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## Water Fight on the River - Round Ten

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Kirk Magleby

10. Question. What was the general direction from Nephi to Zarahemla? See the article "[Asking the Right Questions](#)" in this blog. Article last updated June 14, 2014.

10. Answer. Zarahemla was north of Nephi

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10. Exhibit. We place a ruler on our map of the rivers and have Google Earth calculate the heading of the line between Kaminaljuyu (Nephi) and Santa Rosa (proposed Zarahemla on the Mezcalapa-Grijalva). The heading is 127.56 degrees. 90 degrees would be due west. 135 degrees would be north- west. This line runs west-northwest. As with all images on this blog, click to enlarge.



Heading of the line between the Guatemala City area and the Mezcalapa-Grijalva

We do the same thing with Kaminaljuyu (Nephi) and Nueva Esperanza II (proposed Zarahemla on the Usumacinta). The heading is 158.54 degrees. 180 degrees would be due north. 135 degrees would be northwest. This line runs north-northwest.



Heading of the line between the Guatemala City area and the Usumacinta

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10. Conclusion. The Usumacinta conforms much better with The Book of Mormon text. You have to go through all kinds of lexical gyrations to get the Mezcalapa-Grijalva's west-northwest heading even in The Book of Mormon ballpark. Advantage Usumacinta.

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10. Running Score. Mezcalapa-Grijalva 0. Usumacinta 10.

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10. Note. Some Book of Mormon students, in an attempt to justify particular geographic correlations, try to argue that the Nephites used different cardinal and ordinal directions than we do today, or that the north, south, east, and west quadrants on Mormon's mental map were not equidistant 90 degree quarters as The Book of Mormon text implies [1 Nephi 19:16](#), [Mosiah 27:6](#). Most Mesoamericanists would dispute these ideas. The Maya had 4 directional glyphs that correspond with the 4 cardinal directions. Instances are found on the Dresden Codex, Rio Azul Structure A-4 Tomb 12, Copan Stela A, and the Yotz Kanpet ceramic bowl rim text, among many others. Each of the 4 cardinal directions had a color. North was white, east red, south yellow, and west black. Blue/green represented the center of the quadrants. Each of the 4 cardinal directions was associated with 13 years in the 52-year calendar round. North were muluc years, east kan

years, south cauac years, and west ix (hiix) years. Each cardinal direction also had a deity associated with it. The 4 bacabs and the 4 chaacs or atlantean sky-bearers are examples. Each cardinal direction had its own wind, and the Maya conceived of 4 sacred trees of life, one in each of the 4 directions. These multiple trees of life are the origin of the noted Maya "crosses" with perpendicular arms which are well known from Palenque and other sites. Diego de Landa in his 1566 *Relacion de las Cosas de Yucatan*, describes a Maya worldview with the same 4 cardinal directions the Spanish were familiar with. Contemporary Maya religious ritual, such as that practiced today in Momostenango, continues to honor the sacred nature of the 4 cardinal directions/deities with offerings around a circle as the priest faces east, then west, then north, and finally south. Symmetry in Mexican and Mayan art show that the ancient Mesoamericans used the same golden mean or golden section proportions that many Old World cultures such as the Egyptians scrupulously followed. The celebrated Aztec calendar stone on display in the National Museum of Anthropology in Mexico City is one example in bas relief sculpture.



Aztec Calendar Stone, a study in symmetrical proportions

Among the many cosmological ideas represented on this sophisticated carving are the 4 cardinal directions and the 4 deities associated with them: Ehecatl (Quetzalcoatl) as god of the west, Huehuetotl as god of the north, Mictlantecuhtli as god of the south, and Tlahuizcalpantecuhtli as god of the east. Each of these gods is also an atlantean skybearer,

jointly holding up the vault of heaven. This is the post-classic Nahua (Aztec) adaptation of a very old Mesoamerican and certainly Mayan concept. An interesting Morelian variant of this artifact is in the Yale Peabody Museum of Natural History.

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A Cotzumalhuapan-style ball court marker from the site of La Nueva, Guatemala shows four stylized trees of life in each of the four cardinal directions.



Stone sculpture from the Guatemalan piedmont area showing north, south, east, and west life trees

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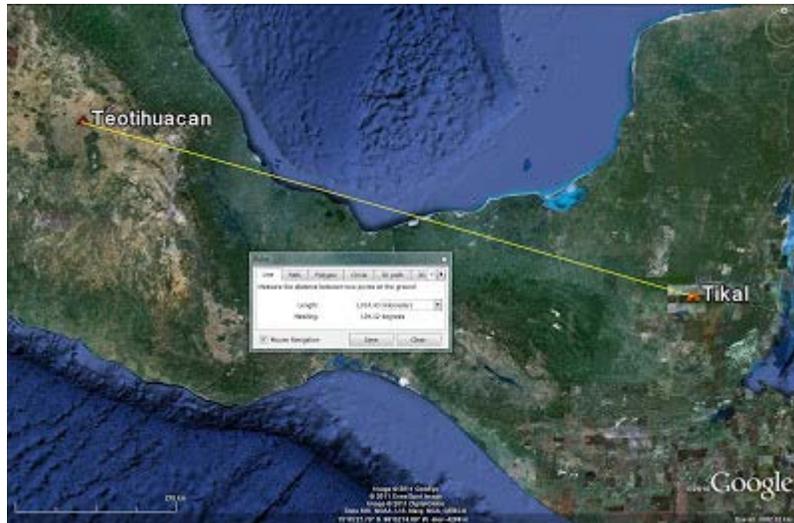
This serrated disk from Mexico shows the 4 cardinal directions and the intermediate points in typical equi-distant 90 degree quadrants. The serrations represent calendrical units. Time and space were often represented together symbolically in Mesoamerican art. Artifacts similar to this one are known from many sites throughout Mesoamerica.



Inlaid jade disk in The National Museum of Anthropology, Mexico City  
The 8 rays show the 4 cardinal directions and the 4 intermediate points.  
Photograph by Kirk Magleby, September, 2006.

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In January of 378 AD, just as the Nephite nation was collapsing at Cumorah, a powerful military emissary from Teotihuacan named "Fire is Born" conquered the Maya city states of El Peru (Waka) and Tikal in present-day Guatemala. Teotihuacan-affiliated Tikal then went on to conquer Uaxactun, Copan, and other important Maya sites in a cross-cultural florescence that ushered in the Maya classic period. An inscription carved on the famous Tikal Stela 31 (the August, 2007 issue of *National Geographic* features a striking full-page image) describes this foreign invader as "Warlord of the West." Google Earth makes it easy to check the orientation of Teotihuacan relative to Tikal to see what the early classic Maya considered "west." Note that Teotihuacan in this era was the strongest empire in Mesoamerica with sites like Cholula, Xochicalco, and Maticapan (near The Book of Mormon Ramah/Cumorah) in its orbit.



Teotihuacan west of Tikal

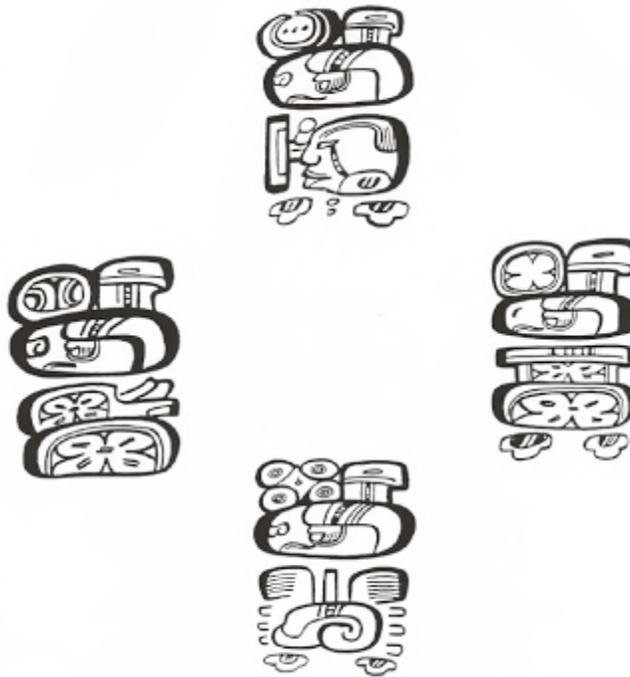
Teotihuacan is on a heading 104.12 degrees from Tikal. 90 degrees is due west. 135 degrees is north-west. So, what the Maya in Book of Mormon times called "west" is analogous to our use of that term today.

A similar relationship is attested in post classic times. Toltec emissaries and culture from Tula Hidalgo greatly influenced the site of Chichen Itza in Yucatan. Many Maya sources describe Tula in the west and Chichen Itza in the east. See George Kubler, "Serpent and Atlantean Columns: Symbols of Maya-Toltec Polity" in *The Journal of the Society of Architectural Historians*, Vol. 41 No. 2, May 1982, pp. 93-115. See also Douglas T. Peck, "The Geographical Origin and Acculturation of Maya Advanced Civilization in Mesoamerica" in *Revista de Historia de America*, No. 130, January - June 2002, pp. 7 - 28. Google Earth shows the heading between Tula Hidalgo and Chichen Itza is 84.61 degrees where 90 degrees is due east. Clearly, this ancient Maya usage of the terms "east" and "west" is analogous to our modern notion of those cardinal directions today.



Tula Hidalgo in the West, Chichen Itza in the East

Structure A-4 Tomb 12 could hardly be more explicit. It shows the 4 Mayan glyphs for the 4 cardinal directions, and each glyph is oriented to the same north/south/east/west compass direction we use today.



The 4 Mayan glyphs for the 4 cardinal directions from Rio Azul following David Stuart

Chiapa de Corzo Mound 11, Tomb 1 has a similar arrangement of greenstone ax heads and celts dating from ca. 800 B.C. These objects were found on the center-line of the pyramid, oriented to the four cardinal directions. See Bruce R. Bachand "[Chiapa de Corzo: Rise of a Zoque Capital in the Heart of Mesoamerica](#)" in *Popular Archaeology*, Volume 3, June 2011. Mound 11 was part of the earliest "E Group" yet discovered. An E Group is an astronomically-aligned collection of structures known from Zoque and Maya sites all over Mesoamerica. E Groups, first identified at Uaxactun, are typically oriented to the four cardinal directions.



Ritual offering from Chiapa de Corzo, Photograph by Bruce R. Bachand

Literally hundreds of ancient sites and structures throughout Mesoamerica are oriented to the four cardinal directions we use today. For example, the site of Los Horcones in the Municipio of Tonala, Chiapas, Mexico is laid out on a north - south axis. See Pierre Agrinier, "The Ballcourts of Southern Chiapas, Mexico" in V. Scarborough and D. Wilcox, *The Mesoamerican Ballgame*, Tucson: University of Arizona Press, 1991. The 95 meter long principal structure (archaeologists call it B-1) at the large nearby site of Iglesia Vieja faces due east. Akira Kaneko, "Investigacion Arqueologica en la Region Tonala de la Costa del Pacifico de Chiapas" in J.P. Laporte, B. Arroyo and H. Mejia, *XXII Simposio de Investigaciones Arqueologicas en Guatemala, 2008*, Guatemala City: Museo Nacional de Arqueologia y Etnologia, 2009.

At the site of Takalik Abaj, Christa Schieber de Lavarreda and Miguel Orrego in 2012 excavated six ceramic female figurines associated with a royal tomb. Four of the figurines,

which date to ca. 500 B.C., were oriented to the four cardinal points, the corners of the Maya universe. The other two were oriented east - west. See "The King's Maidens" in *National Geographic* July 2014, p. 25.



Female effigies from Takalik Abaj, Photograph by Kenneth Garrett

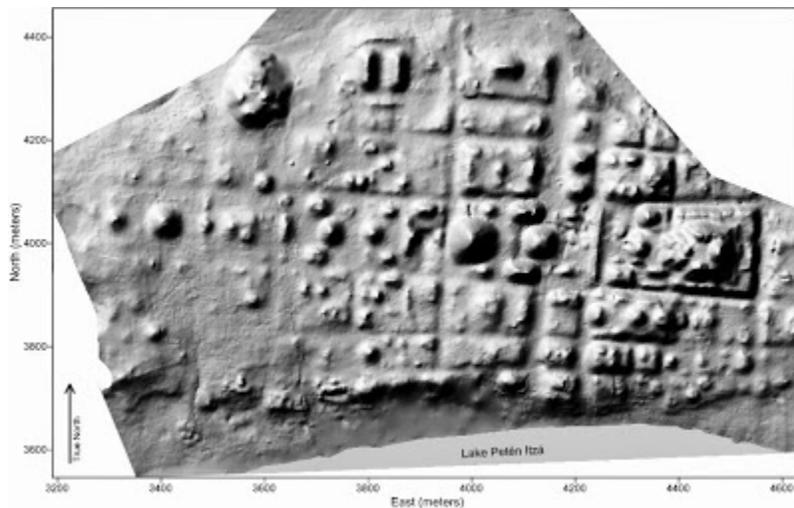
Structure 7 at Takalik Abaj is thought to be an astronomical observatory. It has 3 rows of monuments aligned north - south. One of the rows pointed to the constellation Ursa Major (aka the big dipper) as it was in the middle pre-classic. Ursa Major points to Polaris, the current north polar star. See the article "[Test #5 North South East and West](#)" for context. One of the rows pointed to the constellation Draco as it was in the late pre-classic. Draco's bright star Thuban was the north polar star ca. 2,000 B.C.

The Maya built sophisticated roads called sacbes. Many of them were oriented to the cardinal directions. Here is a map showing two of the best known sacbes in northern Yucatan oriented east/west. Modern cartographers often do the same thing when drawing political boundaries.



Ake to Izamal & Yaxuna to Coba Sacbes oriented E to W just like portions of the Mexico/Guatemala border

In April 2015 Timothy Pugh of [Queens College, City University of New York](#) gave a presentation at the 80th Annual Meeting of Society for American Archaeology [SAA](#) in San Francisco. He showed this LIDAR image of the oldest part of the site of Nixtun Ch'ich' just across Lake Peten Itza from Flores, Peten, Guatemala.



Preclassic Nixtun Ch'ich' Built on a Grid

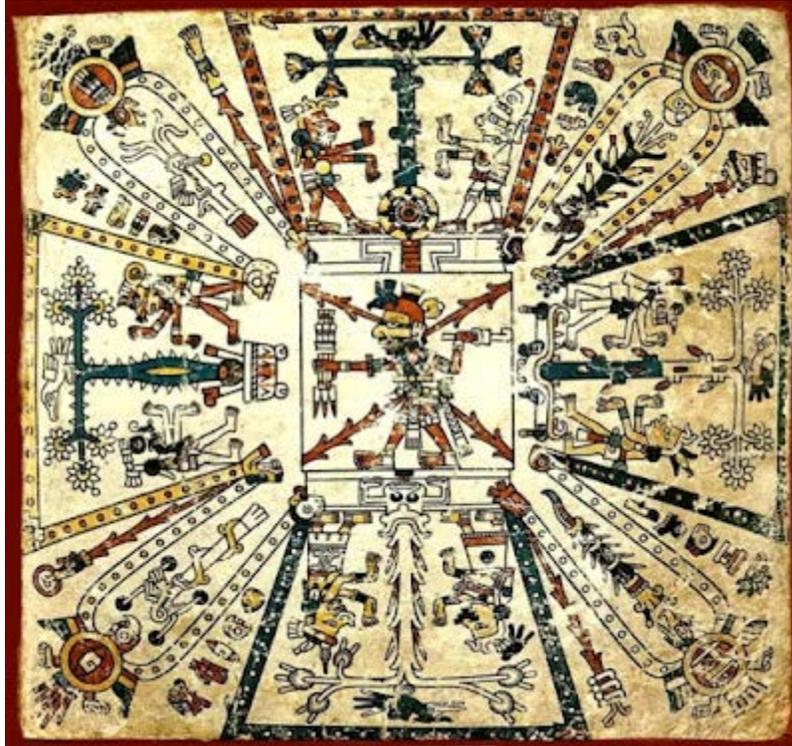
Occupied between 600 B.C. and 300 B.C. this early Maya site on the shores of Lake Peten Itza was laid out in a grid pattern. The main East West axis is only 3 degrees off true East. The ceremonial district runs along this EW axis, while residential areas are north and south of it. Prior to this discovery, the earliest Mesoamerican site known to have been built on a grid was Teotihuacan in Central Mexico.

The important preclassic Maya site Cerros was laid out on a north - south axis.

In Allen J. Christenson's translation of the *Popol Vuh* we read that both the earth and sky have four corners and four sides, measured with a cord strung between stakes that is then doubled over (Dennis Tedlock in his translation calls it "halving the cord" to find the midpoint. This resulted in a squared territory like a maize field, a house or a table. One of Christenson's informants, a traditional Maya priest, explained that when he is seated at his ritual table, "My body is in the form of a cross, just like the four sides of the world. This is why I face to the east and behind me is the west. My left arm extends out toward the north, any my right arm points to the south." Allen J. Christenson, *Popol Vuh* Electronic Library, English Translation, (Provo, Utah: Brigham Young University, 2007), note 39.

Christenson's remarkable interpretation of the *Popol Vuh* also includes two instances of the phrase "the East, where the sun rises." "The Defeat of Cabracan" paragraphs 4 & 14. On the equator, the sun viewed on a flat horizon rises due east on the vernal and autumnal equinoxes and ranges from 23.5 degrees north on the summer solstice to 23.5 degrees south on the winter solstice. As one moves northward, the range of variability from solstice to solstice increases slightly. So, at 15.5 degrees north latitude (Guatemala City) the sun viewed on a flat horizon rises due east on the vernal and autumnal equinoxes and ranges from 24.38 degrees north on the summer solstice to 24.38 degrees south on the winter solstice. The formula for calculating solstitial variation of sunrise points on a flat horizon is  $23.5/\cos(\text{latitude})$ . So, during the course of one solar year in highland Guatemala the sun will rise at a variety of points in an arc slightly less than 50 degrees wide centered on due east. On a compass star, the east direction is 90 degrees wide from northeast to southeast, so a 50 degree arc fits comfortably within those bounds and almost fits within the 45 degree bounds of east northeast to east southeast. The direction the Quiche Maya authors of the *Popol Vuh* called "east" is the same direction we call "east" today because like them, our modern system is also based on the sunrise. See the blog article "[Test #5 North South East and West.](#)"

Here is the idea of the four quarters of the earth, each with a cruciform tree of life and a sacred wind, as expressed on the first page of the Codex Fejervary-Mayer.



First page, Codex Fejervary-Mayer

And, here is the same idea represented in a Maya floral altar set up on the floor of a building in San Cristobal de las Casas, Chiapas in 2009. Note that this altar uses the traditional Maya color scheme: north - white, east - red, south - yellow and west - black. Since black blossoms are rare in this part of the world, the Maya priests who erect these altars often substitute purple for black and then paint a black stripe over the purple flowers.



Traditional Maya floral altar oriented to the four cardinal directions

Ancient Mesoamericans were such sophisticated observers of nature they calculated the 25,770-year precession of Venus. An entire sub discipline within Mesoamerican archaeology (archaeoastronomy) is dedicated to the study of site alignments with celestial phenomena. They knew how to plot true north even in the millenia before Polaris became the northern pole star. We have no reason to contort The Book of Mormon text into some arcane notion of skewed cardinal directions.

For a description of the four cardinal directions as understood by the precontact Quiche of highland Guatemala, see the blog article "[Quichean Directionality](#)." For the astronomical phenomena behind cardinal and ordinal directional systems worldwide see the blog article "[Test #5 North South East West](#)." For additional corroboration that Mesoamerican cultures used four solar-based cardinal directions see the blog article "[Light from L.A.](#)"

On October 16, 2015 Richard Hansen, director of the Mirador Basin Project in northern Peten, gave a lecture at the Utah Museum of Natural History affiliated with the University of Utah. He said most Olmec sites are oriented N/S while most early Maya sites are oriented E/W and aligned to important solstitial and equinoctial points on the horizon. See the article "[Hansen and Coe](#)."

On March 8, 2016, Takeshi Inomata of the University of Arizona gave a lecture at the Harold B. Lee Library on BYU campus. He showed many examples of middle preclassic

greenstone ax foundation deposits laid out in cruciform shape oriented to the four cardinal directions. See the article "[Takeshi Inomata](#)."

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The article "[Smoking Gun](#)" has additional evidence that Mesoamerican directions followed traditional cardinal and intercardinal points.

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In addition, textual directions with credible correlations from the Middle East are testable. [1 Nephi 16:13](#) says the Lehites traveled in nearly a south-southeast direction. [1 Nephi 16:14](#) says they continued along that same heading for some time, generally following the shoreline of the Red Sea. [1 Nephi 16:33](#) describes the group continuing along basically the same course until they reached Nahom which correlates with modern Naham about 35 kilometers north east of Sana'a, the present-day capital of Yemen. See Noel B. Reynolds, "Lehi's Arabian Journey Updated" in *Book of Mormon Authorship Revisited*, Noel B. Reynolds, editor, (Provo, Utah: FARMS, 1997). This map shows a transect from Jerusalem on the north to the probable Nahom on the south.

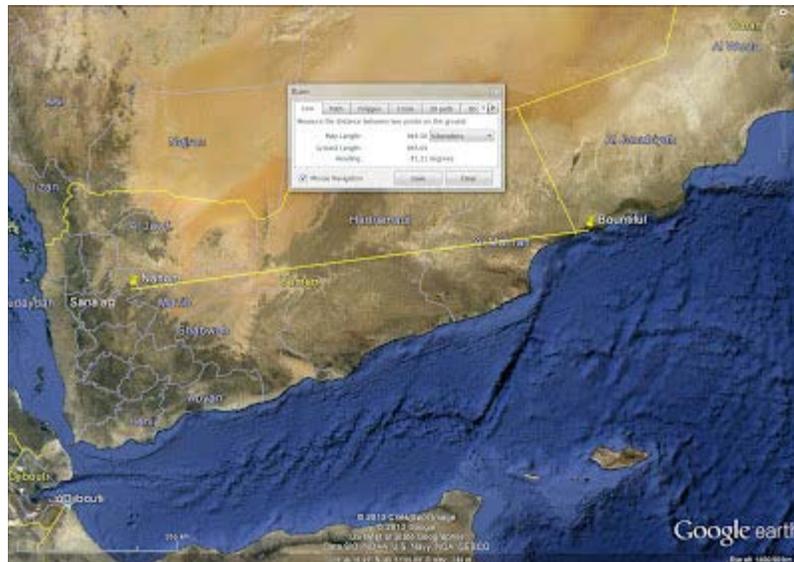


General route from Jerusalem to likely Nahom

The route shown runs for 2,027 kilometers at a heading of 150.11 degrees where 90 is due east, 135 is southeast, 157.5 is south-southeast, and 180 is due south. The Book of

Mormon description of "nearly south-southeast" precisely matches modern directional terminology.

From Nahom, the Lehitites traveled nearly eastward [1 Nephi 17:1](#) until they reached the oasis Bountiful on the Omani coast. Bountiful was probably the area today known as Wadi Sayq (see the Reynolds article cited above).



Likely route nearly eastward from Nahom to Bountiful

This route runs for 944 kilometers on a heading of 81.21 degrees where 90 degrees is due east and 67.5 is east-northeast. Again, The Book of Mormon description "nearly eastward" is precisely the language we would use today to describe this direction of travel. The Book of Mormon concept of directional cardinality was very similar to our current notion.

This is not surprising since the Nephites and Lamanites came from Jerusalem where a directional system much like our own was embedded in the Hebrew language. "Saphon" (variant tzaphon) was the word for north, "negev" for south. "Kedem" (variants edom, adom) meaning "red" was the word for east, "yam" meaning "sea" for west. This map shows the geographic origins of 3 of these 4 Hebrew terms. The 4th probably had its origin in solar phenomena.



Cardinal directions used in ancient Jerusalem

"Saphon" came from Mount Zaphon in modern Turkey, almost due north of Jerusalem. "Negev" is the desert south of Jerusalem. "Yam" was the Mediterranean Sea west of the city. "Kedem" or "red" probably referred to the color of sunrise on the eastern horizon. Another possible derivation was geological. Edom, marked by the famous site Petra east of the Great Rift Valley, was and is well-known for the brilliant red color of its sandstone. The association of east (sunrise) with the color red is known from many ancient cultures, including the Maya.

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Here is a little gem from Warren Aston via John W. Welch, a photo of one of three known inscribed altars from Nahom with the Semitic word "*NHM*" clearly visible. Since Semitic languages use only consonants, the name has been rendered variously as Nehem (original Ross T. Christensen suggestion), Naham (contemporary Yemeni map) and Nahom ([1 Nephi 16:34](#)).



*NHM* incised altar photo courtesy John W. Welch

With a meaning of suffering or mourning, *NHM* fits the text of [1 Nephi 16:35](#) precisely. Furthermore, this altar and the two known variants date from approximately Lehi's time period, ca. 600 B.C. Do we know where The Book of Mormon took place? In the case of Nahom in Yemen, the evidence seems clear and convincing.