

- **Major themes in modern archaeoastronomy, cultural astronomy, skyscape archaeology**
- Careful field work such as precise determination of true north, photographic documentation, collaboration with archeologists, attention to ethnography and historical sources if available.
- Necessity of considering cultural context and evidence from the archaeological record. Astronomical alignments by themselves are insufficient sources of information about the culture.
- Alternate ontologies are useful for providing alternate hypotheses about cultural meaning.

“astronomical alignments should be elicited within the context in which they functioned...**meanings cannot emerge just from astronomical alignments themselves**,, the ultimate goal of our discipline is to study astronomical objects and phenomena as perceived, used, and interpreted by local cultures.”

-Stanislaw Iwaniszewski

“The Temple of the Inscriptions in the Spiritual Landscape at Palenque”. In: *The Materiality of the Sky*, Proceedings of the 22nd Annual SEAC Conference, 2014, edited by Fabio Silva, Kim Malville, Tore Lomsdalen and Frank Ventura. Sophia Centre Press, University of Wales, Trinity St. David, Ceredigion, pp. 267-287.

“an understanding of the sky by non-western people cannot simply be treated as a non-modern (or “primitive”) version of western models of reality. In order to understand their astronomy, one must operate with the assumption that non-western practitioners of astronomy may have entirely different ontologies with which they modeled their worlds. Heavenly bodies may have been understood as living, animate beings and their behavior in the sky may been described in terms of their own social life.”

-Stanislaw Iwaniszewski

2016 “The Social Life of Celestial Bodies: The Sky in Cultural Perspective. In: *Astronomy and Power: How Worlds Are Structured*, Proceedings of the SEAC 2010 Conference, edited by Michael A. Rappenglück, Barbara Rappenglück, Nicholas Campion, Fabio Silva. [BAR International Series, 2794].British Archaeological Reports, Ltd, Oxford, pp. 13-18.

Bath SEAC 2014, September 2016



Carahunge, Zorats Karer, Armenia





10 WORLD'S OLDEST THINGS FROM ARMENIA

1

Leather Shoe - 5,500 years old

Made from a single piece of cowhide, cut into two layers, tanned and laced



2

Sky Observatory - 7,500 years old

"Carahunge" (Armenian Stonehenge) is a megalithic stone circle used for the observation of the sky



3

Human Brain - 6,000 years old

Discovered inside a skull belonging to a 12- to 14-year-old girl



4

Wagons - 4,000 years old

Over a dozen wagons found in a burial site in Lchashen near a lake, in perfect condition



5

Skirt - 5,900 years old

It is considered the world's oldest piece of reed clothing ever discovered



6

Wine-Making Facility - 6,100 y/o

A large wine press for stomping grapes, fermentation and storage vessels found in Armenia



7

Metal Smelting Foundry - 6,000 y/o

Metal processing facility found at Metsamor, among the most sophisticated of its kind at that time



8

Stone Age Tools - 325,000 y/o

Thousands of Levallois stone tools found in Armenia, challenging the out of Africa theory of human innovation



9

Depictions of Agriculture - 7,500 y/o

Petroglyphs found in Armenia show the oldest pictures of men driving chariots, wagons, and plowing animals



10

War Horses - 4,500 years old

Various artifacts of domesticated war horses discovered at a burial site "Nerkin Naver"





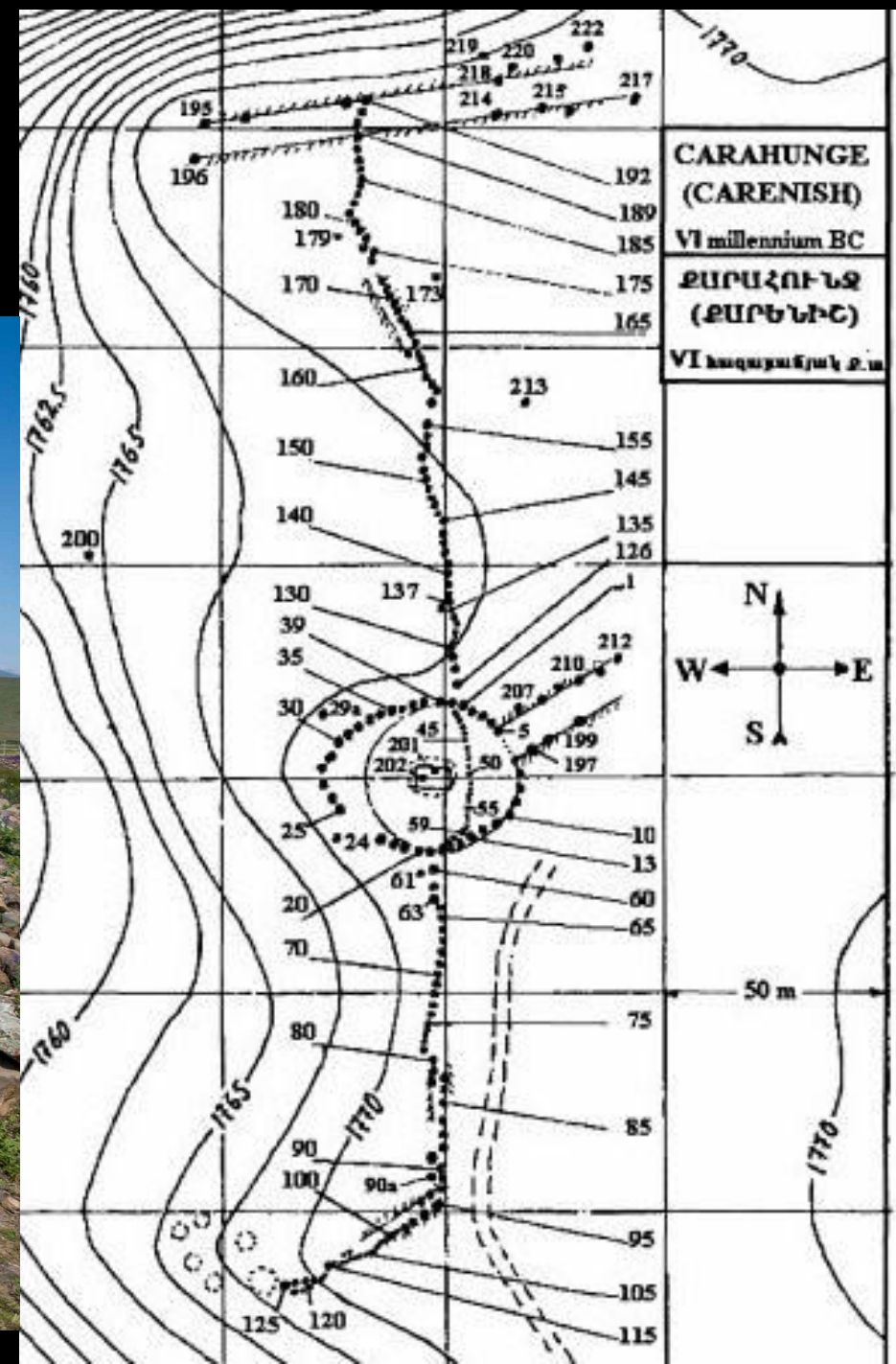




Table 5

STARS					
Star name, Constellation	Prehistoric period			Stone N	
	Years ago	Rising Az°	Setting Az°	Rising	Setting
Sirius α C Ma	4500	117.5	242.5	183	-
	6000	125.2	234.8	-	108
	7500	135.7	224.3	98, 110	162
Cappella α Aur	4500	51.5	308.5	-	51
	6000	63.2	296.8	161, 187	-
	7500	73.7	286.3	66, 85	71
Rigel β Ori	4500	120.7	239.3	-	-
	6000	132.3	227.7	98	-
	7500	146.2	213.8	147	151
Betelgeuse α Ori	4500	96.6	263.4	40	78
	6000	107.0	253.0	-	160
	7500	118.4	241.6	183	-
Deneb α Cyg	4500	39.9	320.1	126	-
	6000	38.9	321.1	126	44, 99
	7500	34.8	325.2	-	84, 122
Bellatrix γ Ori	4500	101.1	258.9	-	55, 160
	6000	112.0	248.0	-	139
	7500	123.6	236.4	76	163
Alnilam ϵ Ori	4500	109.3	250.7	129	-
	6000	120.1	239.9	-	-
	7500	132.3	227.7	98, 110	177
Alnitak ξ Ori	4500	109.7	250.3	-	-
	6000	120.4	239.6	-	-
	7500	132.6	227.4	98, 110	177
Mirzam β C Ma	4500	124.5	235.5	76	-
	6000	134.1	225.9	98, 110	177
	7500	147.0	213.0	147	151, 164





during the period from 7500 years ago down to 2000 years ago (four Stones of them are 7500 years old). The accuracy of Stone Hole axis directions to the calculated star Elevations in their culmination moments is $\pm 1^\circ$.

Table 6

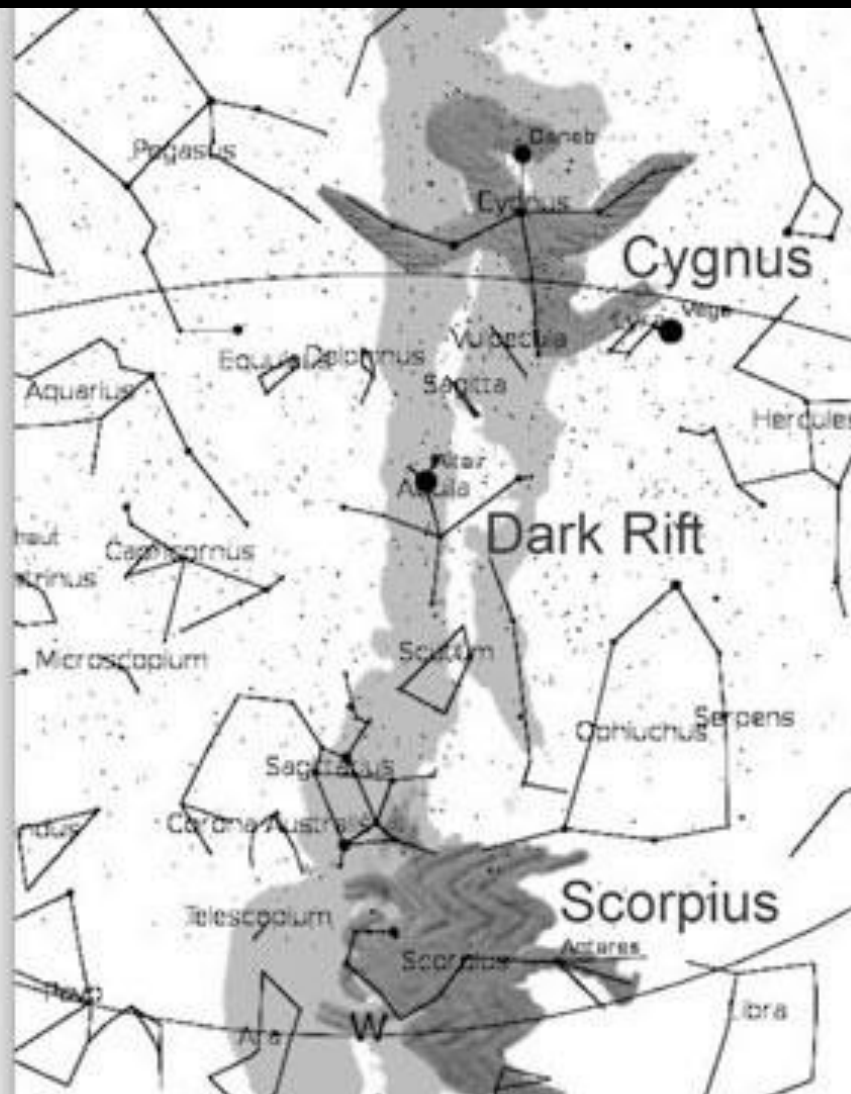
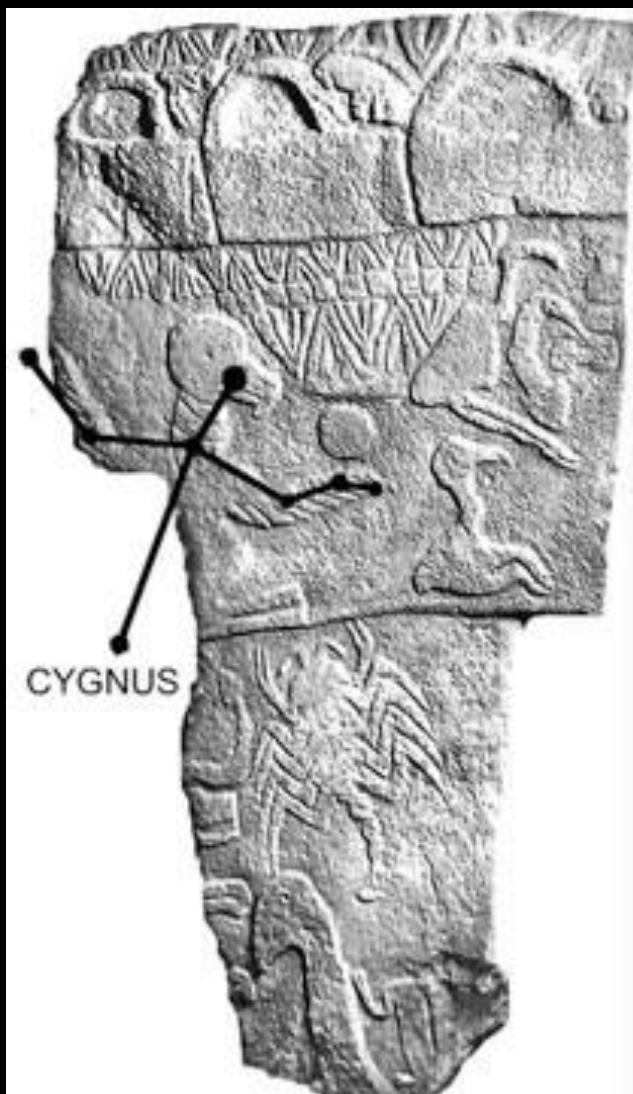
Star name	STARS				
	Prehistoric period				Stone N
	Years ago	Culmination	Az°	Altitude°	
Arcturus, α Boo	7500	Lower	0	8.6	128
Rigel, β Ori	7500	Upper	180	10.6	60
Alioth, ϵ U Ma	7500	Lower	0	18.2	109
Dubhe, α U Ma	7500	Lower	0	5.6	152
Alkaid, η U Ma	2000	Lower	0	9.6	128
Alnilam, ϵ Ori	7000	Upper	180	~22	53
Alnitak, ξ Ori	7000	Upper			
Sirius, α C Ma	6500	Upper			
Mirsam, β C Ma	5000	Upper			
Procyon, α C Mi	6000	Upper	180	~50	62
Betelgeuse, α Ori	3500	Upper			

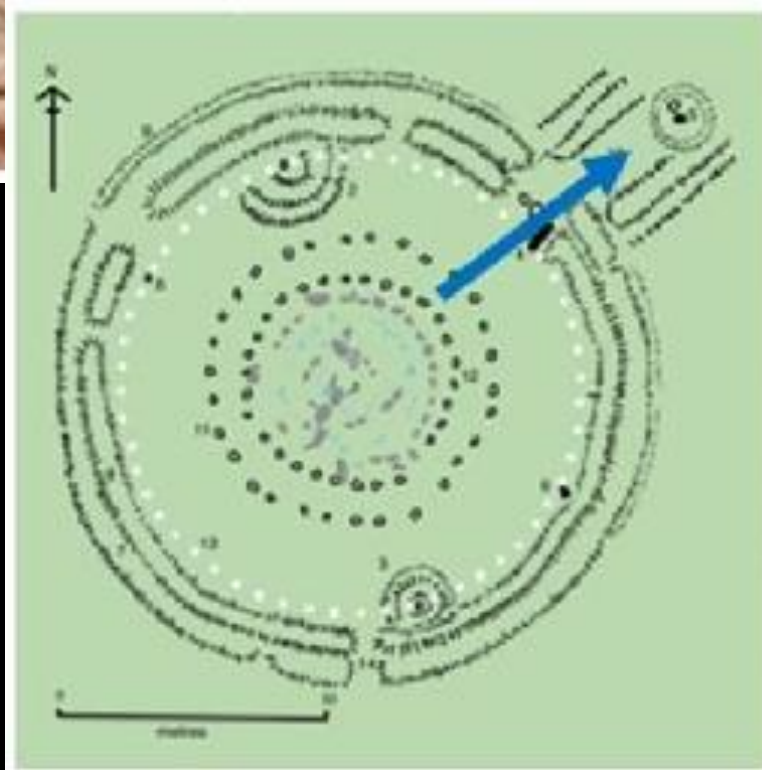
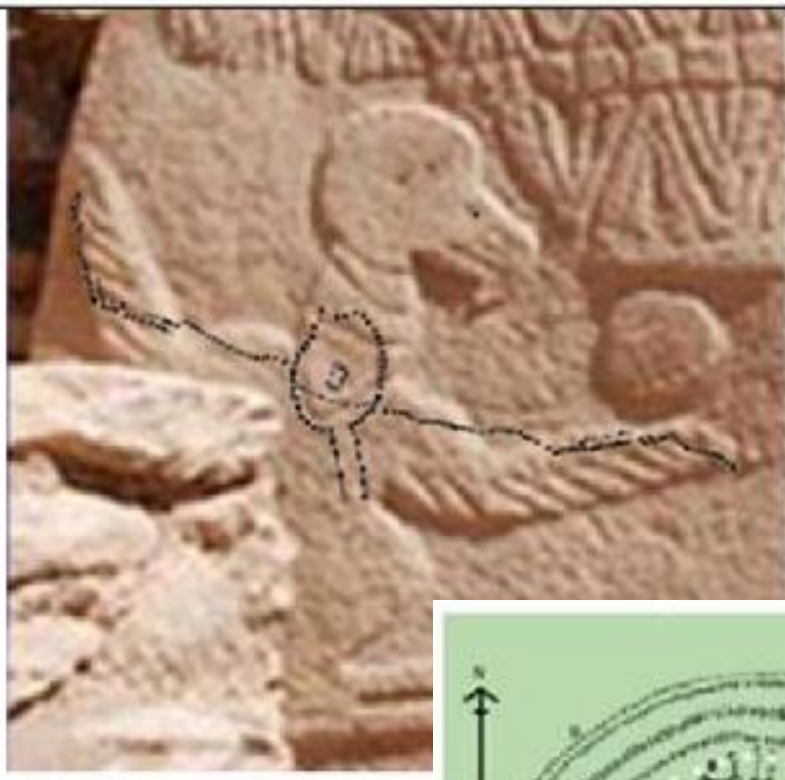
In the result we can say that Carahunge was in active use during the period of 7500-2000 years ago.

The high attention was paid again to Orion (4 Stones) and also to Ursa Major (5 Stones) constellations.

1.26. CARAHUNGE DATE CONCLUSION

Gobekli Tepe: 9000-7500 BCE

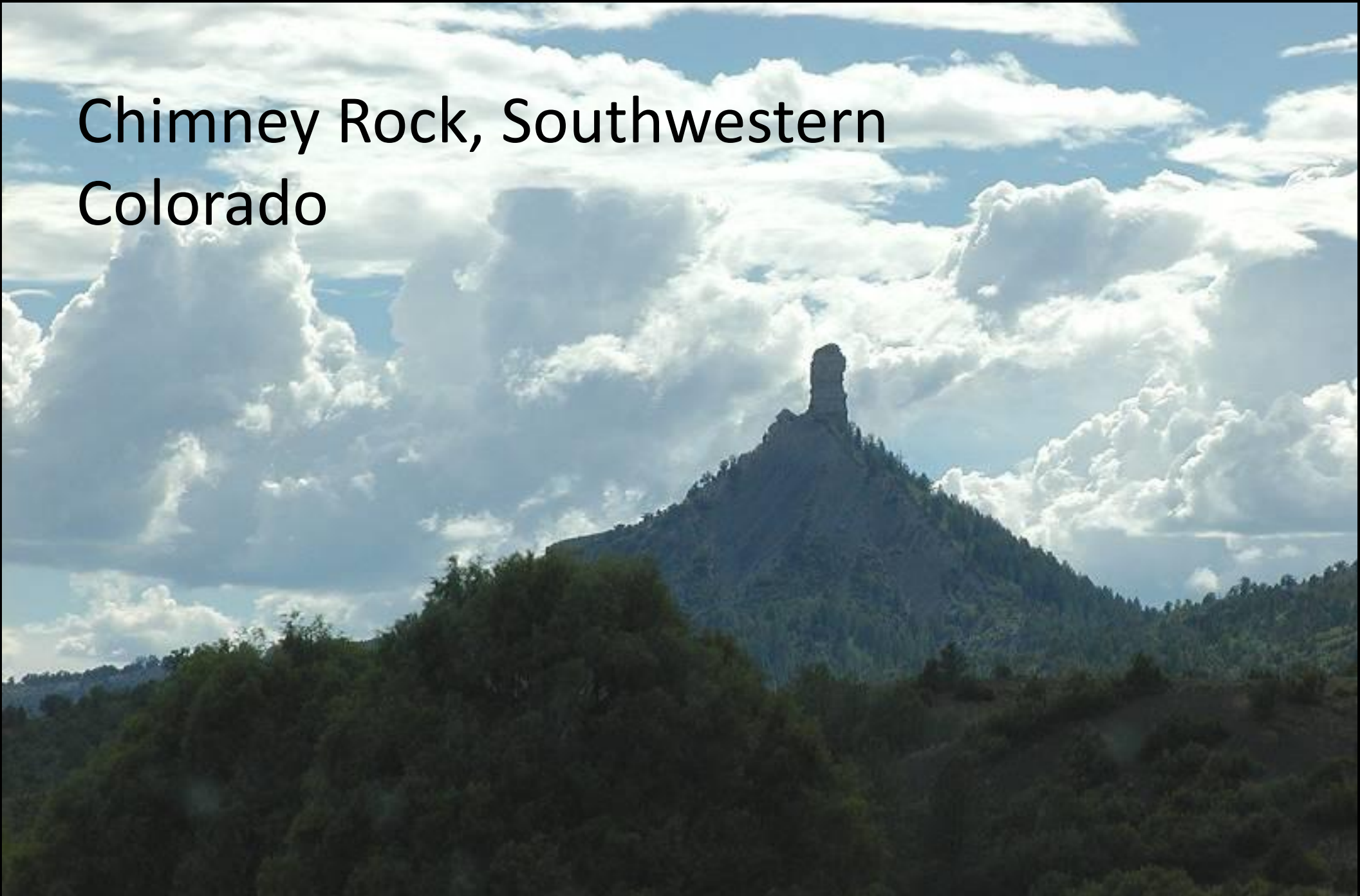




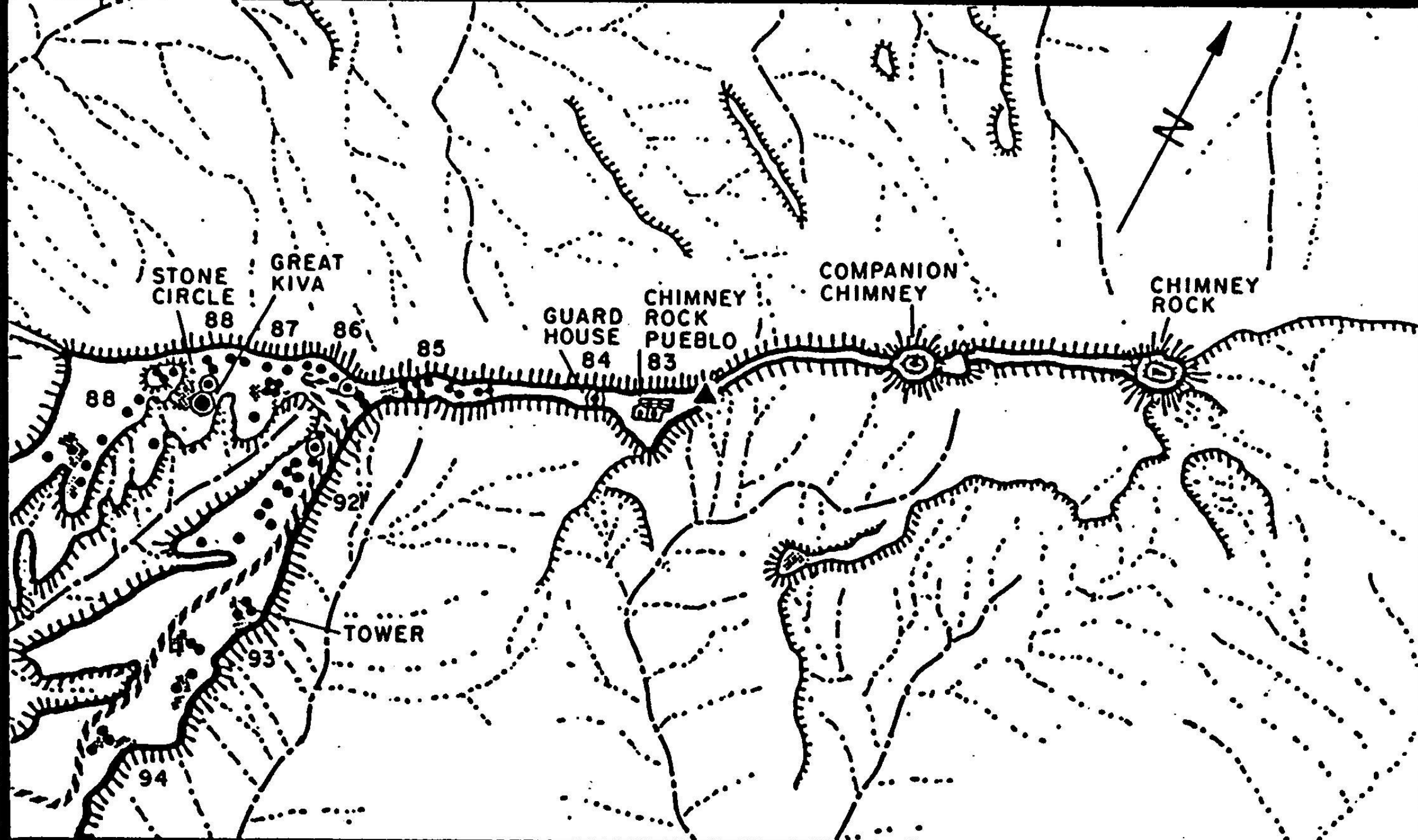
Carahunge Interpretations

- **5500 BCE is not consistent with local archeological dating, which put it into the Middle Bronze Age or Iron Age: 2300- 1000 BCE**
- **Precise orientations are based upon proposal that tubes were placed in the holes to limit the field of view---no archaeological evidence of any ceramic tubes**
- **Similarity to vultures is not backed up by any archaeology**
- **Presence of burials and tombs in southern arm may suggests it is a mortuary site, in which movement from north to south may symbolize birth to death.**
- **Stones may have been a defensive wall**

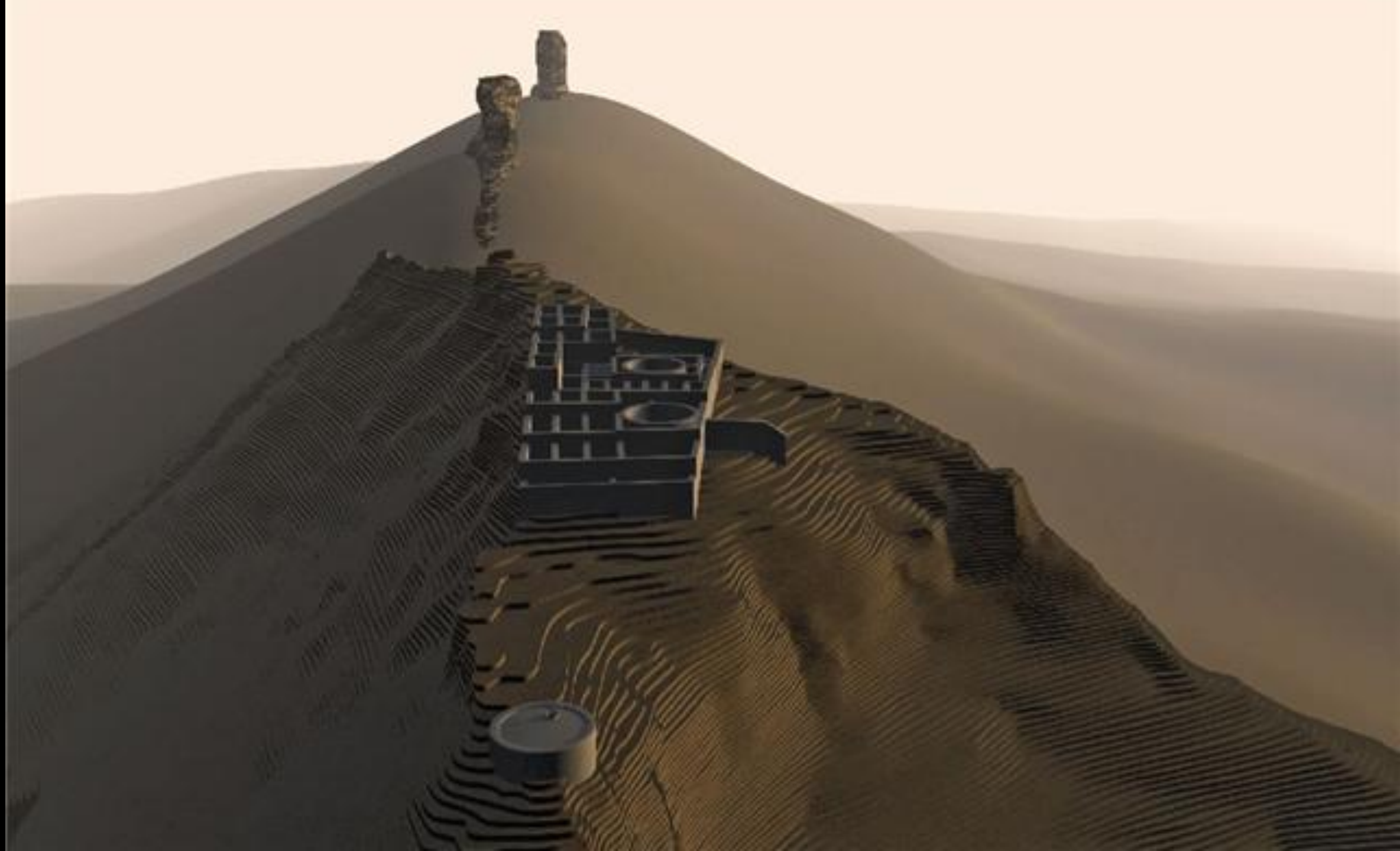
Chimney Rock, Southwestern Colorado











DISCOVERY PHOTOGRAPH

8 August 1988

Major Lunar Standstill

Juxtaposition of Moon and

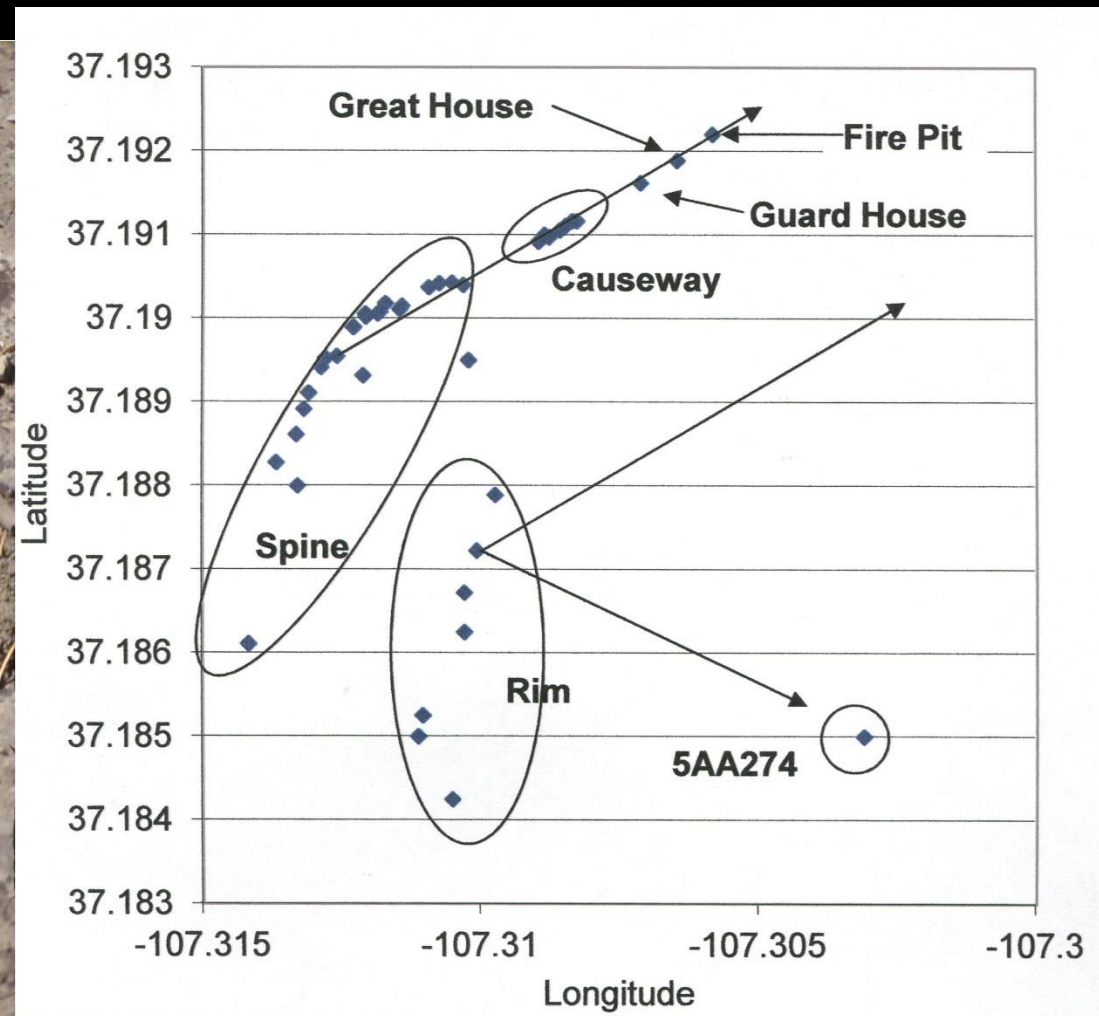
Sacred Landscape-

theophany(?)

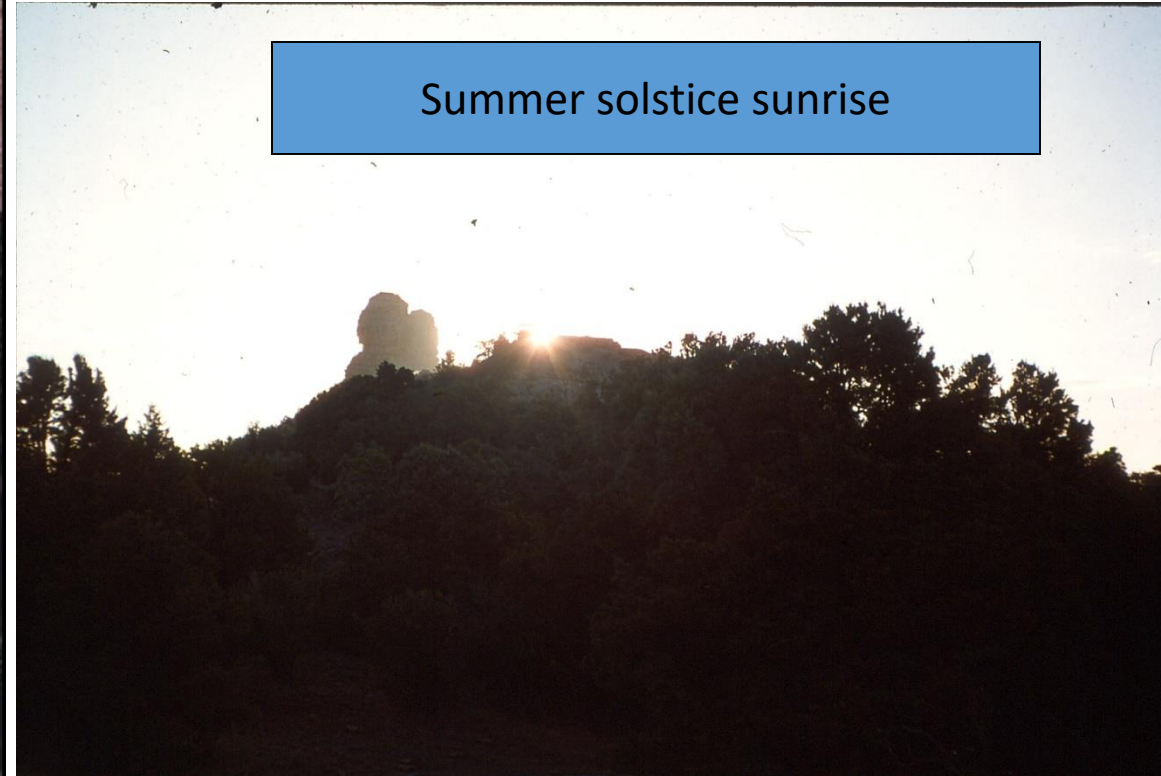




16 YEARS LATER
DECEMBER 2004

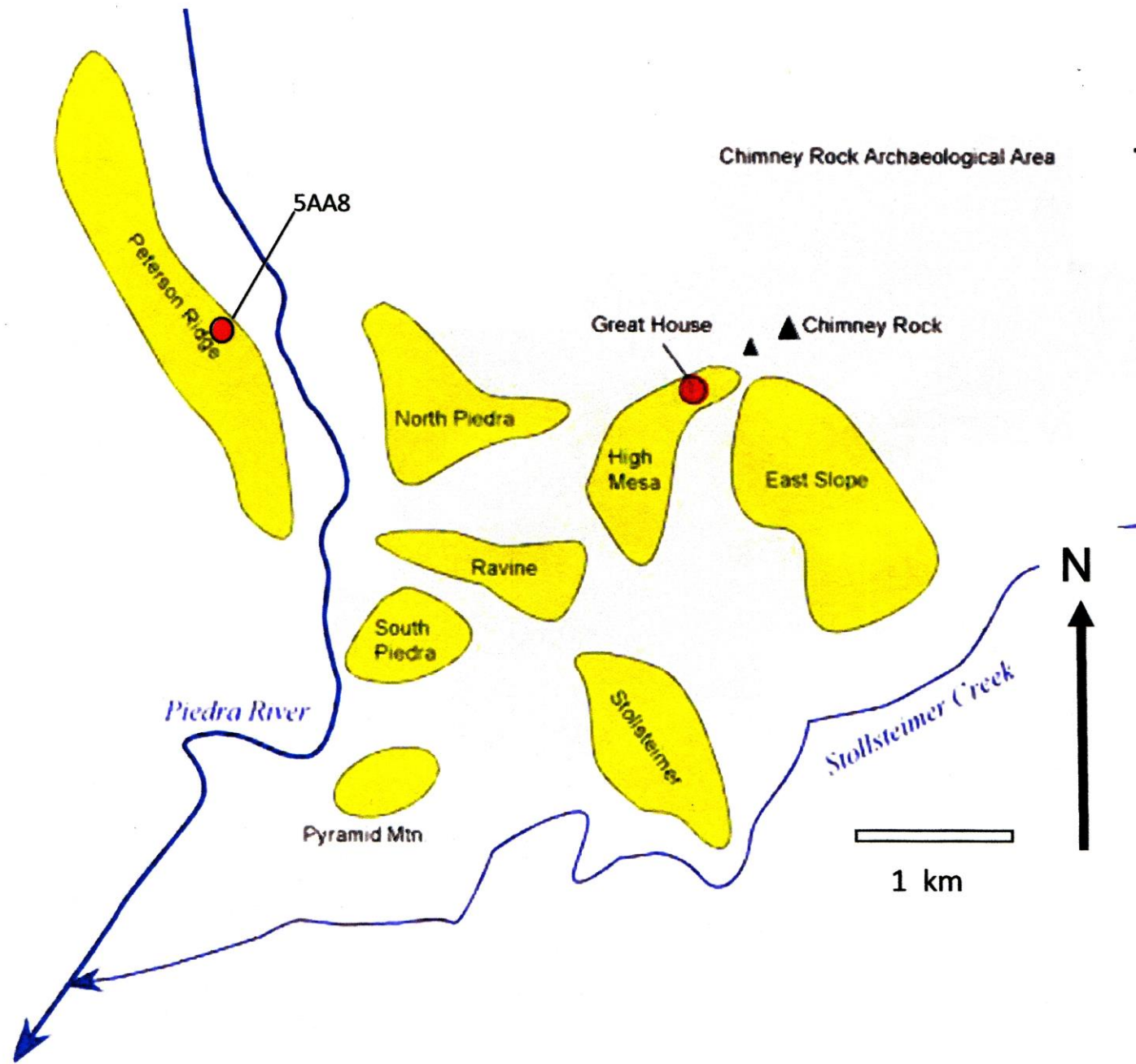


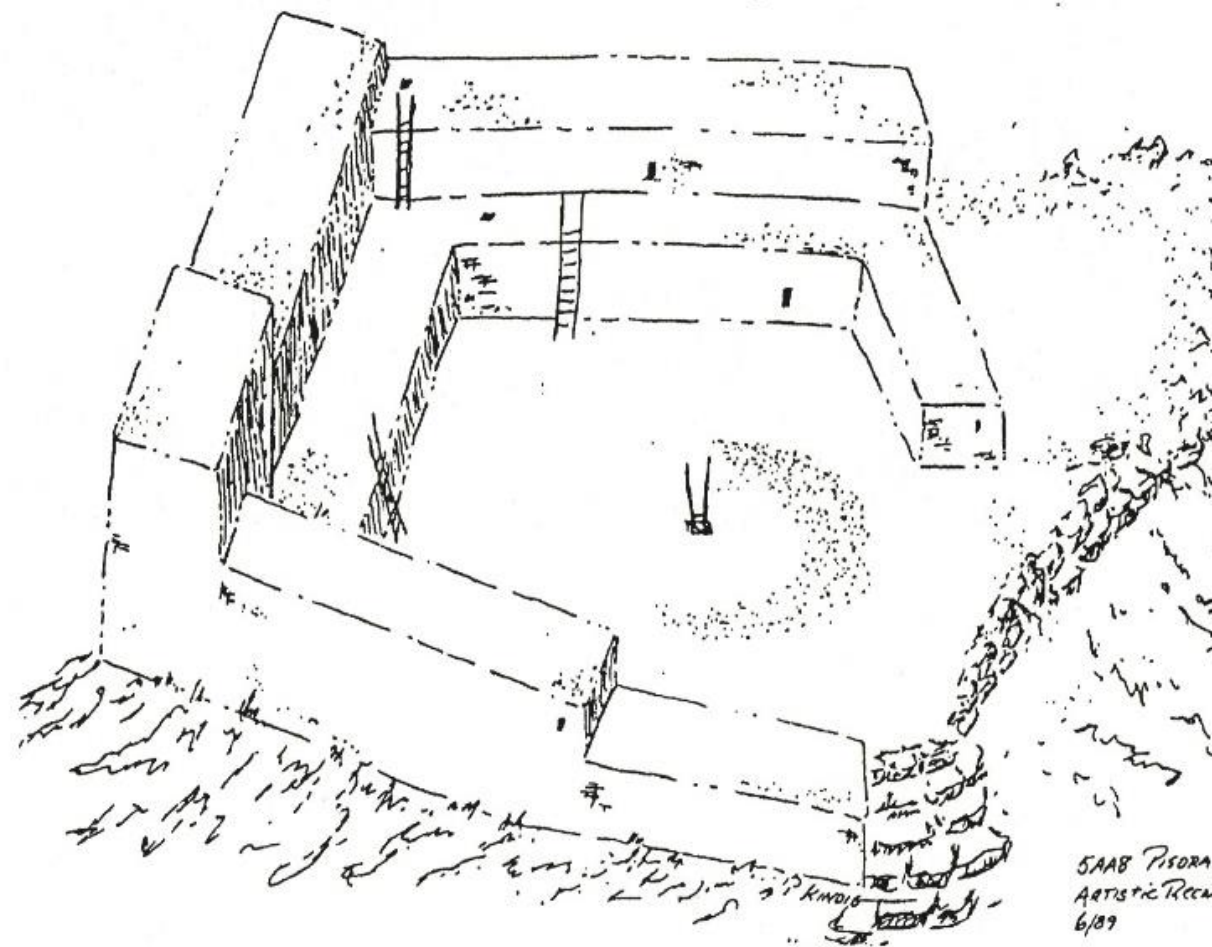
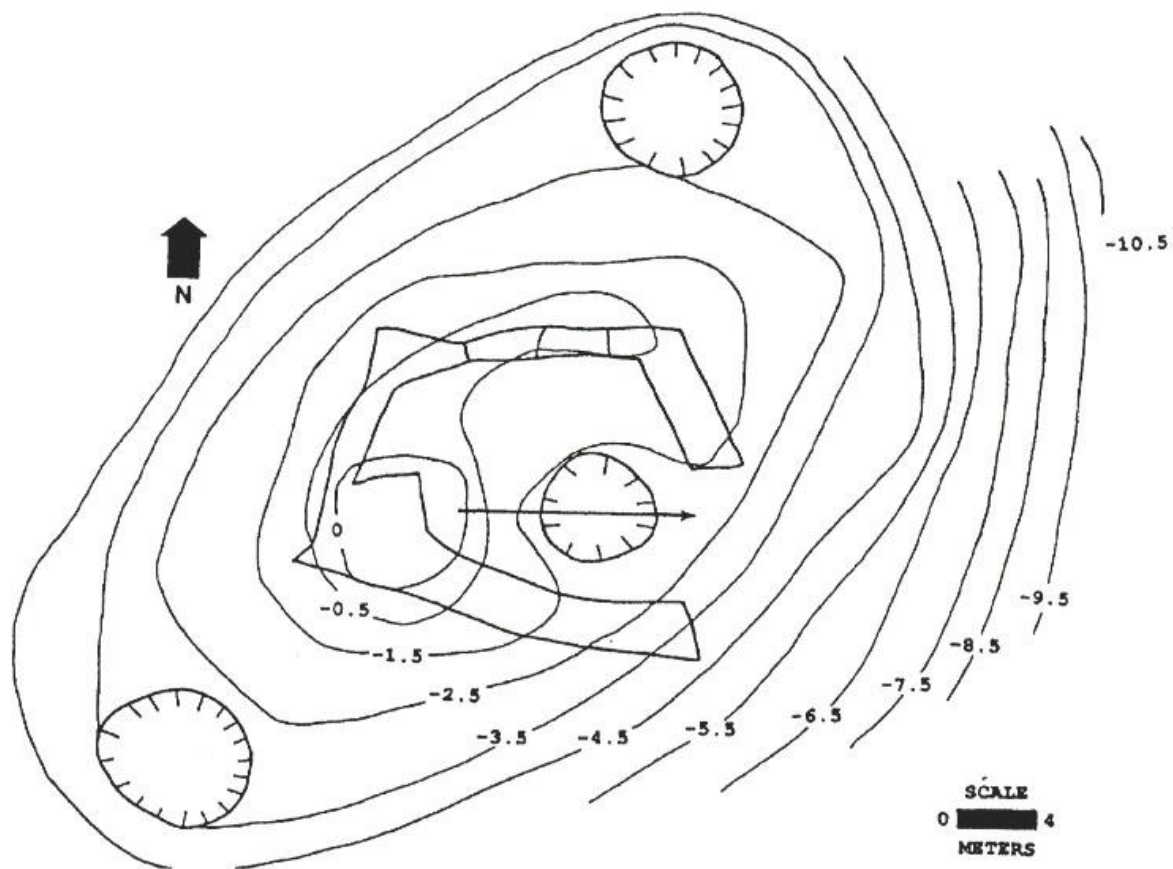
The north wall of the great house marks
the rising summer solstice sun as viewed
from the bedrock basin



Summer Solstice from the Sun Tower

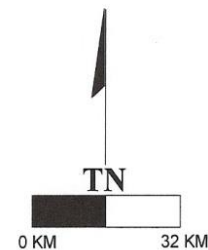
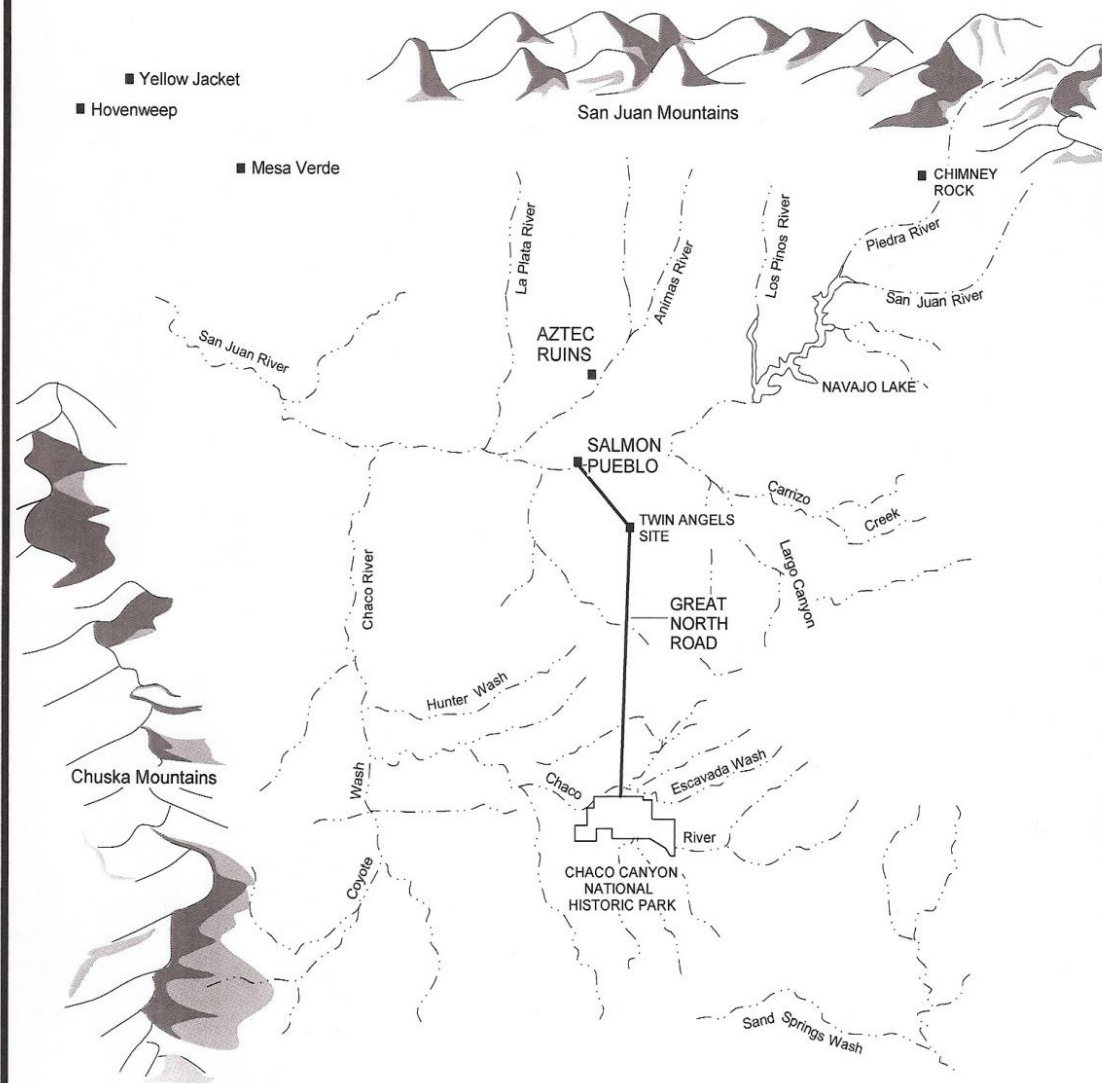






Equinox Sunrise





Chaco Canyon and Fajada Butte, New Mexico

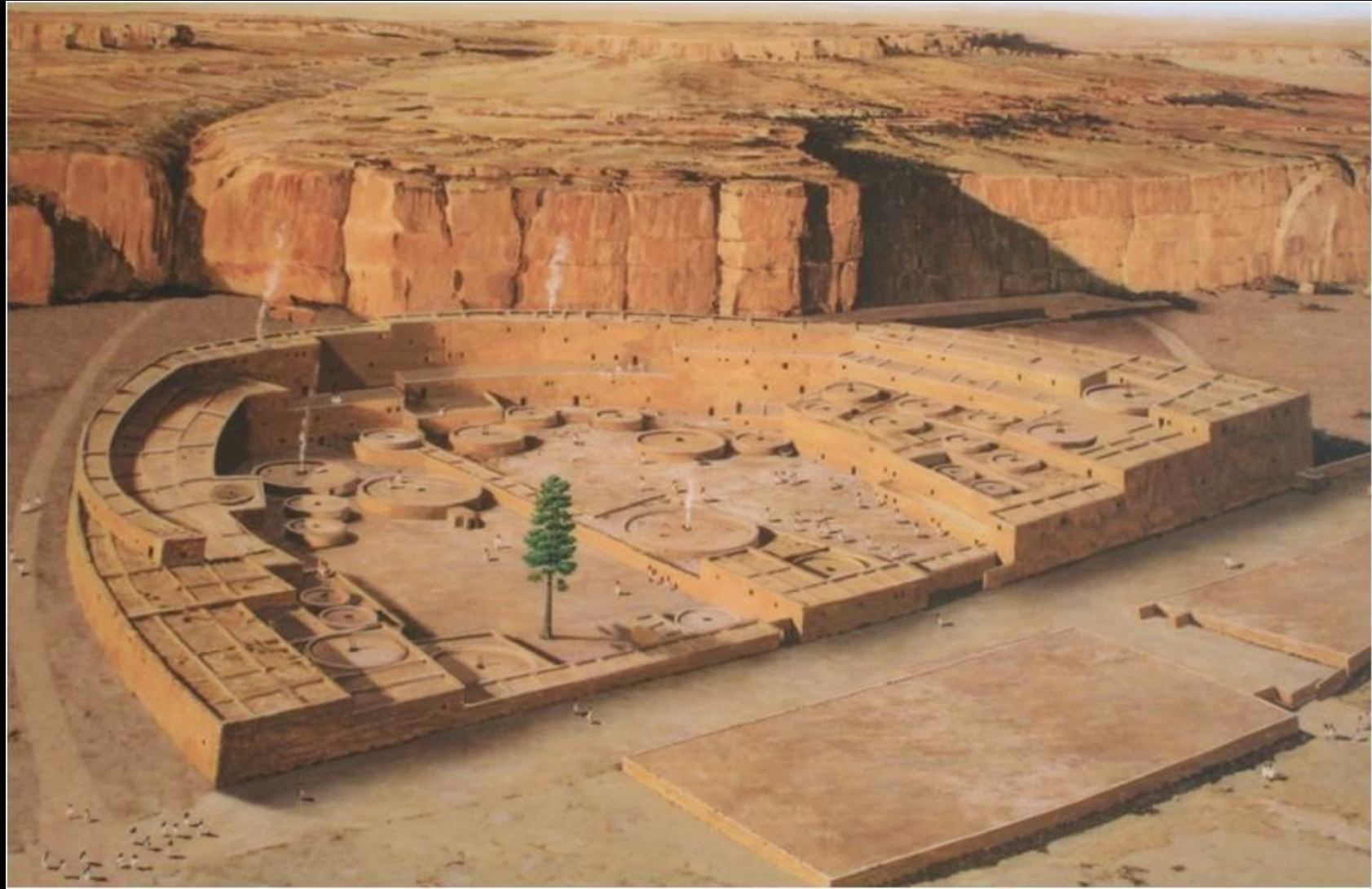
Great House Phase: 1020-1150 CE



Kin Kletso Great House: Sacred Landscape and the Sun



Pueblo Bonito Great House – 1100 CE

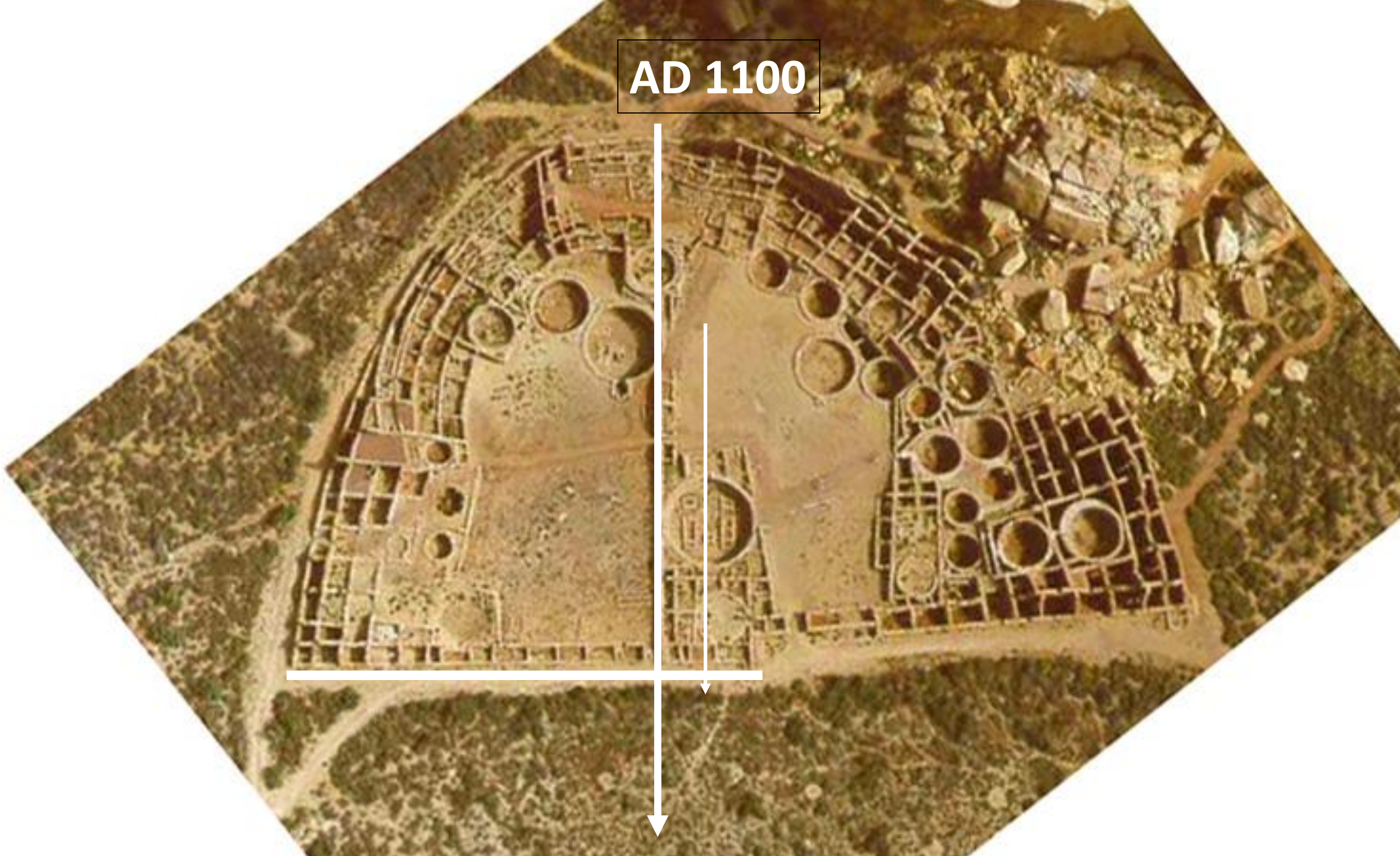


Pueblo Bonito Today

650 rooms 2 Great Kivas



AD 1100

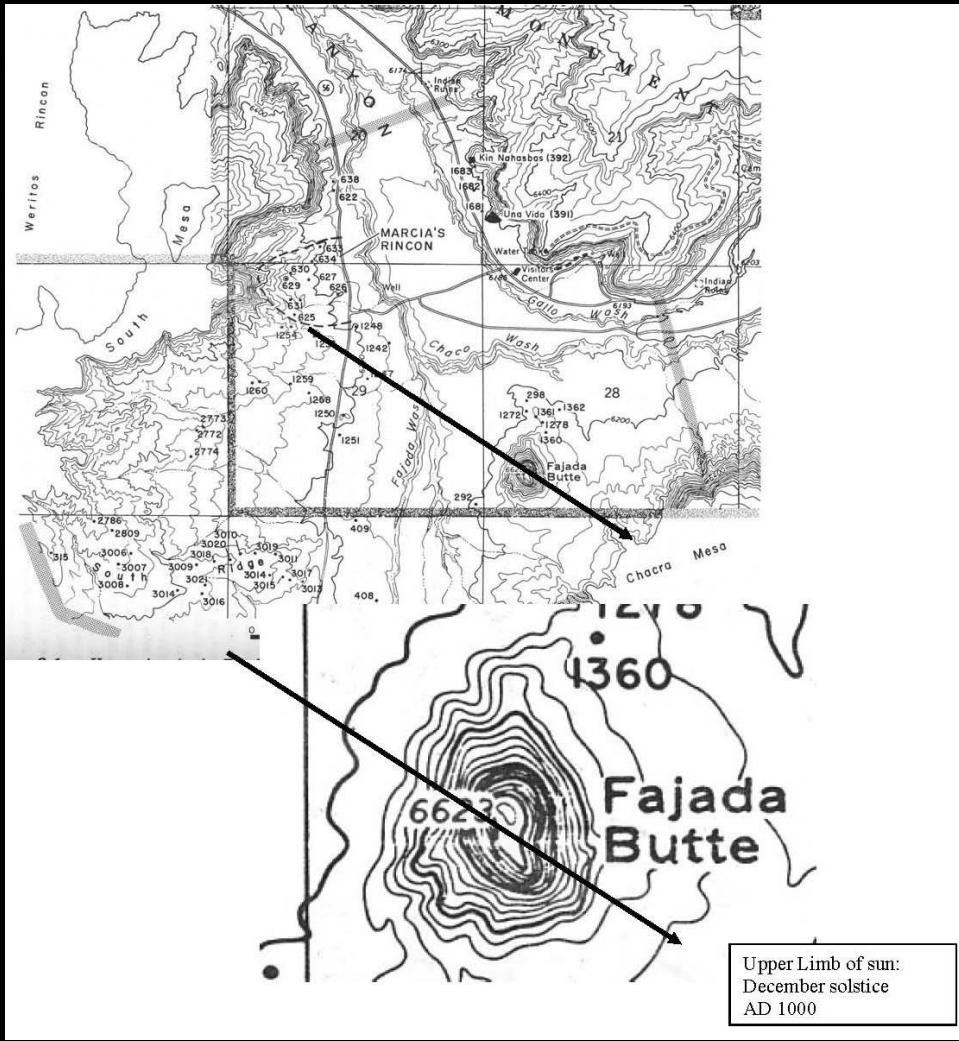


Great Kiva of Pueblo Bonito

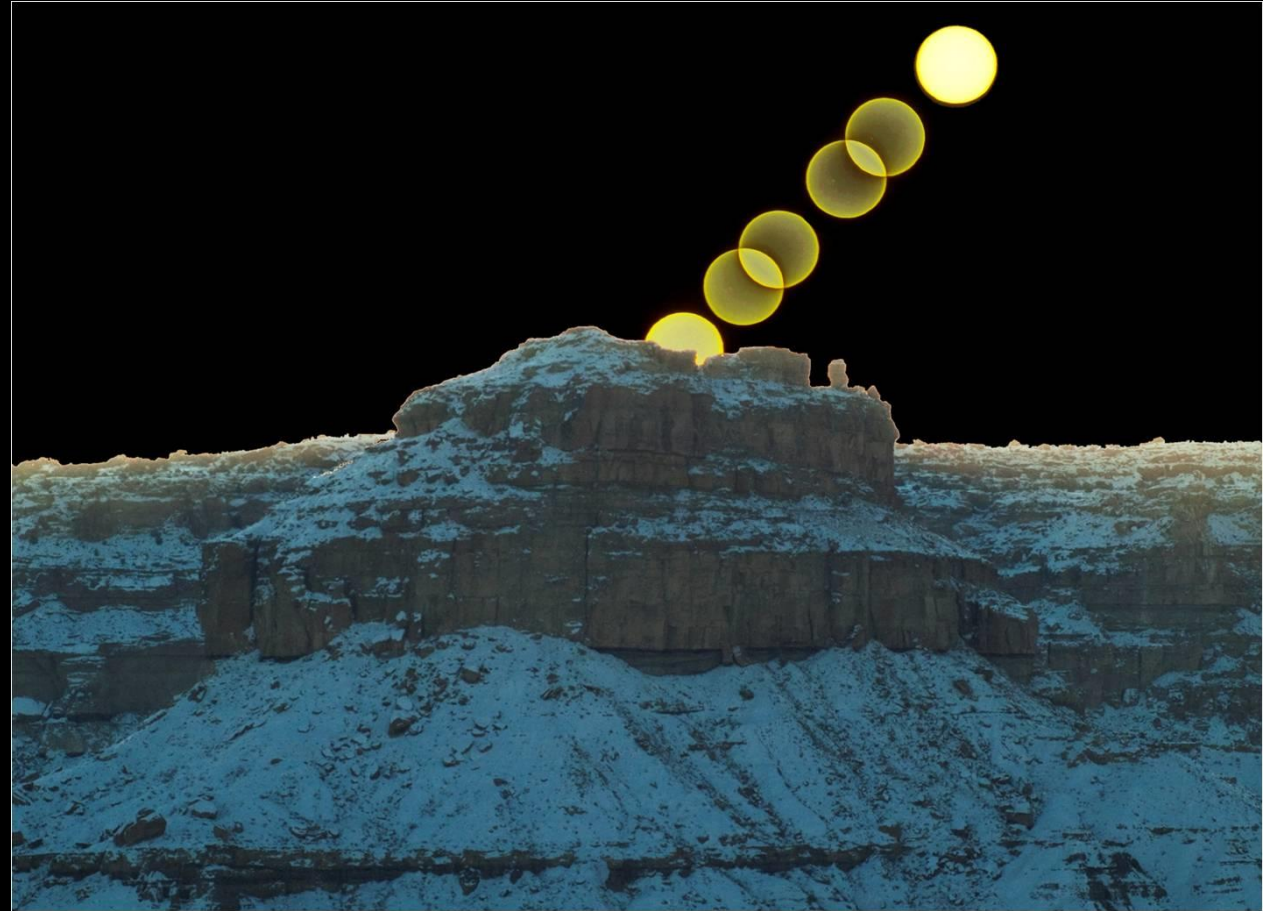




The First Astronomy: ~ 950 CE Great Kiva in Marcia's Rincon

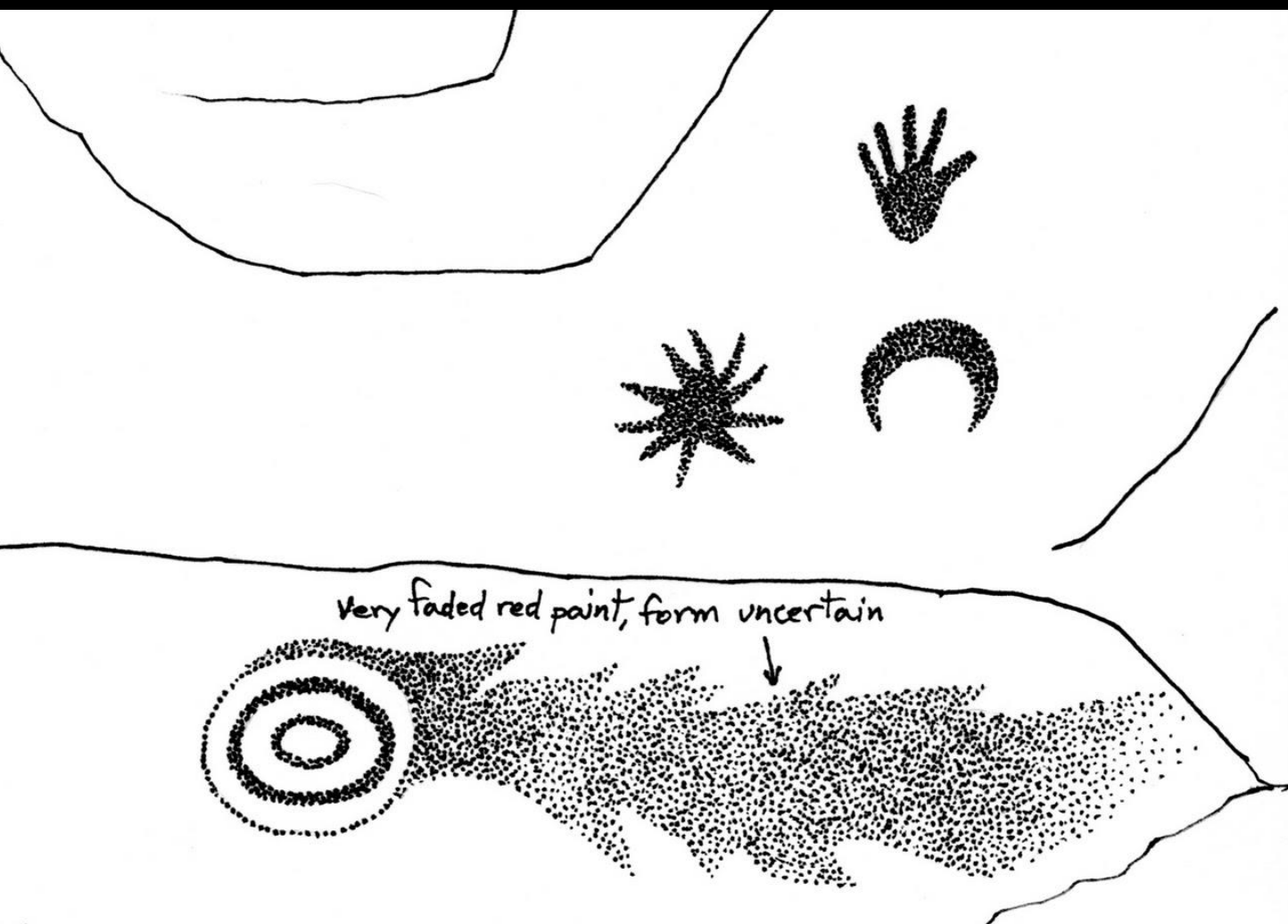


December Solstice Sunrise: Sacred Landscape and the Sun



Crab Nebula (1054 CE) and Halley's Comet (1066 CE)









Piedra del Sol

June 4-5

summer solstice





Total eclipse A.D. 1097

Piedra del Sol

