The Dating of La Quemada and Theory of Its Development

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Abstract:

La Quemada is a site that has drawn much attention to itself due to the unique location of the site on the northern frontier of the Mesoamerican culture area. This has caused many archaeologists to produce many different theories regarding its development, chronology, and purpose. The following paper briefly discusses the past theories of the site that were drawn from sampled radiocarbon dates taken in the 1950's and 1960's, and then goes into more recent dating conducted by Trombold and Nelson. This later work shows that the site developed during the Epiclassic period (A.D. 500-900), hundreds of years before previously thought. One theory discussed suggests the idea that when a core of a culture disintegrates, such as Teotihuacán, that the outlying cultures, like La Quemada, experience a florescence. To lend support to this theory the paper indicates that the dates of La Quemada coincide with the time period when Teotihuacán is in decline, and that La Quemada was in florescence and then subsequently declined before the development of the Toltec and the Chaco Canyon cultures.

Introduction

La Quemada is an archaeological site located in the Malpaso Valley of Zacatecas, found in the north-central part of Mexico. Radiocarbon dates for the site from the 1950's and 1960's come from an archaeologist by the name of Pedro Armillas, and recently new radiocarbon dates have been established from samples taken by Nelson, Trombold, the Gobierno del Estado de Zacatecas, and the Instituto Nacional de Antropologia e Historia (Nelson 1997:87-88). What this paper discusses is the differences between Armillas' samples and those recovered more recently, and what effect these new dates have on the theories of when and why the site of La Quemada came into existence. The question examined in this paper concerns whether the disintegration caused peripheral cultures, such as that represented at La Quemada, to experience a florescence.

By examining and correcting for the inconsistencies and errors for the past theories concerning La Quemada, archaeologists are able to seriously develop ideas on why La Quemada appears in the archaeological record. Also, with this research archaeologists begin to understand the societies during pre-Columbian times, especially societies that have been overshadowed by the core of Mesoamerica. Furthermore, archaeologists can also obtain a better understanding of the social patterns and order of these understudied people from this area and how they developed. If the site is not a Toltec outpost, like many used to believe, then the creation of the hierarchy in the site and outlying sites comes from elsewhere (Nelson 1995, 1997; Trombold 1990).

Figure 1: Map of Northern Mexico: After Nelson 1997

Methods

To find an answer to the question of this paper, I gathered a collaboration of materials on La Quemada. Most of them were articles from archeological journals, although a few of the sources were from published books. Then I gathered books on the other sites in the region that may have been contemporaneous and had a connection to La Quemada. These books were a mixture of broad overviews of regions, Mesoamerica for example, or books on specific archaeological work on certain sites, such as Teotihuacán. The last academic books that I gathered were of another peripheral site that may have experienced similar occurrences as La Quemada, the South American site of Chavín de Huántar.

After obtaining all of my research materials I began researching the defined timeline of the La Quemada site. With this timeline I continued to find the dates of occupation for the possible contemporaneous sites. With these timelines I could see whether the sites and La Quemada coexisted. I also researched the types of artifacts that have been excavated at La Quemada to see if any influence or trade from the surrounding sites could be seen in the archaeological record.

The last area of research involved examining a cross-cultural example of florescence in the wake of the decline of a core culture - Chavín de Huántar. There were characteristics that are similar, yet different enough to show that this type of cultural phenomenon occurs elsewhere in the world.

With all of this information together, I was able to conclude at what time La Quemada existed, whether it coexisted with other sites, whether it was an outpost for the Toltec culture, whether it was part of a trading route for turquoise between Chaco

Canyon cultures and the Toltec, and whether it is possible that the reason the site was founded and existed was because of the cultural collapse of the core culture.

Background

Mesoamerica and La Quemada

Agricultural peoples have been documented in the area of La Quemada since A.D. 200, however, human remains have been found that date back to 9.500 B.C. (Nelson 1997:85). The period system used by archaeologists for Mesoamerica goes as follows: the Classic period A.D. 150-600; the Epiclassic period A.D. 600-900; the Postclassic is A.D. 900-1519, and the Postclassic is usually separated into Early Postclassic (A.D. 900-1100) and Late Postclassic (A.D.1100-1400) (Nelson 1997:88).

The Mesoamerican culture area contains many separate groups of people, and through time they tend to share many cultural qualities. Mesoamerica encompasses the various groups of the Valley of Mexico as well as the Maya groups of Mexico, Belize, Guatemala, El Salvador, and Honduras. To the north of Mesoamerica there are the vast deserts of northern Mexico and the southwest of the United States that were inhabited mostly by nomadic hunters and gatherers (Kelly 1982:25). To the south there were chiefdoms of Central America that were not related to the Maya (Coe 1994:11).

During the Classical Period, the people of Mesoamerica were connected to one another in many ways, but one of the major similarities was their subsistence pattern. They were agriculturalists who lived off of a balance of maize, beans, squash, and chile peppers. In addition to this, they also shared a ritual game, called the ball game, and many of the sites in Mesoamerica contain the ball court necessary for playing this game. All the groups in Mesoamerica had very complex religious systems, and many of them

were similar to one another and often had the same gods, but with different names. Also, these religions believed in sacrificing humans to their gods. Many advanced skills were shared by the more developed groups in this area of the world, such as astronomy, a calendar system based on 260 days, and a writing system using hieroglyphs (Coe 1994:11-12).

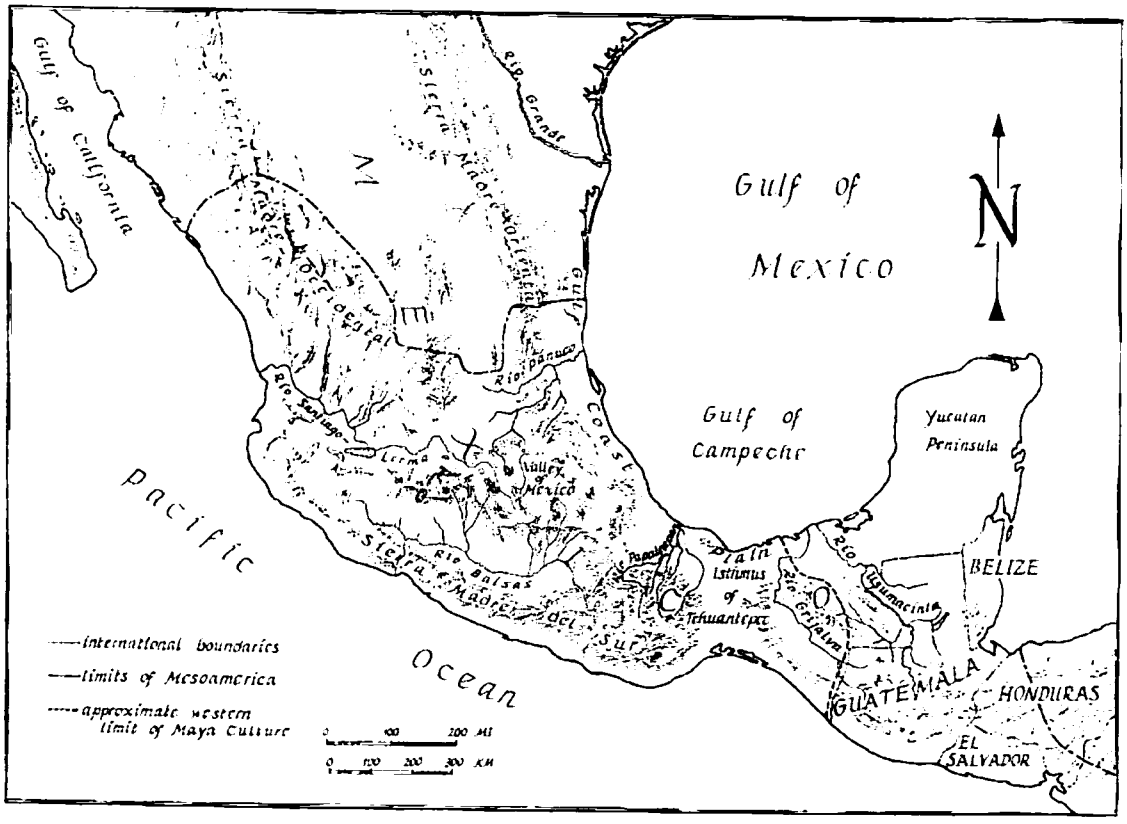

Figure 2: Map of Mesoamerica: After Coe 1994

There are many different languages spoken throughout Mesoamerica. There have been fourteen different language groups identified that occurred in pre-Columbian times, and each of these groups had different dialects (Coe 1994:16). Although found in the northern area of Mesoamerica, La Quemada shows no signs of having a calendar or writing system. However, it has obvious connections to other areas due to the presence

of ball courts, similar ceramic artwork, and evidence of religious sacrifices; all of which are traits of the Mesoamerica heartland (Nelson 1997:85).

The Chalchihuites culture is the name designated to the people who lived at La Quemada. This culture takes its name from a site in northwestern Zacatecas. La Quemada is the most southern extremity of this culture, and Zape, Durango, (a modern state of Mexico) is the most northern limit of the Chalchihuites culture. Most of the Chalchihuites sites are located on sloping hills, and exhibit terracing, rectangular structures, and ornaments of stone, bone, shell, and copper (Howard and Lister 1955:122). Many of these cultural remains also are found within the Mesoamerican core, so it is safe to assume that the Chalchihuites culture was part of the Mesoamerican culture, and it was in fact the northern most example of it (Howard and Lister 1955:127). However, aspects of the paper by Howard and Lister (1955) need to be taken into consideration for reasons that will be discussed later in the paper. The first known description of the site comes from Fray Antonio Tello in A.D. 1650. Then much later in 1866 a man by the name of Tarayre mapped La Quemada. In 1903, Batres went to the site and also wrote a description of it for the government of Mexico. It is an interesting account, but filled with allegories to the Bible. However, the descriptions are very detailed and worth reading (Hedrick and Kelly 1971:1).

The site of La Quemada is a heavily fortified ceremonial center, and it is one of the largest in its area (Trombold 1990:306). It contains artificial terraces, platforms, stairways, causeways, ball courts, temples, residential areas, sunken patios, and middens (Nelson 1997:85). Also, there was a palisade wall that circled the core center of the site (Nelson 1995:605). The Malpaso Valley contains many settlement sites that are smaller

in comparison to La Quemada, and they have roadways that connect them to La Quemada (Nelson 1997:85).

The site itself can be divided into four parts: the monumental core, the flanking areas, the patio complexes, and the middens (Nelson 1997:90). The monumental core contains the large structures of the site, such as the Hall of Columns, the Ball Court, and the Votive Pyramid, all enclosed within cliffs and man-made walls. The Hall of Columns is what is left of a structure that was held up by columns. The general configuration itself is called a colonnaded hall by archaeologists, and it is seen in other Mesoamerican sites, such as Tollán. The flanking areas are also man-made constructions, usually terraces, which include residential areas and public areas. Residential areas are designated in the literature as patio complexes, and are described as being houses and temples surrounding a sunken patio which occupies an entire terrace. Lastly, there are middens where refuse was thrown, such as ash, broken pottery, and food waste. Middens 6 and 11 seem to have been used more frequently. To date, 56 terraces and 25 middens have been located (Nelson 1997:90).

Archaeologists who have worked on La Quemada have come to the conclusion that it was a chiefdom level society. Archaeologists often describe four levels of society: the band, the tribe, the chiefdom, and the state. An empire is an imperialistic outgrowth of some highly complex states, such as Rome, the Inca, or a more recent example, the British Empire. The band level is the lowest structured and the state is the highest structured. This is not to say that one is inferior to another: it is just a way of defining social systems. Complex societies are considered chiefdom or state level. "Social systems are considered complex if they are comparatively large demographically and

spatially, encompass multiple settlements in an integrated political structure, and exhibit horizontal and vertical social differentiation. Other properties associated with complexity are hereditary ranking, production of surplus and its appropriation by an elite, craft specialization, and long-distance exchange" (Nelson 1995:598).

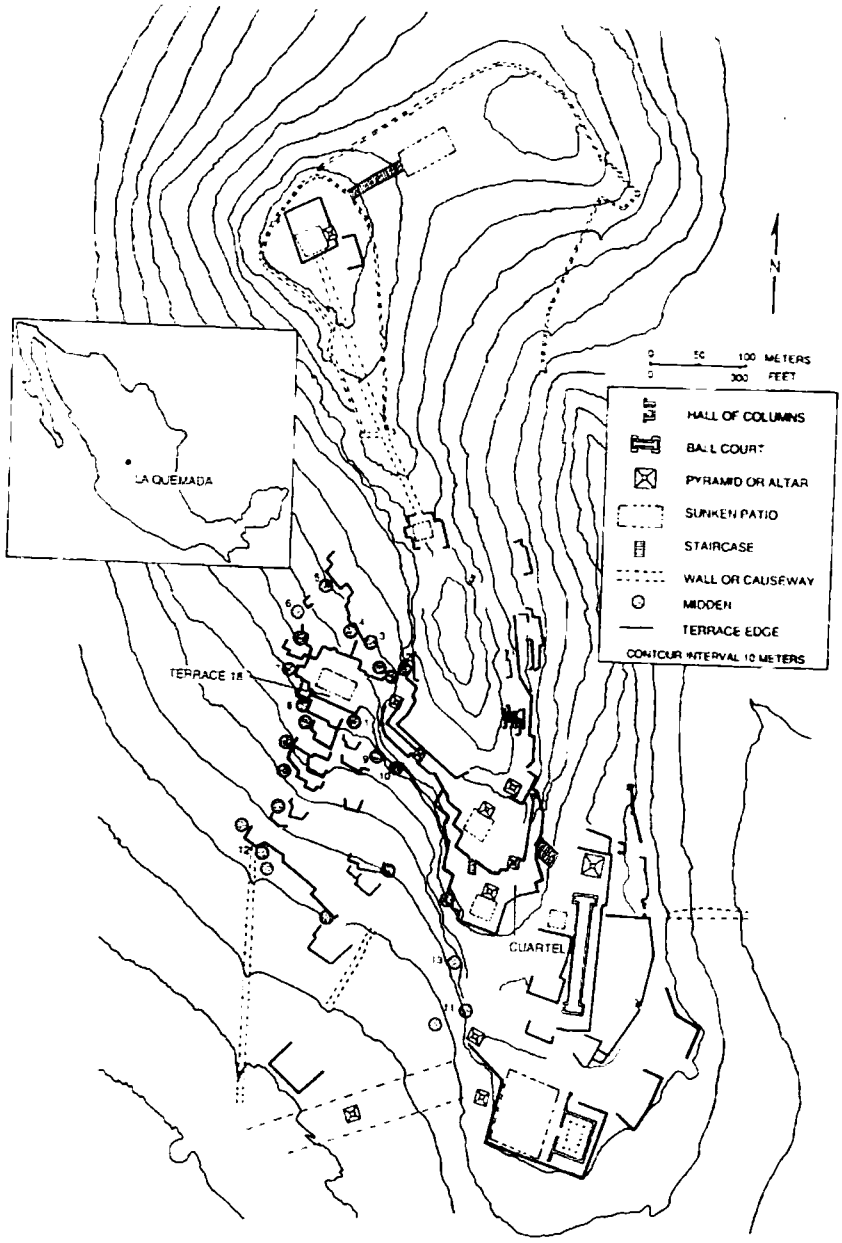

Figure 3: Map of La Quemada: After Nelson 1997:

There is a copious amount of evidence for La Quemada being a complex society, with, the population of La Quemada's size, denoting that of a chiefdom. As previously stated, La Quemada is associated with satellite sites connected by a road system. To date, there have been 220 sites that appear to be linked to La Quemada via this road system. The site itself probably had a population of 440 people. This is based on the calculation of 25 people per terrace on the site. With a fifty percent overstatement and understatement, the range of the site could be anywhere from 220 to 880 residents. Many of these satellite sites have not been worked on as of yet, but the few that have are what has been used for the calculations. The outlying sites are much smaller in comparison to La Quemada, so with this taken into account the calculation is 12.5 people per terrace. These outlying sites could have held a population of 2,750, and again when considering a fifty percent overstatement and understatement the population could have been 1,032 to 4,126 residents. This puts the estimation of total population between 1,250 and 5,000 residents (Nelson 1995:604).

The road system of La Quemada is also a sign of complexity. All together, there are about 109 miles of road that connect the smaller sites to La Quemada, as well as roads that lead to geological formations that can be interpreted as lookout points for military organization. It is interesting that La Quemada is directly connected to the smaller and probably lesser status groups, because it shows that the elite at the site of La Quemada wanted to be in direct control over the population. This shows that the population of La Quemada and the surrounding sites had a hierarchy, which is an element of a complex social system, meaning that not all individuals have the same social status (Nelson 1995:611).

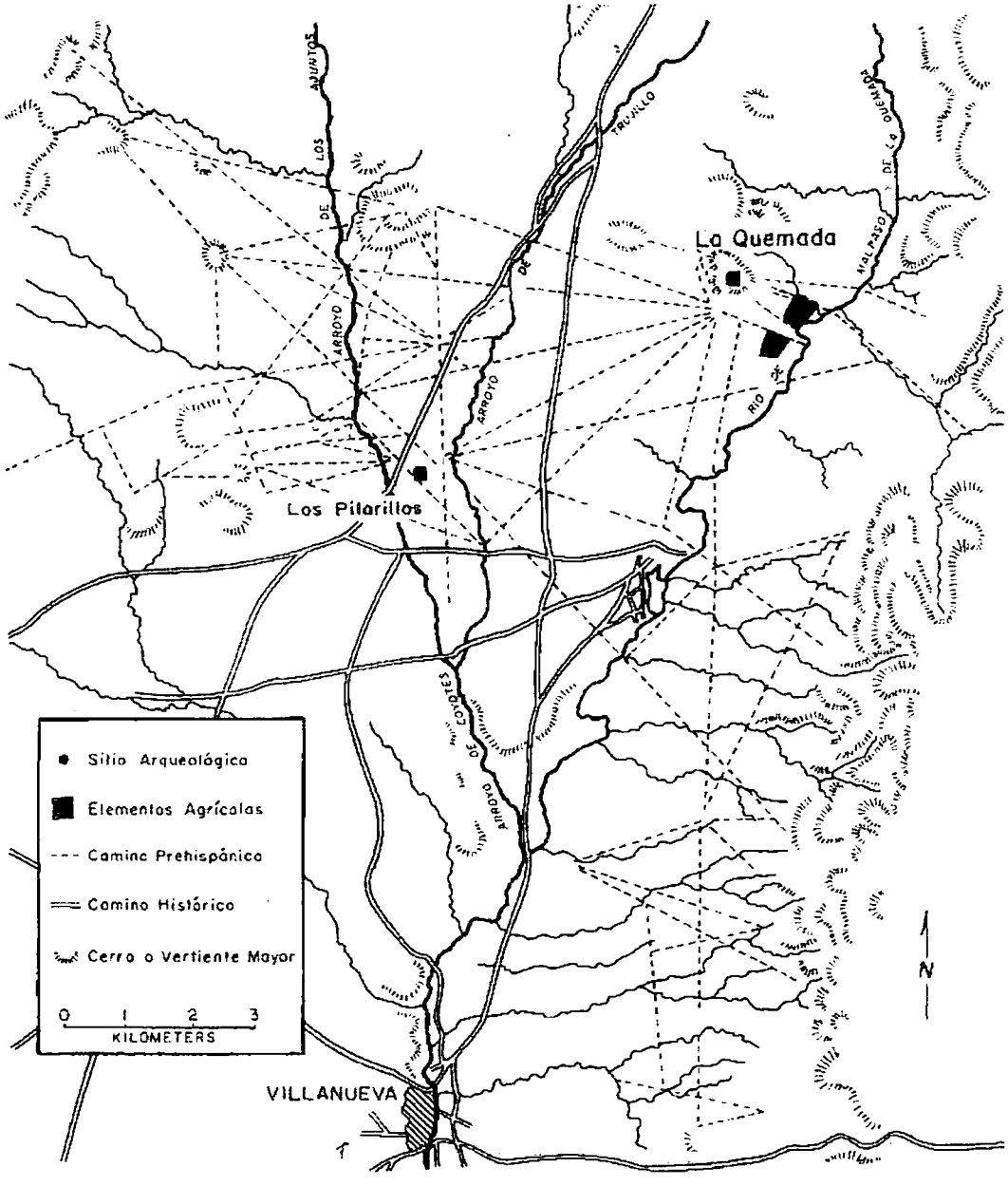

Figure 4: Map of La Quemada's Road System: After Nelson 1995

The last indicator of a complex society existing at La Quemada is the burial practices of the site and the satellite sites. As of yet, there is no cemetery that has been discovered. In the outlying sites the burials are found in the floors of the households in flexed or extended positions. These are assumed to be the residents of the small sites. Different mortuary remains have been found at La Quemada. The remains that have been found tend to be adult males, extensively processed, and deposited in mass groupings. Some appear to have been hung from roofs, on walls, and on racks that were typical in later cultures such as the Toltec and Aztec. Archaeologists believe that due to the lack of respect to the remains these racks displayed mutilated enemies, and it shows that the people of La Quemada were trying to enforce a type of social control out of fear. This control of the surrounding population is just another example of the social complexity of the site of La Quemada (Nelson 1995:612-613).

Possible Contemporaneous Sites

The term "Mesoamerican core" defines a specific culture of Mesoamerica that is the unifying basis of the other cultures throughout the Mesoamerican region. This core changes throughout time due to the rise and fall of cultures. In Mesoamerica most archaeologists agree that there were four core cultures throughout pre-Columbian history. The first core was the Olmec, the second was Teotihuacán, the third was the Toltec, and the fourth and last was the Aztec (Coe 1994:131). These core cultures spread their influence through trade, political means, and militaristic expeditions. Similar iconography, religious practices, and structural designs that spread throughout Mesoamerica during these periods are testament to this. The two Mesoamerican cores

within this paper are Teotihuacán and the Tula Toltec, both of which will be dated in the following pages.

Teotihuacán was one of the few planned cities in the New World. It is located in the Teotihuacán Valley, which is part of the Valley of Mexico. The site itself covers eight square miles, and contains many temples and palaces. One of the most interesting characteristics of the city is the residential compounds. These compounds seem to have been occupied by kin groups or working specialist groups that came from other cities and cultures (Coe 1994:91-96). It is believed that the population of the city peaked at about 85,000 people, although there are archaeologists who would argue that the population was much higher, possibly 200,000. Teotihuacán's influence was felt far and wide. There are Maya sites that show influence, such as Tikal, Yaxha, Altun, Ha, and Becan, while a site called Kaminaljuyu has evidence that it was actually ruled by Teotihuacanos. Sites in central Mexico that show evidence of Teotihuacán influence include Cholula, Monte Alban, and El Tajin (Kelly 1982:58).

The capital city of the Tula Toltec was Tollán, located 50 miles northwest of Mexico City. During the major occupation there was a population of 30,000-40,000 people, and the site itself covered 5.4 square miles. Instead of compounds such as Teotihuacán, Tollán had complexes of five houses that surrounded a courtyard with a shrine in the middle. These complexes were separated from other complexes by walls (Coe 1994:136-140). At their apex the Toltec had come to dominate the other cultures of northern, western, and central Mexico, the Yucatan Peninsula, and as well as the groups of the Guatemalan highlands, and the central and northern Gulf Coast area.

There are also archaeologists who believe they had influence all the way into the southwest of the United States (Coe 1994:132; Sabloff 1997:113 and 116).

The Chaco Canyon culture, although not part of Mesoamerica, has been included in the theories of why La Quemada developed. This is due to the theory that La Quemada was part of a turquoise trade route between Tollán and the dominant groups in Chaco Canyon, located in northwestern New Mexico. Since Chaco is not part of Mesoamerica, they did not have the same cultural traits. There was a different religious system, there was no 260-day calendar, and the ball game was not part of their culture. However, the area did use maize, beans, and squash in their agriculture. Before the Chaco culture, there were other pueblo peoples in the Southwest, but none of these groups ever lasted more than a generation. The village were built, lived in by a family group, and then relocated somewhere else soon afterwards. The Chaco culture was different than its predecessors. It was the first to have long lasting structures that were occupied for generations (Lekson 1999:20).

During its greatest occupation, there were a dozen Great Houses. These Great Houses were designed in advance by a few people, built by mass labor, and they were deliberately built to instill awe in the viewer. The buildings were multistoried, built around an open plaza, and its primary use was probably not residential. Many of the rooms were more than likely used as storage and for administrative purposes. Elite people lived in these Great Houses, and each only had a population of a few hundred. The elites probably did not build these Great Houses, but the people they controlled did. These lower class people also made most of the ceramics that the elite people used. These lower class people came from what are called unit pueblos. The unit pueblos were

irregular in shape, with about five stone masonry rooms, a kiva, and were no where as rich in artifacts as the Great Houses were (Lekson 1999:20-21).

Dating System

A main aspect of the following paper is the radiocarbon dates of the La Quemada site. Radiocarbon dating was developed in the 1940's by Professor Willard F. Libby at the University of Chicago. It is a process that determines the approximate age of organic material. This is done by measuring the amount of carbon 14 left in the organic material. There are three types of carbon that occur naturally in the world; carbon 12, carbon 13, and carbon 14. Carbon 12 and 13 are both stable isotopes, while carbon 14 is unstable, or radioactive. Because carbon 14 is unstable, it decays, meaning the isotope has changed and can no longer be measured as carbon 14 (Higham 1999).

Carbon 14 enters living beings through photosynthesis and through the food chain. At a point an organism reaches equilibrium with the amount of carbon 14 that is in the atmosphere. When the organism dies the equilibrium is lost, and the carbon 14 begins to decay, and no new carbon 14 is absorbed into the organism. The rate of decay is slow, for every 5,568 years half the original amount of carbon 14 that was in the organism has decayed and can no longer be measured as carbon 14. Thus the half-life of C-14 is 5,568 years. To date, scientists can measure up to ten half-lives, and that is 50-60,000 years before present. By measuring how much carbon 14 is left in a sample of dead organic material, a scientist can tell how many half lives the material has gone through, or how far along it is on its first half life. This then tells the scientists the approximate age of the organic sample (Higham 1999).

To fully understand the dates one also has to know the difference between calibrated and uncalibrated dates, as well as corrected dates. When a radiocarbon date is calibrated, it means that the date has been fixed to show the most correct approximate date. The reason that uncalibrated dates are slightly incorrect is due to three factors. The first is that the amount of carbon 14 in the atmosphere has changed slightly over the years. The second is that the date that radiocarbon dates are associated is the year 1950, not the present date of when the samples were tested for carbon 14. Then the last factor is that the present rate of half life is 5730 years, and not 5568 years (University of Oxford 2007). Most of the dates used in this paper are uncalibrated, meaning they have not been corrected for these three factors. This is due to the fact that the author is using the dates to find the normal distribution in order to find the probability of the dates to give a time period for the site. The dates are corrected, meaning the samples have been corrected for isotope fractionation, when they can be and are stated as such (Nelson 1997:91).

Previous Dates and Interpretations

To begin with, the radiocarbon dates from previous years should be discussed. According to Trombold, Pedro Armillas collected three samples which were dated from a field season conducted in 1951-1952. On the contrary, Nelson states that these three samples were taken from an archaeologist named James B. Griffin during his field season in 1956. Since Nelson's article is of a more recent date, his interpretation of these three dates being Griffin's is being used as a caution. Griffin's three dates come from the Cuartel area of the citadel (Trombold 1990:310). Problems that need to be considered before viewing the dates are that they were dated using the carbon dioxide-carbon disulfide method, which often had inconsistencies that developed in the dates due to

errors in preparation. Thus, the labs that practiced this doubled the statistical error from 100 to 200 years. In addition, all of these samples were taken from wood, which also has a tendency to cause inaccuracies. The reason for this inaccuracy is that wood has a higher probability than charcoal of being contaminated by fungus or other microorganisms. This contamination would give the sample a more recent date (Trombold 1990:309).

The uncalibrated dated samples for these three samples are M-430 (A.D. 1065 +/- 200), M-431 (A.D. 1175 +/- 200), and M-432 (A.D. 745 +/- 200) (Nelson 1997:101). The first date comes from a wooden roof beam that was located in surface debris north of an excavated room. The second date was from charred wood that was adjacent to the wall of the room where it was found. It was believed that it was from a hearth, but later interpretation has dismissed this theory. The third was collected from the western area of the Cuartel (Trombold 1990:310-1).

Armillas collected the second set of dates in the 1963-1964 field seasons. There were twelve dated samples taken, and only two of these dated samples were not taken from the Cuartel. The dates from this sample at La Quemada go as follows: M-1651 (A.D. 720 +/- 120), M-1652 (A.D. 410 +/- 120), M-1653 (A.D. 720 +/- 120), M-1654 (A.D. 870 +/- 120), M-1655 (A.D. 770 +/- 120), M-1656 (A.D. 1180 +/- 120), M-1658 (A.D. 930 +/-120) (Nelson 1997:101). Date M-1654 was taken from a wood sample that was in the same room as M-1653, so it is possible that it was contaminated, and that is the reason for the slightly later date than the average dates in this group. Sample M-1652 comes from the same area as the previous two, and its date is out of range. Trombold believes that this is due to the inconsistencies that are common with the carbon dioxide-

carbon disulfide method. Lastly, sample M-1656 was taken from a sample collection of charcoal that Trombold believes was an insufficient amount to try and date, and that is why the date is off from the average of the rest of the dates (Trombold 1990:313).

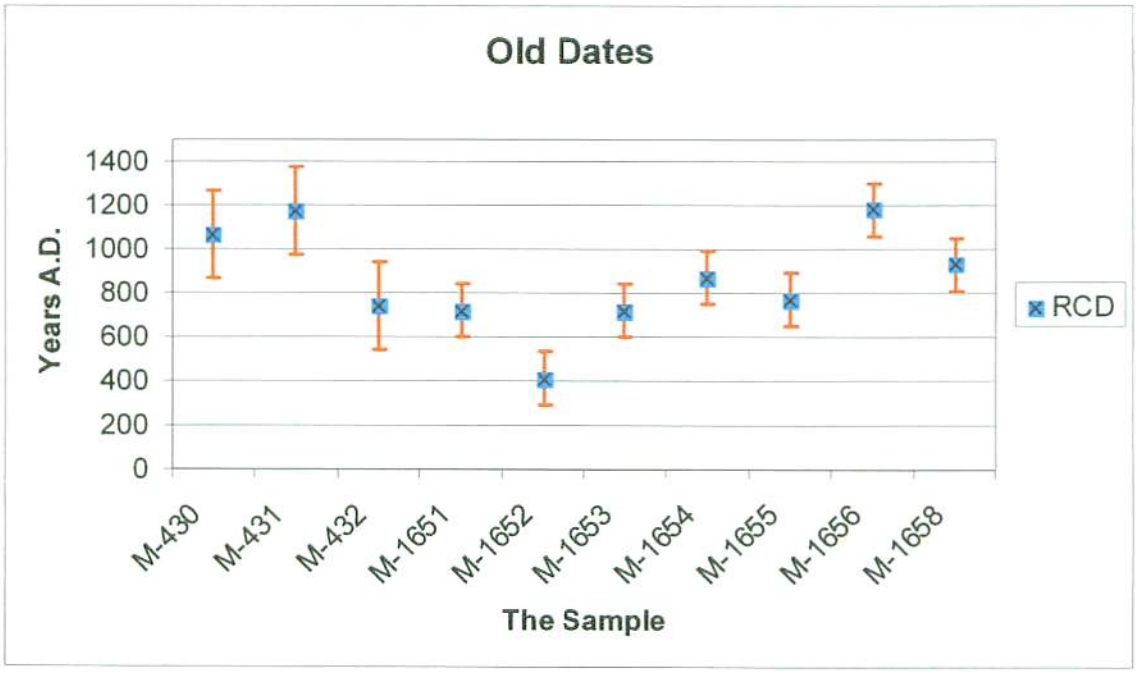

Figure 5: Graph of La Quemada's Previous Radiocarbon Dates

Before these first samples were determined, many archaeologists believed that the site of La Quemada was a Late Postclassic site, which would mean that the culture that La Quemada correlated with was the Aztec. With these dates from Griffin and Armillas, archaeologists began to think that the site should be dated to the Early Postclassic, which would mean that it correlated with the Toltec, as a turquoise trade route (Coe 1994:134). This was a reasonable assumption, since the dates suggested it and the architecture of the colonnaded hall suggested it as well. During this time, colonnaded architecture was viewed as being from the Postclassic cultures (Nelson 1997:89). Archaeologists, such as Lister, Howard, Weigand, Coe, and Batres began to support the idea that this site was a Toltec outpost.

Problems with the Original Radiocarbon Dates

As previously stated, the way in which these early dates were taken lead to misinterpretations of the true time period of the site. The dates were taken during the first years of radiocarbon dating, and they had the standard deviation of +/- 200 years. The samples were also taken from wood, which has the possibility of making the dates more recent, since the wood could be contaminated by fungus. Also, a few of the dates obtained by Pedro Armillas were taken from a charred corn kernels and a charred beans. Material with the life span of only one growing season is not as reliable as wood or charcoal which has a life span of many years. This could cause an inaccuracy of 80-100 years. Also, corn (maize) causes another inaccuracy. It has a different growing process than other plants. This process is called C4, which causes the plant to collect more carbon 13 and carbon 14 than other plant material. This makes the corn seem 250+/-50 years too recent. This was not known at the time that Armillas took his samples (Trombold 1990:310).

Also, through re-investigation of the samples used for dating, it has been found that the three samples taken by Griffin were not samples that can be designated to the original occupation. They were not collected from excavations, but from burned charcoal that was found on the surface of the site. These samples are likely from individuals who inhabited the site after the original occupation (Nelson 1997:89). It is possible that these people used the site as a religious center in veneration of what they saw as their ancestors. Furthermore, colonnaded halls are now seen to have come from an earlier period in northwestern Mexico than in central Mexico. They come from the Classic period in the area of La Quemada, and not the Postclassic (Nelson 1997:89).

New Radiocarbon Dates

Nelson and Trombold both gathered new dates for La Quemada and the surrounding satellite sites. To begin with, Nelson took many samples from different areas on the La Quemada site. When dates were obviously incorrect when compared to other samples in the same context, Nelson threw the dates out so not to compromise the data. An example of this was Nelson throwing out the date of sample number 37, which was of a single piece of charcoal that dated to A.D. 390+/-50 (Nelson 1997:92-94).

Terrace 18 of the site included 19 dates taken by Nelson, which incorporated Midden 7 due to its close proximity to the terrace. That terrace was built in two stages. By the first stage it had reached 80% of what it would become and the second stage is what is found at present. The terrace is a residential area with a patio located in the center, as well as a small temple, probably dedicated to ancestors or the patron god of the families on the terrace. As previously said, all of the dates are uncalibrated, although some are corrected when stated.

From the eight levels of stratigraphy Nelson was able to determine the occupation that occurred on the terrace. The natural ground surface, considered the first stratum, yielded two dates, number 38 (A.D. 540+/-80) and number 39 (A.D. 650+/-50). Number 38 was taken from charred firewood, and number 39 was from a charred cob of corn. They were located on the bedrock in a hearth, and the fact that it was found in the hearth shows that the construction of the terrace occurred almost immediately after the cooking of the meal, or else the charred cob and wood would have been thrown away, washed away, or blown away by the wind. It is possible that this hearth actually represents the cooking fire of the construction workers of Terrace 18 (Nelson 1997:94).

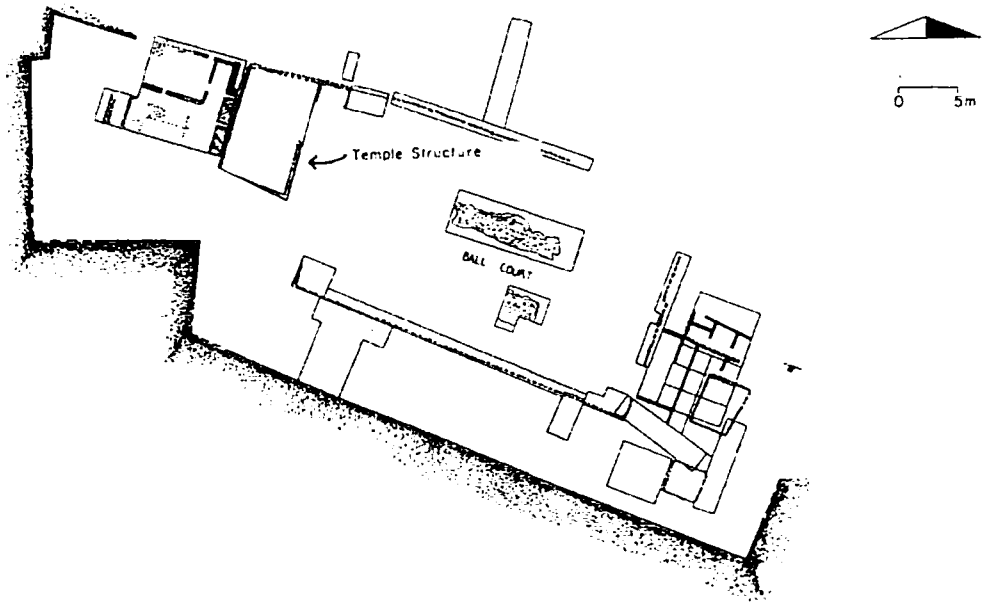

Figure 6: Map of Terrace 18: After Nelson et al. 1992:

The second stratum is considered the construction of Terrace 18, and it is associated with one date that is considered too early, and so it is rejected. The third stratum is the actual buildings that were built on the first terrace. It is represented by two dates. The first is date number 22 (A.D. 530+/-60) and the second is number 19 (A.D. 670+/-120). Both samples come from charred wood. The fourth stratum, the fill of the reconstruction of the first terrace into the second terrace, is not represented by any dates. The fifth stratum comes from the building of structures after the reconstruction of the terrace. The dates from this stratum are number 4 (A.D. 600+/-50), which comes from a roof support beam from the patio temple, number 12 (A.D. 630+/-60), which came from a concentration of charcoal located in the fill of patio B, and number 15 (A.D. 690+/-90), which comes from scattered charcoal and is also a corrected date (Nelson 1997:95).

Stratum six comes from the rearrangement of the original buildings after the reconstruction of the terrace. This stratum has three dates. The first is number 2 (A.D. 630+/- 60), and the second is number 1 (A.D. 690+/-50). Both of these dates come from the charred remains of roof beams of the temple. It is possible that these beams were reused from some other structure. The third date, number 3 (A.D. 740+/-50), comes from a roof post in the temple (Nelson 1997:96). This date is more recent than the other dates that come from the temple, which brings up some interesting questions. Were the other beams reused from older constructions? Also, was this post a brand new timber brought in for reconstruction?

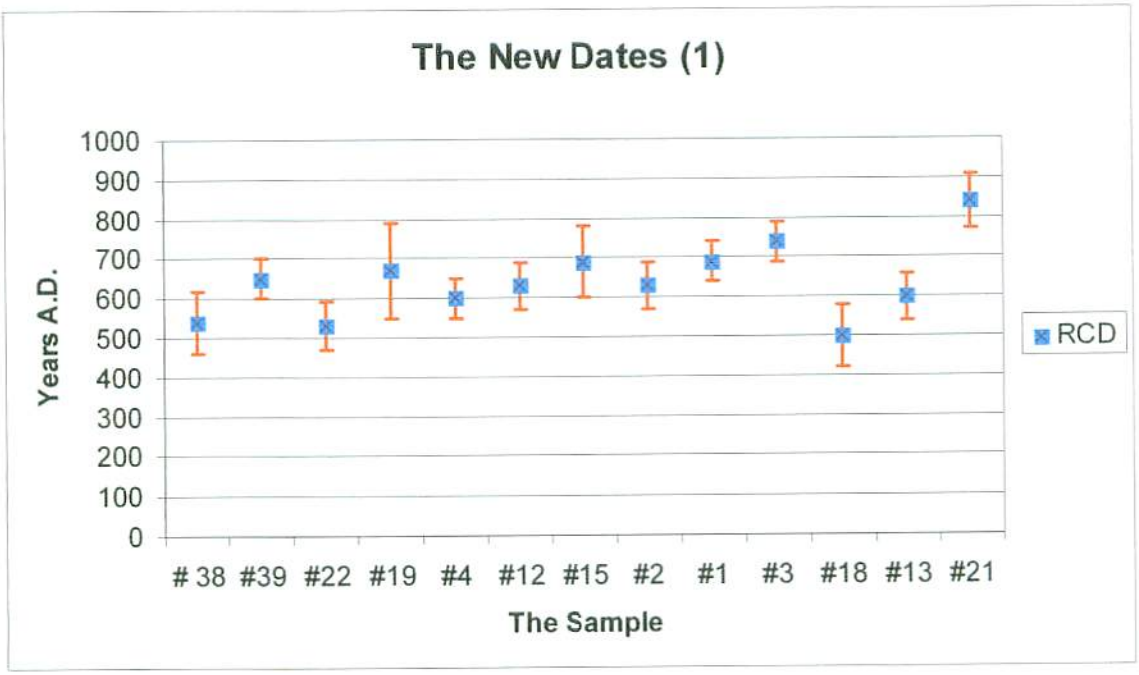

Figure 7: Graph of La Quemada's New Dates

Stratum seven is represented by seven dates, and it is the stratum that is associated with the abandonment of the site. It is different from stratum six by the fact that the materials recovered and used for dating are from more perishable materials, such as charcoal and charred food remains, and not wood beams used for construction. Most of

the dates from this stratum come from charcoal associated with skeletal remains. The bones that are found tend to be disarticulated, probably from being hung or resting on walls, roofs, and such, which can also be associated with skull racks, as previously stated. The dates of the wood from these skull racks are unusually old, which either means that these specific skull racks had been used for a very long time, or the wood was very old and kept for the construction of the skull racks specifically. The earliest date associated with skeletal remains comes from date number 18 (A.D. 500+/-80), and is a corrected date. The skeletal remains are believed to have hung from the outside portion of the temple wall. Date number 13 (A.D. 600+/-60) is also a corrected date.

The date was obtained from charcoal as well, and the skeletons are believed to have been suspended above the patio floor in this case. The last date to be associated with skeletal remains is the corrected date number 21 (A.D. 840+/-70). This date is an excellent example of the time of probable abandonment of the site (Nelson 1997:96).

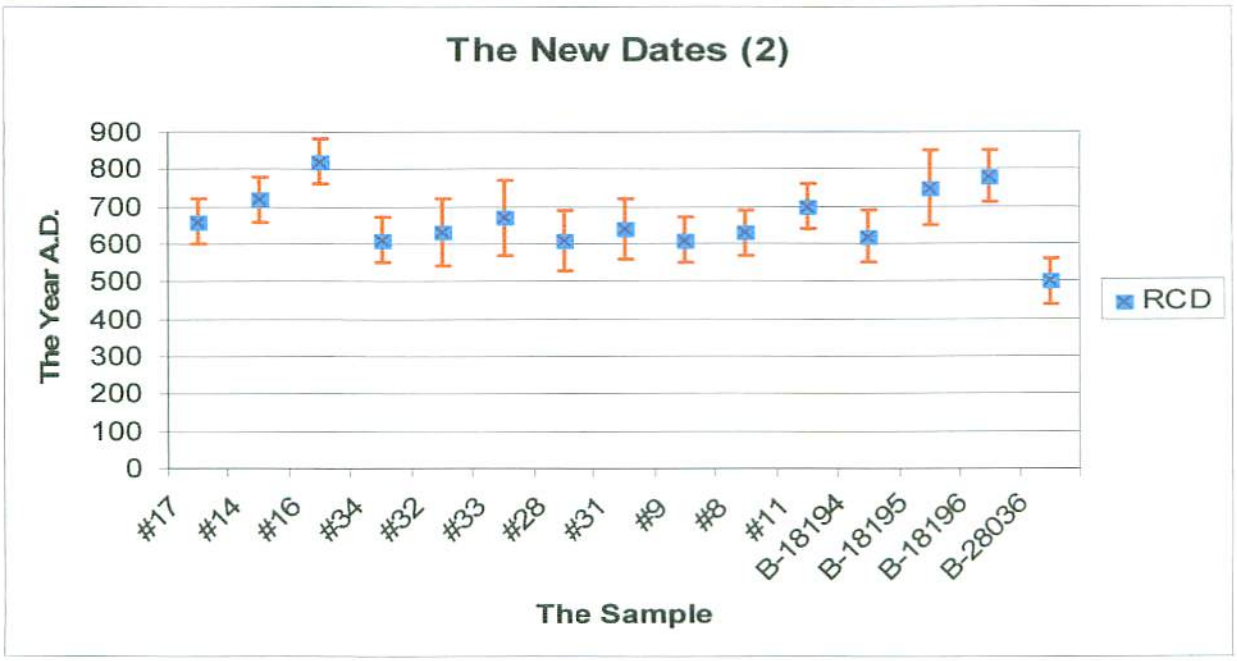

Figure 8: Graph of La Quemada's Dates

The two other dates that belong to Stratum 7, right before abandonment, are sample number 17 (A.D. 660+/-60), which is corrected and taken from a sample of charcoal found on the floor of the ball court, and number 14 (A.D. 720+/-60), which is also a corrected date that is taken from small pieces of charcoal found on the patio, but not the same layer as the ball court sample. The last used date for Stratum 7 is also one of the latest dates, coming from the corrected sample number 16 (A.D. 820+/-60). The sample is of firewood taken from a hearth located on the east platform that overlooks the temple. This last sample is considered the best indicator of the moment of abandonment (Nelson 1997:97). Stratum 8 was not represented by any dates, although it is possible that sample number 16 was a post-original occupational date (Nelson 1997:97).

Midden 11 has thirteen dates taken from it, but two of these dates were rejected. The midden is undisturbed, so the dates are of high quality. The midden can be separated into four stratums; early, middle, late, and post-occupational. The earliest date that can be used from the early stratum is number 34 (A.D. 610+/-60). It is a corrected date, and it is taken from a piece of charcoal that is assumed to have been from firewood. This is more than likely an area where residential debris was dumped, and that is why most of the dates from here are assumed to come from firewood that would have been cleaned out of hearths. Two other dates come from the early stratum of Midden 11. The first is number 32 (A.D. 630+/-90) and number 33 (A.D. 670+/-100). Both of these dates are corrected, and were from charcoal that could have been part of the same piece of wood (Nelson 1997:97).

Figure 9: Graph of La Quemada's New Dates

The middle stratum is represented by three different dates. The first one is number 35 (A.D. 540+/-80). This is a corrected date taken from a sample of charcoal. It is believed to be a sampling error, due to the fact that it has an earlier date that the dates of the earlier stratum. The other two dates are both from a concentration of charcoal. Corrected dates number 28 (A.D. 610+/-80) and number 31 (A.D. 640 +/-80) (Nelson 1997:97-98).

The late stratum for Midden 11 is represented by two different dates from the same concentration of charcoal, both of which are corrected. The first is number 26 (A.D. 660+/-90) and the second is number 27 (A.D. 800+/-80). The post-occupational samples are of some interest, since some of them are similar to that of the middle stratum in dates. This is believed to have of occurred because the samples come from a concentration of charcoal that came from decomposing buildings located on the terrace

above the midden. Or, it is possible the charcoal is a redeposit of trash, moved by the inhabitants of post-original occupation. The dates associated with this stratum are number 9 (A.D. 610+/-60). number 8 (A.D. 630+/-60), and number 11 (A.D. 700+/-60) (Nelson 1997:99).

Middens 6, 7. and 15 also have radiocarbon dates. To begin with, Midden 6 has two uncorrected dates. The first is date number 7 (A.D. 490+/-90) and the second is date number 6 (A.D. 680+/-80). These two dates are interesting, because they are found in the same stratum within the Midden, and in well preserved context. Date 7 is a little early, compared to the other dates on the site, but Nelson found no reason to throw the date out. Both of these dates come from charcoal (Nelson 1997:99).

Midden 7, like Midden 11, is also associated with Terrace 18. When excavated, it was found that the Midden 7 was stratified into early, middle, late, and post-occupational levels as well. The first two dates, which are corrected, are from the early stratum of the midden. The first date is number 25 (A.D. 610+/-60), and the second date is number 24 (A.D. 650+/-60). Both of these dates come from samples of charcoal. The last date from this midden, corrected date number 23 (A.D. 460+/-90), was thrown out by Nelson, due to the fact that it is earlier than any of the other dates on the site, and that it comes from the later stratum than the first two, but is earlier in time (Nelson 1997:99).

Midden 15 is associated with a terrace that was constructed below Terrace 18, which might suggest that it is a branch off terrace after a rise in population, and this would then make the dates in Midden 15 later than most of the dates of Terrace 18. The corrected date taken from this midden is number 30 (A.D. 740+/-70). The date is a little bit later than most of the dates found on Terrace 18 (Nelson 1997:99).

There are two calibrated dates that come from the temple structure that is found on Terrace 18. These two dates are from wood samples of support posts, and they yielded date Beta-44793 (A.D. 604-776 (p= 1.00)) and Beta 44792 (A.D. 679-898 (p= .96)). These two dates fall into the range of the other uncalibrated dates, which gives strength to the overall range estimate for the site (Nelson, Darling, and Kice1992:301).

Since the dates for Teotihuacán, Tollán, and Chaco Canyon are in calibrated dates that are found in the following pages, I decided to take the earliest date and the most recent date that is seen as the time of abandonment of La Quemada and changed them into calibrated dates as well. This was done to see if the change made a large difference in the timeline that is proposed by Nelson without the use of calibrated dates. I took date number 7, and when put through the calibration change, and it came to A.D. 534-660 p=.97. Then I took the most recent date, date number 21, and it came out to be A.D. 868-1017 p=.99. These calibration changes were done by using the Calib501 program by M. Stuiver and P.J. Reimer. It is interesting to see that after calibrating the dates that they are more recent than when left uncalibrated, but the room of doubt (+/-70 for example) for both the uncalibrated dates includes dates within the new calibrated dates. Because of this, there is no reason to call into question whether the timeline proposed by Nelson should be changed.

Two other archaeologists, Jimenez and Trombold, did research on a satellite site called Las Adjuntas in 1986. Four dates were obtained from these exactions. The first date, Beta-18194 (A.D. 850+/-70) comes from charred maize that came from the middle phase of the habitation platform they were working on. As previously stated maize throws off the dating process. Trombold used a correction process, and was able to attain

the date of A.D. 620+/-70. Another date, Beta-18195 (A.D. 750+/-100) comes from charcoal taken from a hearth found in Plaza 3. The next date was taken from charcoal that was found beneath the lowest floor of a room complex. The date for this sample is Beta-18196 (A.D. 780+/-70). The last date obtained from the 1986 excavation was B-28036 (A.D. 500+/-60). The sample was taken from charcoal found in the fill of a lower platform found near the room complex. The date for this is extremely early for the stratum that it was collected in. It is believed the reason for this is due to remixing of deposits from early occupations of the area, since it is from a fill used to make a construction. Because of this, the last date is has been thrown out (Trombold 1990:314).

The ceramics in the area of La Quemada do not explain a great deal about the site and possible dates. There are, however, a few examples that shed a little bit of light. The first Mesoamerican culture to enter the area is called the Canutillo phase, between A.D. 100 and 650, in the Rio Suchil Chalchihuites area. The pottery that is designated to this time period is called Canutillo Red-filled Engraved. There are two forms of pottery for this, and they are shallow bowls or plates and hemispherical tripod bowls. These hemispherical bowls are found in the La Quemada region, and they are semi-abundant. They have been located in 18% of the sites surveyed so far. When found in the La Quemada region they are named Malpaso Incised. This type of pottery is also found in the near by site called Alta Vista, but there are some differences between the two. The craftsmanship and the surface treatment to the vessels seem more professionally done in Alta Vista sites than that of the La Quemada region (Trombold 1990:316). This tells archaeologists a few things. That there is a good chance that the origin of this type of vessel came from the Alta Vista region, and not La Quemada, and that these vessels were

not traded to La Quemada by Alta Vista. The idea just passed to the La Quemada region, and they were imitating it. Unfortunately, this type of pottery can not really help with assigning dates to a site, because of its broad range of existence.

True trade can be seen in the vessels that were found at the Las Adjuntas site. The types of vessels that were found are called Vesuvio Red-filled Engraved pottery, from the Vesuvio phase at Alta Vista. This phase is dated from A.D. 650 to 750. These dates match the generally description of the Las Adjuntas dates. It also shows that true trade between La Quemada and Alta Vista was occurring at least by A.D. 650, which is probably the florescence of both regions (Trombold 1990:316).

Another interesting type of vessel was the Mercado Red-on-Cream ware that was found during a survey of site MV-134, a satellite site of La Quemada. This type of pottery comes from the Suchil branch of the Calichal phase from the Alta Vista region, dating from A.D. 850-950. This type of pottery is the marker of cultural decline in the Alta Vista area. It is possible that this phase at Alta Vista was the same at La Quemada, and both declined close in time to one another. This is very tempting to say, considering there are no other types of trade pottery that enter the La Quemada region after this phase (Trombold 1990:318).

Artifacts

If La Quemada was indeed an outpost for Teotihuacán or Tollán, there would be artifacts from these southern cities in La Quemada. Throughout the excavations done on the site, no artifacts from the core area of Mesoamerica have been found. Examples would be specific pottery styles, figurines or mold made figurines, metal artifacts, molcajetes, and plumbate ware (Nelson 1997:89; Trombold 1990:320-321).

Yet there are some artifacts that archaeologists have placed as being Postclassic artifacts that have been found at La Quemada. If this is true, then the artifacts could have possibly come directly from the Toltec in Tollán, or by influence. One such artifact is the clay tobacco pipe. This would imply Postclassic influence over the region that La Quemada is in, but there are reports of excavated tobacco pipes that would suggest otherwise. There have been stone and clay effigy pipes found in the state of Jalisco that come from ca. A.D. 100-200. Also, there were as many as twenty clay fragments of pipes and a complete tubular pipe found at the Cerro Encantado project, which dates from A.D. 100-250. The dating section that follows shows that these dates do not correlate with the Postclassic time period, and this also suggests that clay pipes found in La Quemada do not necessarily mean that the site was inhabited during the Postclassic period (Trombold 1990:321).

Contemporaneous or Not

To understand a culture completely an understanding of other contemporaneous cultures is needed. For this paper especially, the dates of sites that were possibly inhabited simultaneously need to be made clear whether they were in existence when La Quemada existed. If they were, then whether the site had any influence over La Quemada needs to be determined. Also, there are many sites and cultures that in old theories are believed to have had influence over La Quemada, and the determination of the time spans of these sites will help clear up the old theories. This will aid in explaining the development of La Quemada. To begin with, the core culture that is believed to have grown to its full potential and then fallen apart during the time span of La Quemada is Teotihuacán.

Teotihuacán came to dominate the Basin of Mexico between 300 B.C. and 100 B.C. (Kelly 1982:57; Sabloff 1997:61). By A.D. 500 Teotihuacán had reached its zenith of growth and cultural influence (Kelly 1982:58; Million 1973:59; Sabloff 1997:68). However, it is the period of decline of Teotihuacán that is the focus of this paper. Most archaeologists believe that Teotihuacán had lost most of its influence over Mesoamerica sometime between A.D. 600 and A.D. 650 (Coe 1994:106; Kelly 1982:58; Sabloff 1997:68). Past theories are that the city center was destroyed, yet not completely abandoned, by A.D. 700-750 (Coe 1994:105; Kelly 1982:58), although there is new data that the center may have been destroyed earlier, about the same time as the fall of the cultural influence (Sugiyama 2001). These dates do correlate with emergence and growth of La Quemada. Both were in existence at the same time at one point, but Teotihuacán declines and is possibly completely destroyed while La Quemada is around for another two centuries or more.

As previously stated, one theory for La Quemada is that it was a Toltec outpost and a trade route between Tollán, also called Tula, and Chaco Canyon. If this is true, then Tollán and the Toltec culture would have to be contemporaneous with La Quemada. The exact founding of Tollán is somewhat debatable. Most agree that there was a community of some size between A.D. 800 and A.D. 900 located on the site (Coe 1994:135; Sabloff 1997:112), while others use the stories told by the Aztecs in dating the founding of the site, which would have Topiltzin building the site in A.D. 968 (Kelly 1982:46). Either way, the Tollán Phase, A.D. 900/950-1100, is the period of greatest occupation for the site (Coe 1994:138; Sabloff 1997:112).

CHRONOLOGICAL TABLE

DATES (calibrated)	PERIODS	CENTRAL HIGHLANDS	NORTH AND CENTRAL GULF	SOUTHERN GULF COAST	OAXACA	SIGNIFICANT DEVELOPMENTS
1521						*Spanish Conquest, fall of Tenochtitlan*
	Late Post-Classic	Aztec Empire	Isla de Sacrificios	Independent states	Monte Albán V (Mitla, Mixtec states)	*Aztec Triple Alliance formed*
1200		'Feudal' states				*Aztecs reach Valley of Mexico*
	Early Post-Classic	Tollan				*Toltec state*
		Mazapan				
900	Late Classic	Coyotlatelco	El Tajín	Villa Alta	Monte Albán IV	
		Metepec			Monte Albán III-B	*Destruction of Teotihuacan*
600	Early Classic	Xolalpan-Tlamimilolpa (Teotihuacan III)	Late Remojadas	Cerro de las Mesas Late Tres Zapotes	Monte Albán III-A	*Height of Teotihuacan influence*
		Miccaotli (Teotihuacan II)	Classic Veracruz			
150	Late Preclassic	Tzacualli (Teotihuacan I)	Early Remojadas	La Mojarra	Monte Albán II	*Isthmian script* *Building of Pyramid of Sun, city planning at Teotihuacan* *Invention of Long Count calendar*
AD / BC		Chupicuaro Cuicuilco		Early Tres Zapotes		
400		Ticomán				

Figure 10: Dating Table of Cultures: After Coe 1994

The second half of that theory that La Quemada was a Toltec outpost deals with Chaco Canyon. At what time was the area occupied, and does it correlate with La Quemada? The first constructions were built around A.D. 850- A.D. 900 (Lekson 1999:20; Lister and Lister 1981:76). For example, Pueblo Bonito's first occupation was from A.D. 828-935 (Lister and Lister 1981:76). The highest rate of construction of the pueblos occurred between A.D.1000-1100 (Lekson 1999:20), the same century that is estimated to be the height of Pueblo Bonito (Lister and Lister 1981:78). The apex of all

of Chaco Canyon culture, however, is dated from A.D. 1020-1125 (Lekson 1999:20). The date A.D. 1125 is also the end of the Chaco. During this time large scale construction completely stops, and the cultural control seems to vanish from the archaeological record (Lekson 1999:69).

Evidence of Other Peripheries

If La Quemada is a site that developed because of the decline of a core culture, then it is possible for other sites in the world to have experienced the same situation. These peripheral sites could bring to light more information and backing to the argument that this is what occurred at La Quemada. One such site is Chavín de Huántar, in Peru.

The Andes is a very geographically diverse area of the world, with arid coastlines, tall mountains, and rainforest covered slopes. The desert coast lines are cut by many rivers that come from the high mountains, bringing water to one of the driest places on earth. These rivers, full of nutrients from mountains, were the life blood to many of the civilizations that lived in this area since they were irrigated for agriculture. The coasts themselves were also rich with life. The cold water from the Humboldt Current brings an almost inexhaustible amount of resources, including many species of fish, birds, and sea mammals (Burger 1995:13-14).

The mountains are the other characteristic of the Andean civilizations, the tallest of which is 6,768 m. These mountains are cut with deep ravines and jagged peaks that were formed by glaciers that are now gone. Some of these glaciers left remains in the mountains by forming freshwater lakes, which gave an abundance of birds and fish to prehistoric cultures. In the mountains rain comes from moist winds that blow in from the east coast. On these eastern slopes there is constant rainfall that creates the rainforest

environments, and from September to April the winds bring the moisture across the tallest peaks and into the inner mountain valleys. The environment sustains wild camelids, deer, and rodents. The steepness of the mountains creates many different environments with differing temperatures and annual rainfalls. This led to the domestication of many different types of plants that can be grown in different areas, such as the potato, maize, and quinoa by the native cultures (Burger 1995:19-19).

The paper discusses two time periods of the pre-Columbian Andes, the Initial Period and the Early Horizon. The Initial Period was the time in which ceramics were first made in the Andes, as well as the beginning of agriculture. Irrigation was incorporated into the public works, and there was an increase of building ceremonial centers (Silverman 2004:53). During this time the coastal communities along the Peruvian coast began to dominate the scene. There were different types of cultures, or what some archaeologists call traditions, along the coast. For example, the central coast was where U-shaped public buildings were built (Burger 1995:60). There were many sites that had these structures, such as Garagay and Cardal (Burger 1995:63, 66). Another type of tradition is found in the north-central part of the Peruvian coast and was concentrated in the Casma Valley. This tradition had pyramid structures and circular courts. Examples of this are the sites of Cerro Sechín, Sechín Alto, and Moxeke (Burger 1995:77, 80, 72).

The site of Chavín de Huántar is located in the highlands of Peru, at an elevation of 3,150 m, and it shows up in the archaeological record during the late Initial Period and through the Early Horizon. The site contains plazas, terraces, and platform structures, as well as U-shaped religious centers with sunken courts. Many of these structures have a

system of passage ways built into them. In one such passage way there is a carved monolith known as the Lanzón monolith. It is believed that this stone was sacred to the people who lived at Chavín and the surrounding area.

The land around Chavín is good for both mixed agriculture and for herding, but so is the land in the surrounding valleys as well. So what drew in the population to start the ceremonial complex where Chavín is located? It seems that the site of Chavín was founded in one of the best trade routes in the Andes, since many of the high mountains are impassable in the Andes. In the Cordilla Blanca, there are only ten passes that are not blocked by glaciers. The two southern most Andean passes out of the ten intersect where Chavín de Huántar was built. Many different types of trade goods would have been brought to Chavín from the coastal areas in the west, and from the Amazonian areas in the east. Many of these items could not have been grown or made in the area that Chavín was built, such as coca, chili peppers, salt, and fish (Burger 1995:129).

Chavín de Huántar is another example of a peripheral site that experiences a florescence after the decline of the more dominant core culture. The coastal societies were the core cultures of the Andes during the Initial Period, which spanned from 1800-900 B.C. (Silverman 2004:52). These people were responsible for some of the largest ceremonial centers in the Andes. However, at around 900 B.C., when the Initial Period was coming to a close, the coastal cultures began to disintegrate. Construction on the buildings in the lower valleys suddenly stopped. Clear evidence of this is seen at the Cardal and Mina Perdida sites, located in the Lurín Valley, where buildings were not finished and the sites were abandoned (Burger 1995:184).

This occurred elsewhere in the Andes as well, such as in the Rimac and San Humberto Valleys, where during the Early Horizon no new constructions occurred. On the north-central coast, at the mouth of and in the Casma Valley, this took place as well. During 900-800 B.C., there were no new constructions at Taukachi-Konkan, Huerequeque, Sechín Bajo, and Sechín Alto. At Las Haldas, the exact moment of abandonment was left in the archaeological record. On the central staircase of the public building at Las Haldas only half of the steps were plastered, and the ones that were not still had the wooden stakes and cotton strings left by the laborers (Burger 1995:185).

The reason for the abandonment of these sites on the coast of Peru is not exactly known, but there are many theories for why it occurred. The west coast is known for dramatic and destructive weather, such as El Nino, that causes floods and a massive amount of erosion of the topsoil. However, archaeologists have not found evidence that would suggest a climate induced disintegration of the coastal cultures (Burger 1995:190).

There is the possibility that the fall of the core coastal traditions occurred because of invasion from outside groups, but this is also not known for sure. There is evidence of Early Horizon fortresses that were built after the downfall of the coast, such as Chankillo in the Casma Valley. The fortresses may have been built after the people left the valley bottoms because they believed that they would need more protection, and not that they were attacked before the building of the fortified settlements (Burger 1995:188).

Lastly, it could have been completely social and political. If the populations believed that the sacredness of the public ceremonial centers was diminished, then there would be no reason for the populations to stay in the area. The social bonds that held the groups together would be broken, and the belief in the authority figures would be gone as

well. The populace then would move on to other places, such as higher up in the valleys (Burger 1995:189).

When these societies declined around 900 B.C., Chavín de Huántar was founded (Burger 1995:128). The spread of its culture across the Andes began about the same time as their collapse, and its influence was able to reach cultural groups that had never been in contact with one another before. It was the first of only a few cultures in South America that was able to unite the Andes into one civilization (Burger 1995:184). The fact that this all occurred directly during and after the fall of the core cultures on the Peruvian coast is what makes it a peripheral site that had a florescence, much like the theory of what occurred at La Quemada.

Results and Conclusions

Both Nelson and Trombold agree that the new date for the beginning of the occupation of La Quemada should be around A.D. 500, due to the new dates from both the satellite sites and La Quemada itself. The finding of the Canutillo phase ceramics supports this starting date as well (Trombold 1990:319). There is the possibility that the site can date earlier, since structures could be underneath the current ones, and date number 5 which Trombold analyzed was found in the ceremonial Citadel area suggests it as well (Trombold 1990:319). However, one has to be careful with the dating of wood, since wood can already be very old by the time it is used for construction or for firewood (Nelson 1997:107).

The overall timeline of La Quemada is that it was first populated by A.D. 500, and serious growth occurred between A.D. 600-750. By the late 800's and early 900's the site had shrunk back to earlier occupational size and was eventually abandoned. The

rapid growth of the satellite sites coincide with the growth of La Quemada, which is expressed by the date from sample 14 (A.D. 750+/- 100) taken from Las Adjuntas. This date is the marker of an abrupt transition of the site. The layout changed to support new cosmological and political ideas that may have occurred in the area or were brought in by other populations (Nelson 1997:107 and Trombold 1990:319).

As previously stated, La Quemada was thought to be a Toltec outpost and a site on a trading route between the Toltec and Chaco Canyon. The Toltec culture and the site of Tollán began between A.D. 800 and A.D. 900, but the greatest occupation and the greatest influence over Mesoamerica occurred around A.D. 950. Chaco Canyon began around A.D. 850 and had its greatest occupation and influence between A.D. 1020 and A.D. 1125. This places the Toltec and the cultures of Chaco Canyon at the very end or after the occupation at La Quemada. Also, no artifacts from the Toltec time period were found at the La Quemada site, the surrounding sites, or the region. With this information, it can be said that La Quemada was not a Toltec outpost, and that it was not part of a trade route between the Toltec and the Chaco Canyon cultures.

Another question this paper asks is if La Quemada is a peripheral site that experienced a florescence due to the decline of a core culture. The core culture that was in existence during the occupation of La Quemada was Teotihuacán. Teotihuacán experienced its greatest occupation and influence over Mesoamerica at A.D. 500, but it had lost most of that control and a great deal of its population between A.D. 600 and A.D. 650. Interestingly, this decline occurs almost exactly when La Quemada begins to experience its growth.

Also, this paper discusses Chavín de Huántar, a South American site that has been viewed as a peripheral culture during the Initial Period. When the core cultures along the Peruvian coasts declined, due to unknown causes, Chavín de Huántar experienced a culture explosion across the Andes. With the dates of Teotihuacán's decline, the dates of La Quemada's greatest time of occupation, and another example of a peripheral site experiencing a florescence after a decline of a core, the theory of the periphery growth shows promise of being the forerunner of the current theories about the La Quemada site.

The decline of Teotihuacán and the growth of La Quemada are a correlation to one another, yet this phenomenon does not explain why La Quemada experienced a florescence. The best theory to date from the evidence stated above is that Teotihuacán was using the region of La Quemada for resource extraction. Because of this, La Quemada was founded as an administrative center. There is proof of this in the extensiveness of the road system to the surrounding area, the use of dead bodies as message to the populace, and the Mesoamerican characteristics of the site itself. Since the resources were being extracted from the region, the area was left under developed. This can be seen in modern examples of Latin American countries, such as Bolivia. Yet, when Teotihuacán began to decline it most likely lost control over the peripheral regions. When this occurred the resources in the La Quemada region stayed in that region, and thus the wealth stayed there. This is why La Quemada's growth occurs at the approximate time that Teotihuacán declines.

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