 2/4 (1986): 561–9.

5. For a balanced analysis of this census count and its problems, along with evaluations of proposed solutions, see William S. LaSor, David A. Hubbard, and Frederic W. Bush, *Old Testament Survey: The Message, Form, and Background of the Old Testament* (Grand Rapids, Mich.: Eerdmans, 1982), 166–70. For an attempt to defend the literal truth of the counts in Numbers by a believer in Bible inerrancy, see Gleason L. Archer, *Encyclopedia of Bible Difficulties* (Grand Rapids, Mich.: Zondervan, 1982), 129–34; for possible numbers involved in the exodus with comments on the later census in Numbers, see W. Johnstone, *Exodus* (Sheffield, England: Sheffield Academic Press, 1990), 27–8.

6. Roger S. Bagnall and Bruce W. Frier, *The Demography of Roman Egypt* (Cambridge: Cambridge University Press, 1994), 53–4.

7. Hans Delbrück, *Warfare in Antiquity: History of the Art of War*, trans. Walter J. Renfroe Jr. (Westport, Conn.: Greenwood Press, 1975), 33.

8. *Ibid.*, 35.

9. Tim Parkin, *Demography and Roman Society* (Baltimore, Md.: Johns Hopkins University Press, 1992), 65.

10. Ibid., 135.

11. Ibid., 68.

12. Ibid., 90, 136.

13. William G. Dever, "Archaeology, Syro-Palestinian and Biblical," in *The Anchor Bible Dictionary*, ed. D. N. Freedman, et al. (New York: Doubleday, 1992), 1:366.

14. Ibid.

15. Ibid.

16. John L. Sorenson, *An Ancient American Setting for the Book of Mormon* (Salt Lake City: Deseret Book and FARMS, 1985), xvi, xx.

17. Joseph Smith apparently never explicitly identified the hill in New York where he obtained the plates as "Cumorah," but others in the early Church certainly did make this inference. See Rex C. Reeve Jr. and Richard O. Cowan, "The Hill Called Cumorah," in *Regional Studies in Latter-day Saint History, New York*, ed. Larry C. Porter, Milton V. Backman Jr., and Susan Easton Black (Provo, Utah: Brigham Young University Department of Church History and Doctrine, 1992), 73–4.

18. For example, see Doctrine and Covenants 3:18–20; 19:27; 28:8; 54:8; 57.

19. For example, Charles Thompson, *Evidences in Proof of the Book of Mormon* (Batavia, N.Y.: Charles Thompson, 1841); and Orson Pratt, *Interesting Account of Several Remarkable Visions and of the Late Discovery of Ancient American Records* (Edinburgh: Ballantyne and Hughes, 1840); for a good example of numerous loose popular speculations about ancient American peoples around the time the Book of Mormon was published, see Josiah Priest, *American Antiquities and Discoveries in the West . . .* (Albany, N.Y.: Hoffman and White, 1837), and also William H. Stiebing Jr., *Uncovering the Past: A History of Archaeology* (Buffalo, N.Y.: Prometheus Books, 1993), 167–97.

20. Pratt, *Interesting Account*, 17.

21. Ibid., 21.

22. *Journal of Discourses*, 14:7ff., 289ff., 323ff.

23. For a useful summary of this topic and its history, see John L. Sorenson, *The Geography of Book of Mormon Events: A Source Book* (Provo, Utah: FARMS, 1992).

24. Ibid., 385.

25. Ibid., 20.

26. B. H. Roberts, *Studies of the Book of Mormon*, ed. B. D. Madsen (Urbana: University of Illinois Press, 1985), 142; concerning Roberts's lifetime of witnessing to the truthfulness of the Book of Mormon, see Truman Madsen, "B. H. Roberts after Fifty Years," *Ensign* (December 1983): 11–9.

27. Janne M. Sjodahl, *An Introduction to the Study of the Book of Mormon* (Salt Lake City: Deseret News Press, 1927), 435.

28. Ibid., 436.

29. William E. Berrett, Milton R. Hunter, et al., *A Guide to the Study of the Book of Mormon* (Salt Lake City: Department of Education of the Church of Jesus Christ of Latter-day Saints, 1938), 48.

30. Ibid., 53.

31. Hugh W. Nibley, *Lehi in the Desert and the World of the Jaredites* (Salt Lake City: Bookcraft, 1952), 251 (emphasis in original). Nibley notes that this view was also published earlier in the *Church Improvement Era* magazine in April 1947.

32. *Since Cumorah* (Salt Lake City: Deseret Book and FARMS, 1988), 218–9; see also original edition (1967), 249.

33. Hugh W. Nibley, "The Book of Mormon and the Ruins: The Main Issues" (Provo, Utah: FARMS, 1980), 2.

34. Sorenson, *Source Book*, 32.

35. Sorenson, *An Ancient American Setting*, xix.

36. Sorenson, "When Lehi's Party Arrived, Did They Find Others in the Land?" *Journal of Book of Mormon Studies* 1/1 (1992): 1–34.

37. Ibid., 11, 19ff., 27.

38. A useful summary of Book of Mormon peoples by John Sorenson is found in *Encyclopedia of Mormonism*, s.v. "Book of Mormon peoples."

39. See, for example, the articles by James D. Martin, "Israel as a Tribal Society" and H. G. M. Williamson, "The Concept of Israel in Transition," in *The World of Ancient Israel*, ed. Ronald E. Clements (Cambridge: Cambridge University Press, 1989), 95–117, 141–61; also see John Bright, *A History of Israel* (London: SCM Press, 1964), 120–1; Joseph Blenkinsopp, *The Pentateuch: An Introduction to the*

First Five Books of the Bible (New York: Doubleday, 1992), 175–6; and for a brief review of recent theories and controversies, see Donald B. Redford, *Egypt, Canaan, and Israel in Ancient Times* (Princeton: Princeton University Press, 1992), 263–6.

40. Kunich, “Multiply Exceedingly,” bases much of his criticism on this erroneous idea.

41. For a useful recent summary of the literature on population growth in the past, see Mark N. Cohen, “Demographic Expansion: Causes and Consequences,” in *Companion Encyclopedia of Anthropology*, ed. Tim Ingold (London: Routledge, 1994), 265–96. Concerning world population growth in the distant past, Cohen writes: “It is clear that the overall trend of growth is compounded from periods of relative stability interrupted by episodes of very rapid growth and by periods of significant decline or population ‘crashes’” (p. 265).

42. See also Livi-Bacci, *A Concise History of World Population* (Oxford: Blackwell Publishers, 1992), 34; see also Jean-Noël Biraben, “Essai sur l’évolution du nombre des hommes,” *Population* 34 (1979): 16.

43. Robert J. Santley, “Demographic Archaeology in the Maya Lowlands,” in *Precolumbian Population History in the Maya Lowlands* (Albuquerque: University of New Mexico Press, 1990), 325–344. For an interesting diagram of ancient Egyptian population oscillations and growth, see Robert J. Wenke, *Patterns in Prehistory: Mankind’s First Three Million Years* (New York: Oxford University Press, 1980), 486.

44. Charles Emil Stangeland, *Pre-Malthusian Doctrines of Population: A Study in the History of Economic Theory* (New York: Columbia University Press, 1904), 24; Plato, *Laws* 5:741.

45. Moses I. Finley, *Early Greece: The Bronze and Archaic Ages* (New York: W. W. Norton, 1981), 96; see also Anthony Snodgrass, *Archaic Greece: The Age of Experiment* (London: J. M. Dent and Sons, 1980), 15–24.

46. Stangeland, *Pre-Malthusian Doctrines*, 20.

47. *Ibid.*, 21.

48. A. W. Gomme, *The Population of Athens in the Fifth and Fourth*

Centuries B.C. (Oxford: Basic Blackwell, 1933), 78. The literature on Greek colonization and its relationship to population growth is large. For a useful sampling, see F. De Angelis, "The Foundation of Selinous: Overpopulation or Opportunities?" in *The Archaeology of Greek Colonization: Essays Dedicated to Sir John Boardman*, ed. Gocha R. Tsetskhladze and Franco De Angelis (Oxford: Oxford University Committee for Archaeology, 1994): 87–110.

49. *Ibid.*, 79; for a comprehensive discussion of ancient Greek demography and population growth, see R. Sallares, *The Ecology of the Ancient Greek World* (London: Duckworth, 1991), especially pp. 50–107.

50. The term *Nephite* appears earlier in the Book of Mormon in Nephi's prophetic writings (2 Nephi 29:12–13) but not in the earlier historical narrative.

51. CAMSIM is a computer simulation model developed by the present author for deriving kin numbers from demographic rates. The CAMSIM model has been used by the author and others to address topics in historical and contemporary demography in Italy, China, England, and ancient Rome. The principle descriptions of the model are in James E. Smith, "The Computer Simulation of Kin Sets and Kin Counts," *Family Demography: Methods and Their Application*, ed. John Bongaarts, Thomas K. Burch, and Kenneth W. Wachter (Oxford: Clarendon, 1987), 249–66; and James E. Smith and Jim Oeppen, "Estimating Numbers of Kin in Historical England Using Demographic Microsimulation," in *Old and New Methods in Historical Demography*, ed. David S. Reher and Roger Schofield (Oxford: Clarendon, 1993), 280–317.

52. For a more detailed analysis of Lehi's family and the possible demographic composition of his group see John L. Sorenson, "The Composition of Lehi's Family," in *By Study and Also by Faith: Essays in Honor of Hugh W. Nibley*, ed. John M. Lundquist and Steven D. Ricks (Salt Lake City: Deseret Book and FARMS, 1990), 2:174–96.

53. John C. H. Fei and Ts'ui-jung Liu, "The Growth and Decline of Chinese Family Clans," *Journal of Interdisciplinary History*, 12/3 (1982): 375–408.

54. Livi-Bacci, *A Concise History*, 9; Hubert Charbonneau, et al., eds., *The First French Canadians: Pioneers in the St. Lawrence Valley* (Newark: University of Delaware Press, 1993), 140–53; Yves Landry, “Fertility in France and New France: The Distinguishing Characteristics of Canadian Behavior in the Seventeenth and Eighteenth Centuries,” *Social Science History* 17/4 (1993): 577–92.

55. These are the first such precise data occurring in the text. Later in the text (Mosiah 9:18–19) but referring to an earlier chronological date (about 187 B.C.), there is a report of battle casualties in Zeniff’s encounter with the Lamanites.

56. Ansley J. Coale and Paul Demeny, *Regional Model Life Tables and Stable Populations* (New York: Academic Press, 1983). All model life table and stable population figures cited in this article are from the West series.

57. Of course, not all males of the relevant ages would be enlisted in the military, if for no other reason than some must have been infirm or disabled. For the purposes of the rough estimates being produced here, I have not taken into account less than full recruitment.

58. Concerning relevant data on levels and patterns of natural (high) fertility, see H. Leridon, *Human Fertility: The Basic Components* (Chicago: University of Chicago Press), 106–10; Mark Nathen Cohen, *Health and the Rise of Civilization* (New Haven: Yale University Press, 1989), 87–104; John E. Knodel, *Demographic Behavior in the Past* (Cambridge: Cambridge University Press, 1988), 35–69; and Chris Wilson, Jim Oeppen, and Mike Pardoe, “What is Natural Fertility? The Modeling of a Concept,” *Population Index* 54/1 (1988): 4–20.

59. Hugh W. Nibley, *An Approach to the Book of Mormon*, 3rd ed. (Salt Lake City: Deseret Book and FARMS, 1988), 427.

60. This would require a long-term annual growth rate of 0.4 percent, which is somewhat high for a historical population over many centuries, but not impossible.