

# What does the Barrier Canyon Alluvial Chronostratigraphic Study Actually Reveal about the Antiquity of Barrier Canyon Style Imagery?

Phil R. Geib  
University of Nebraska-Lincoln

photo: Bret Webster





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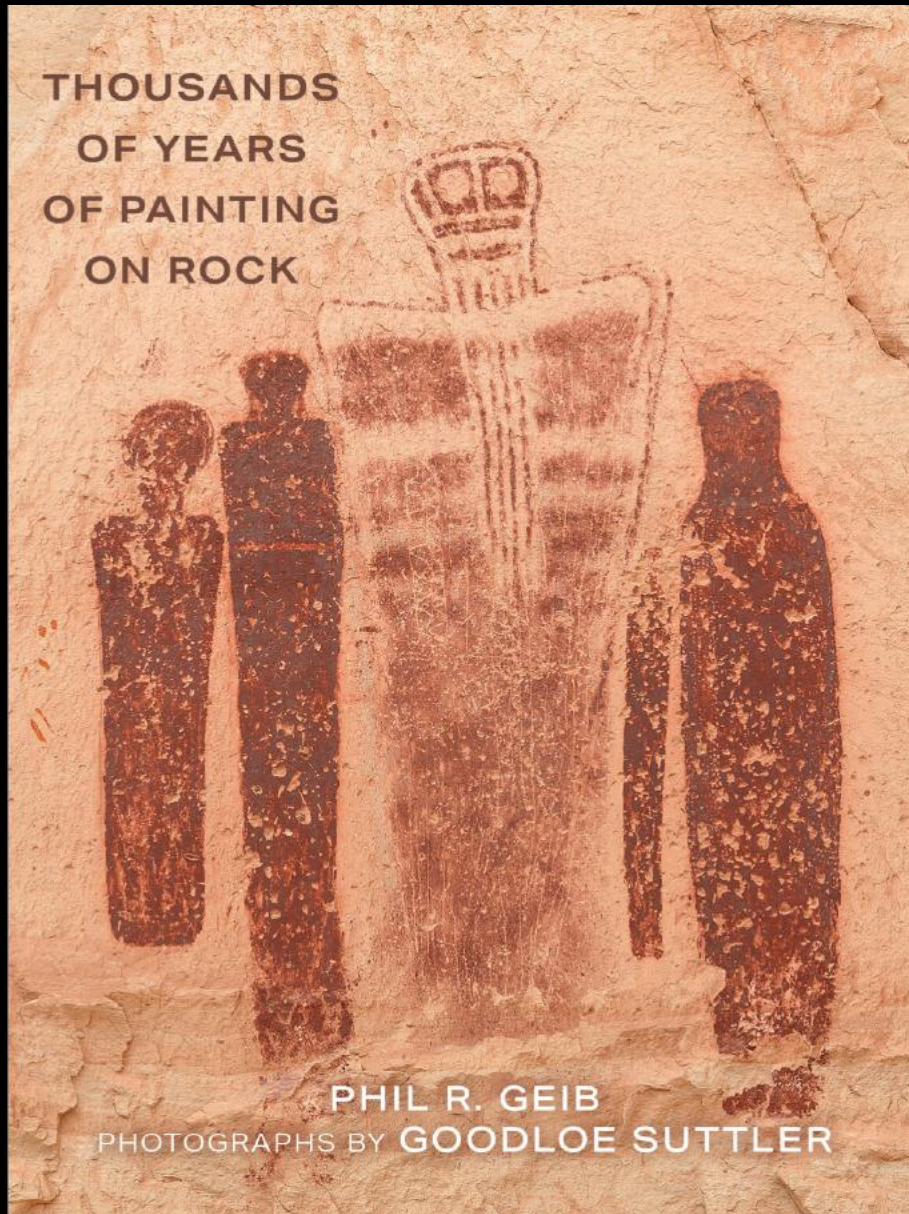
Phil R. Geib  
University of Nebraska-Lincoln

rockfall  
alluvium

photo: Bret Webster







# Goodloe Suttler

Thanks to Goodloe!

Unfortunately, he never got to see a published copy of our book.





**1<sup>st</sup> documented in 1930**

Claflin-Emerson Expedition of the Peabody Museum

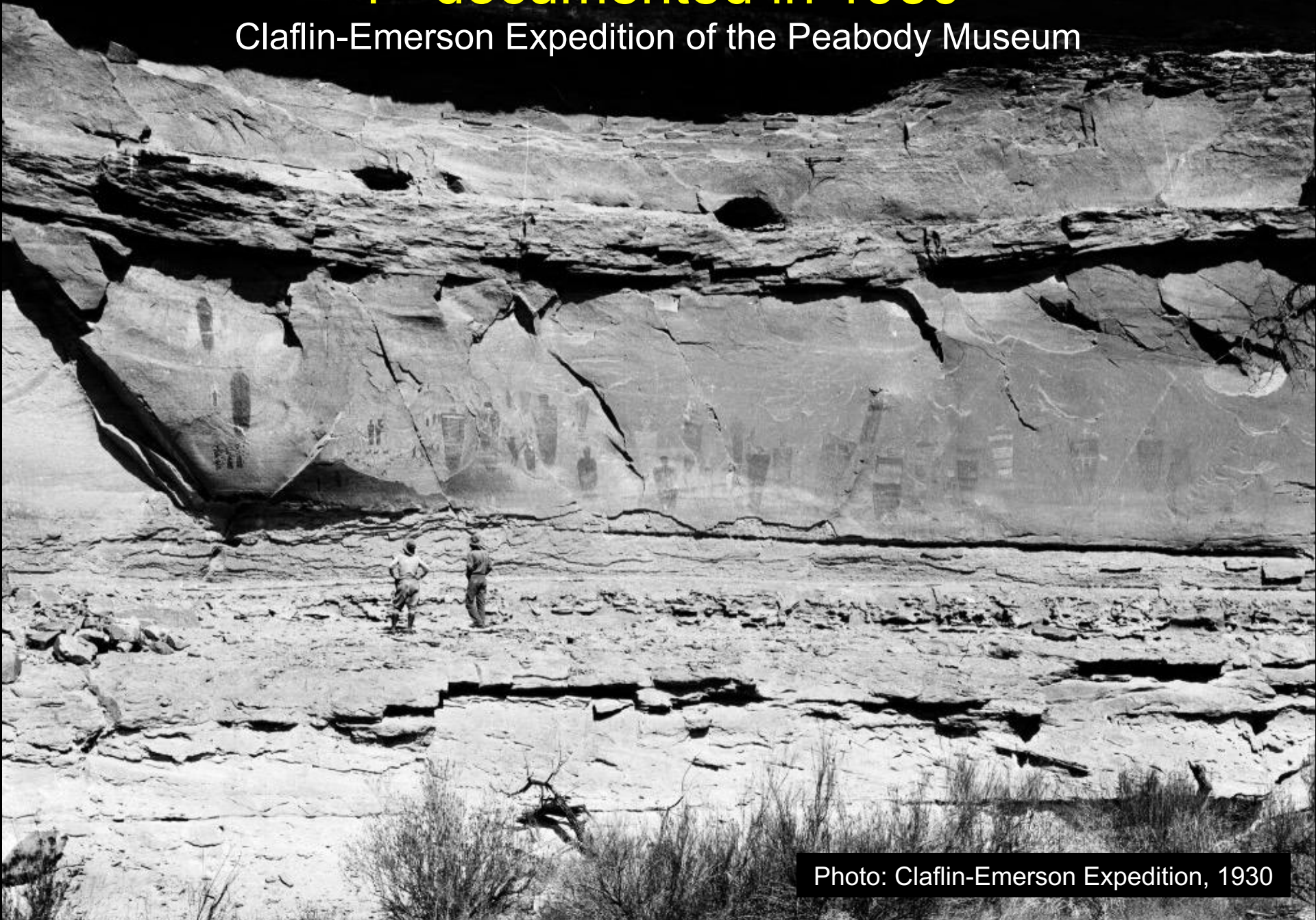
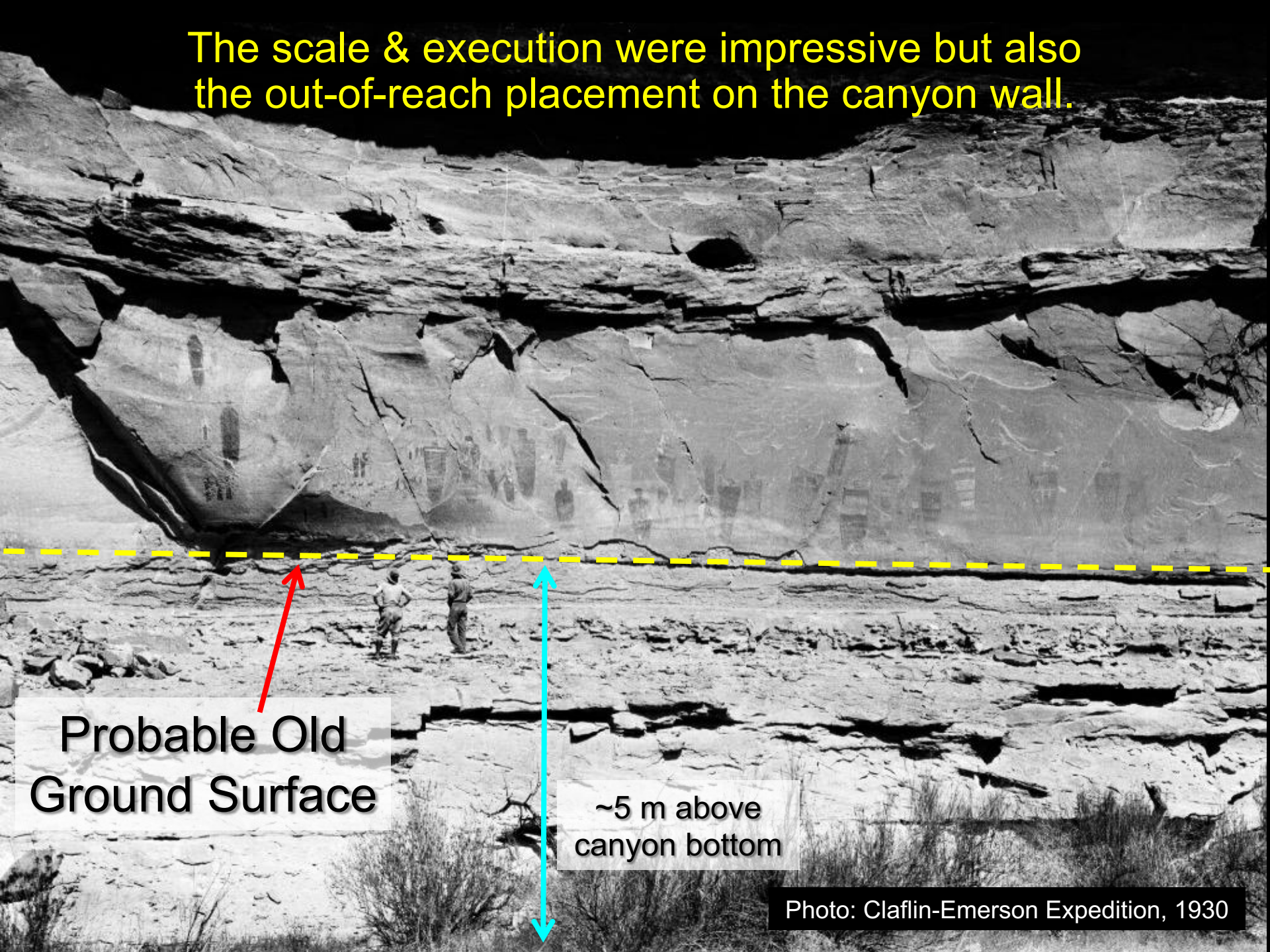


Photo: Claflin-Emerson Expedition, 1930



The scale & execution were impressive but also the out-of-reach placement on the canyon wall.



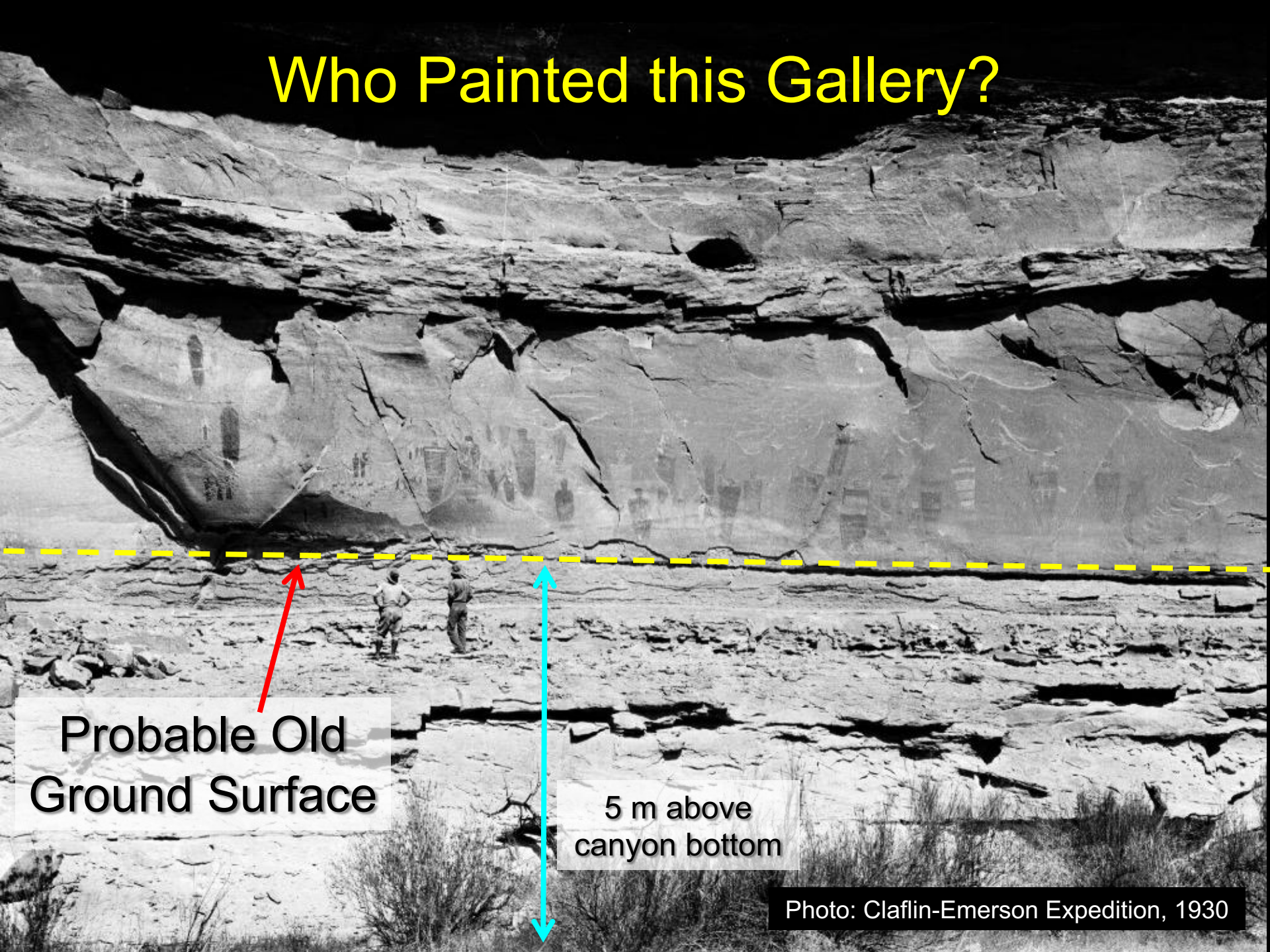
Probable Old  
Ground Surface

~5 m above  
canyon bottom

Photo: Claflin-Emerson Expedition, 1930



# Who Painted this Gallery?



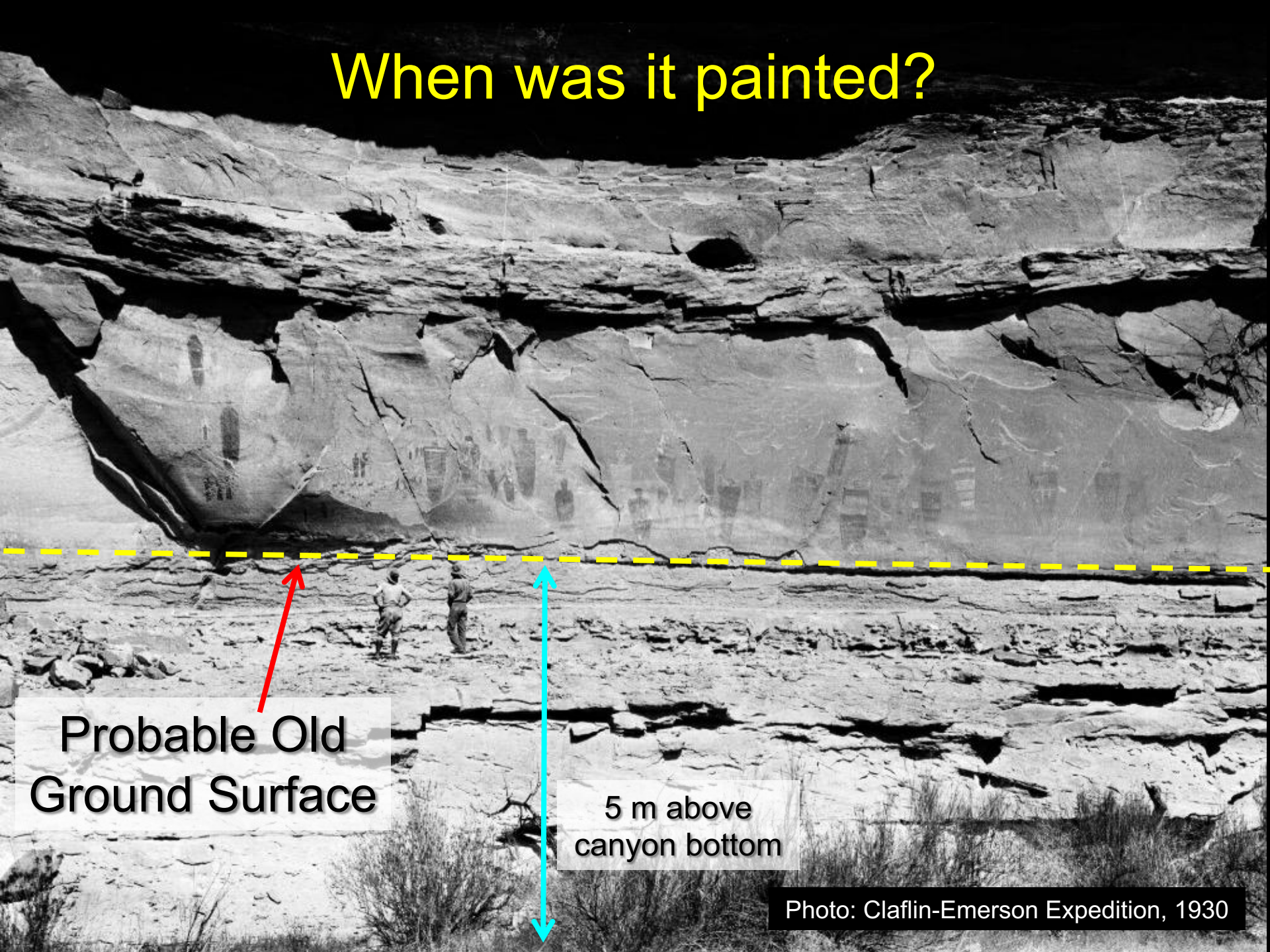
Probable Old  
Ground Surface

5 m above  
canyon bottom

Photo: Claflin-Emerson Expedition, 1930



# When was it painted?



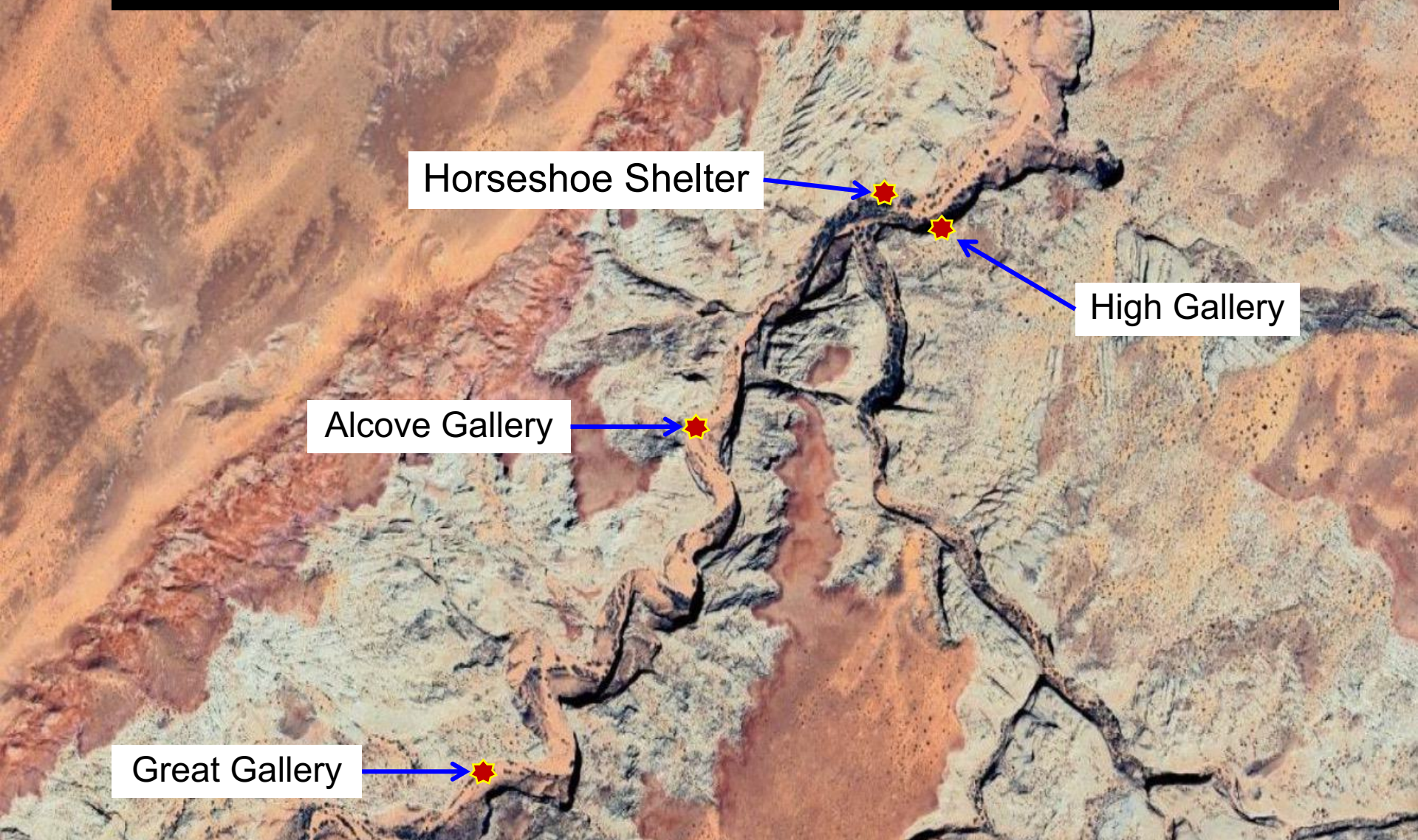
Probable Old  
Ground Surface

5 m above  
canyon bottom

Photo: Claflin-Emerson Expedition, 1930



To answer the **Who** & **When** questions, expedition archaeologists excavated at the only habitation site they found in Barrier Canyon associated with painted images.





# Horseshoe Shelter

Excavated in 1930 with hopes of answering  
**Who** & **When** for Barrier Canyon rock art.



Some interesting finds, but: **Wa Wa Wa Waaa**



# Cottonwood Cave, Clearwater Canyon, UT



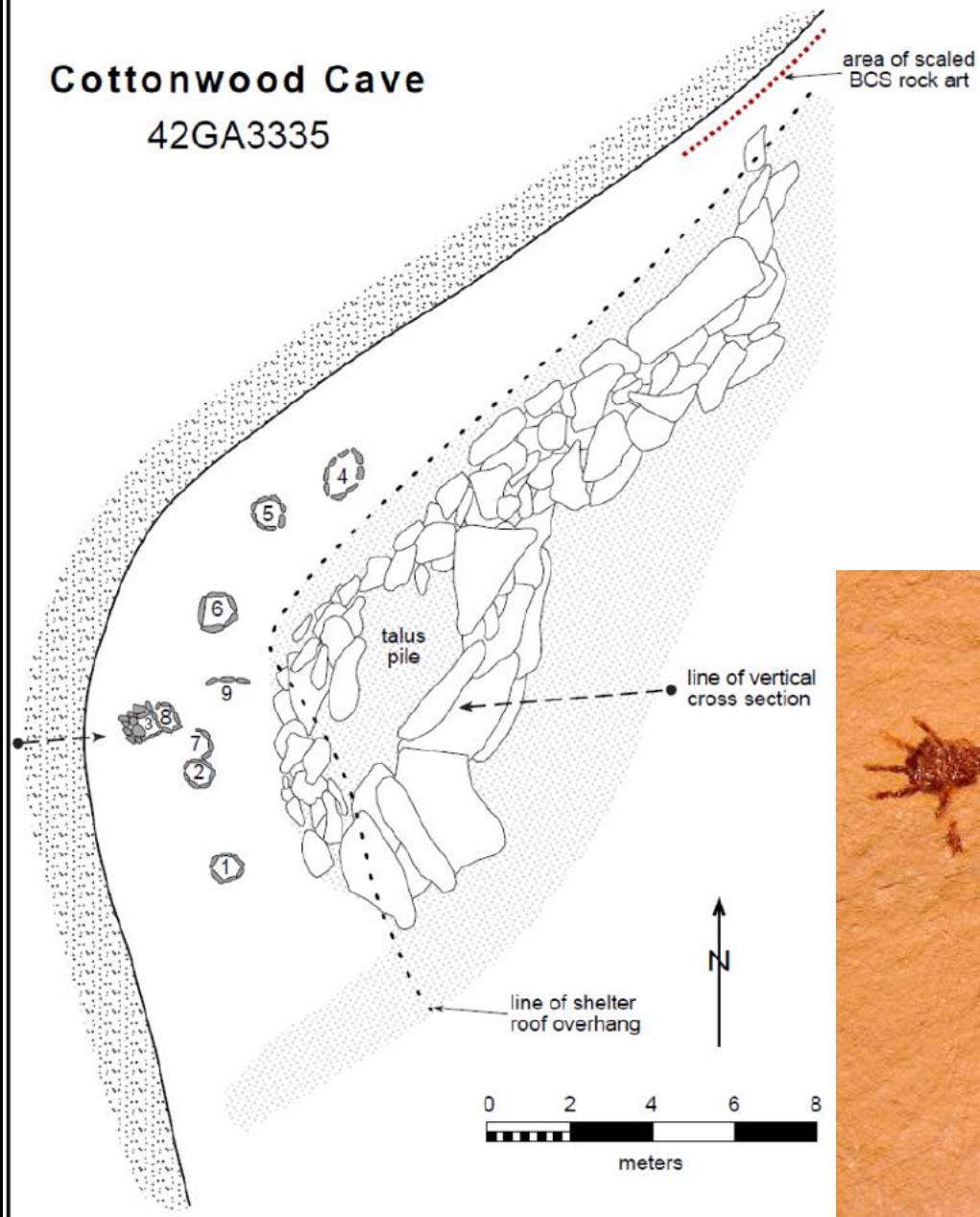
BCS images

Expedition archaeologists also excavated this rockshelter with BCS rock art.



# Cottonwood Cave

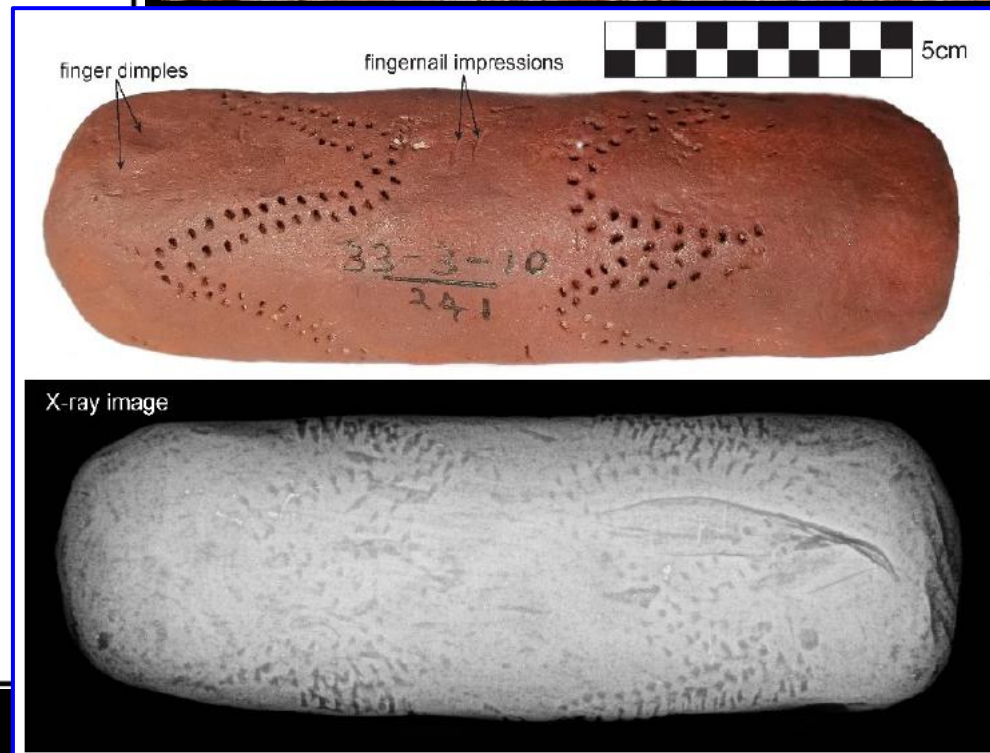
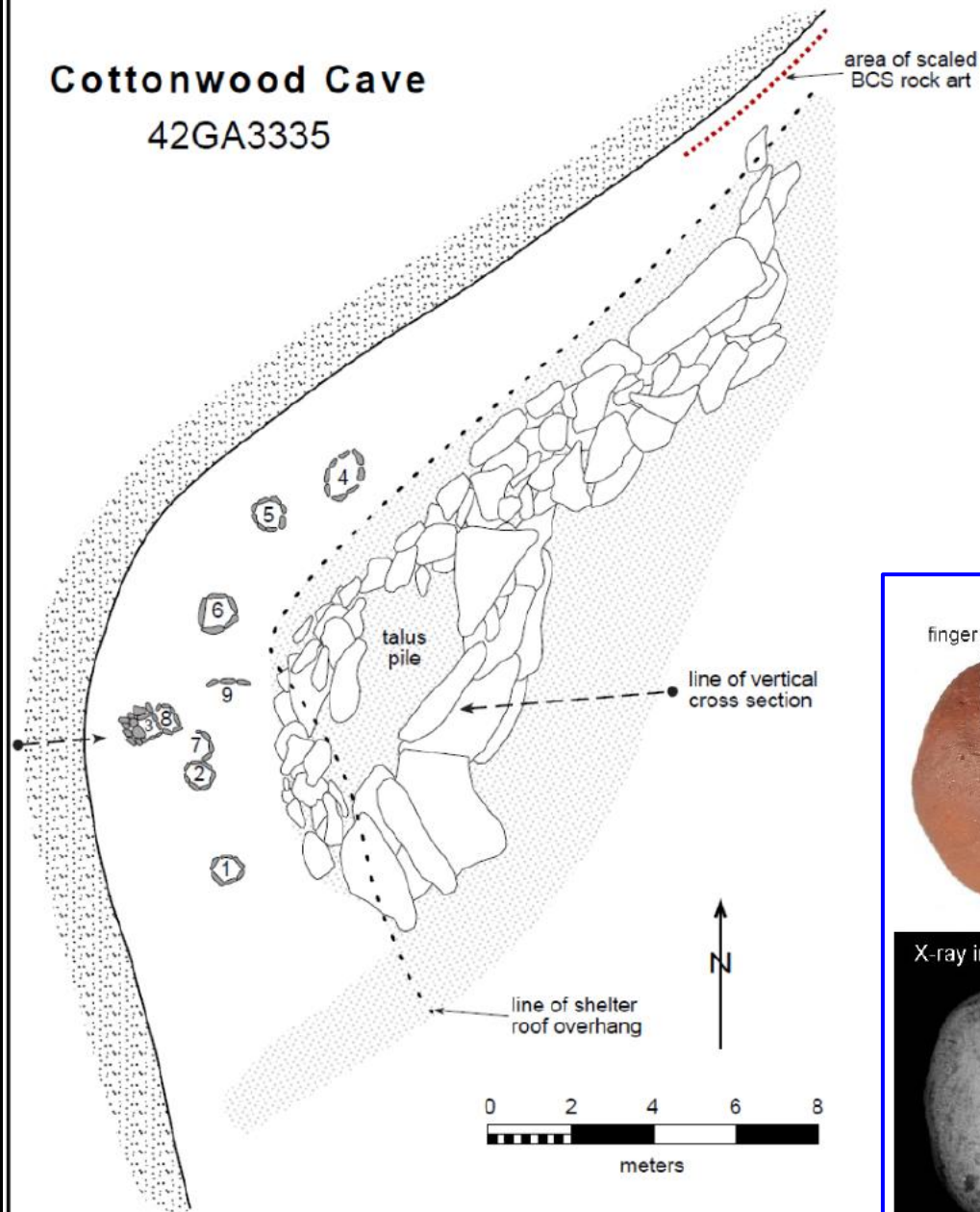
42GA3335





# Cottonwood Cave

42GA3335





# Undulating Dots



Perfect Panel



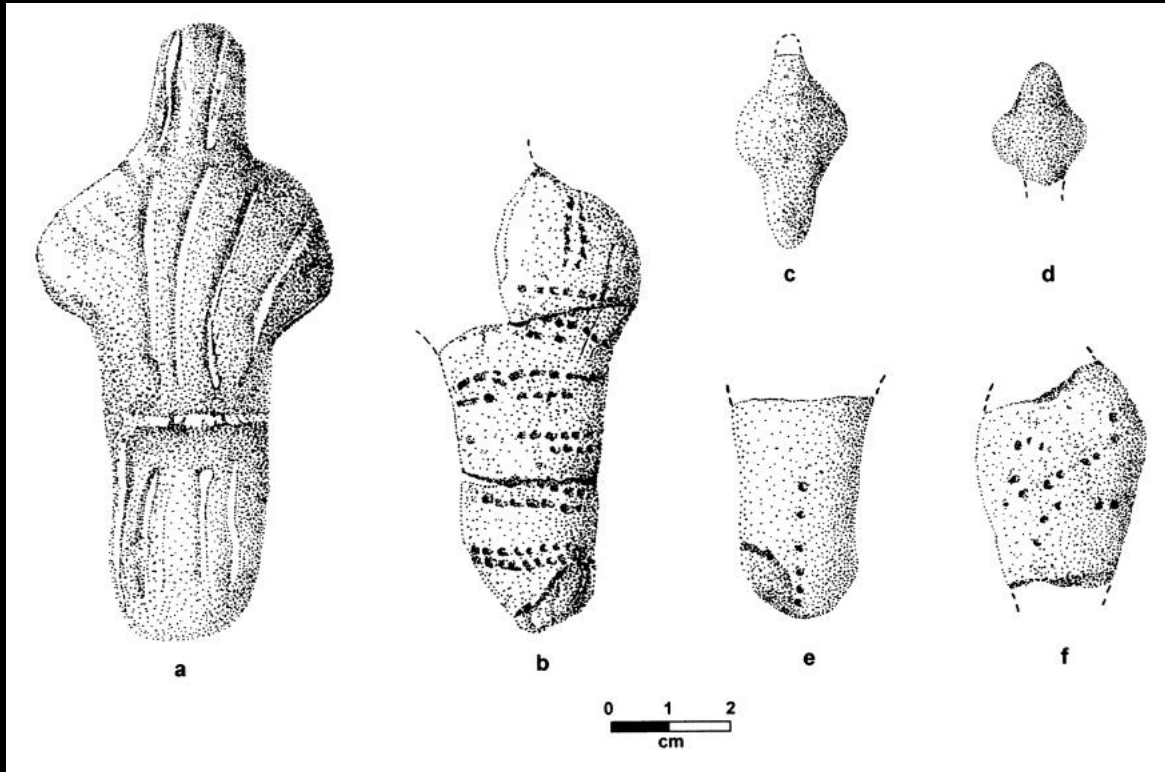
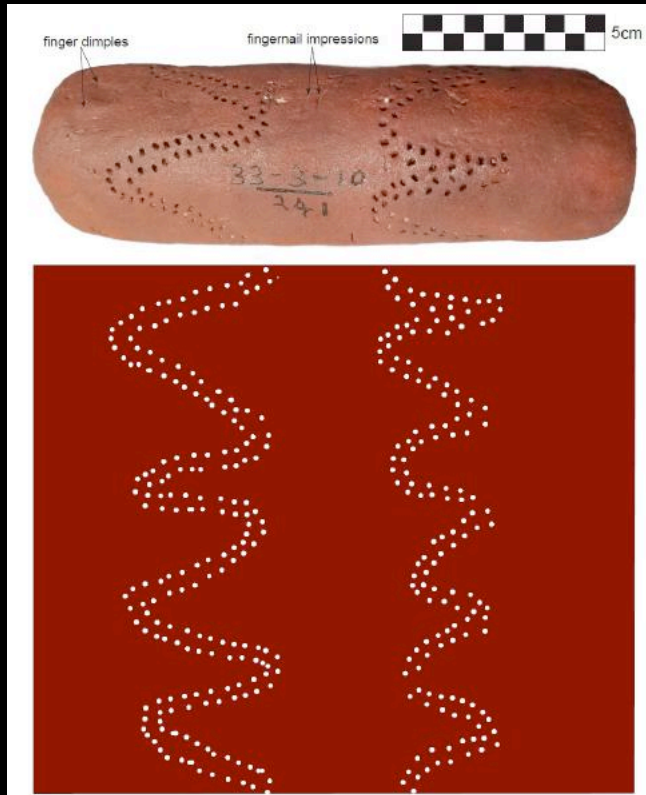
# Undulating Dots



Temple Mountain Wash



# Punctations



Coulam & Schroedl 1996: Figure 3

Punctations created with a pointed tool like those that encircle the paint stick also occur on **Horseshoe Shouldered** clay figurines from the early Archaic layers at 3 sites.



# Horseshoe Shouldered



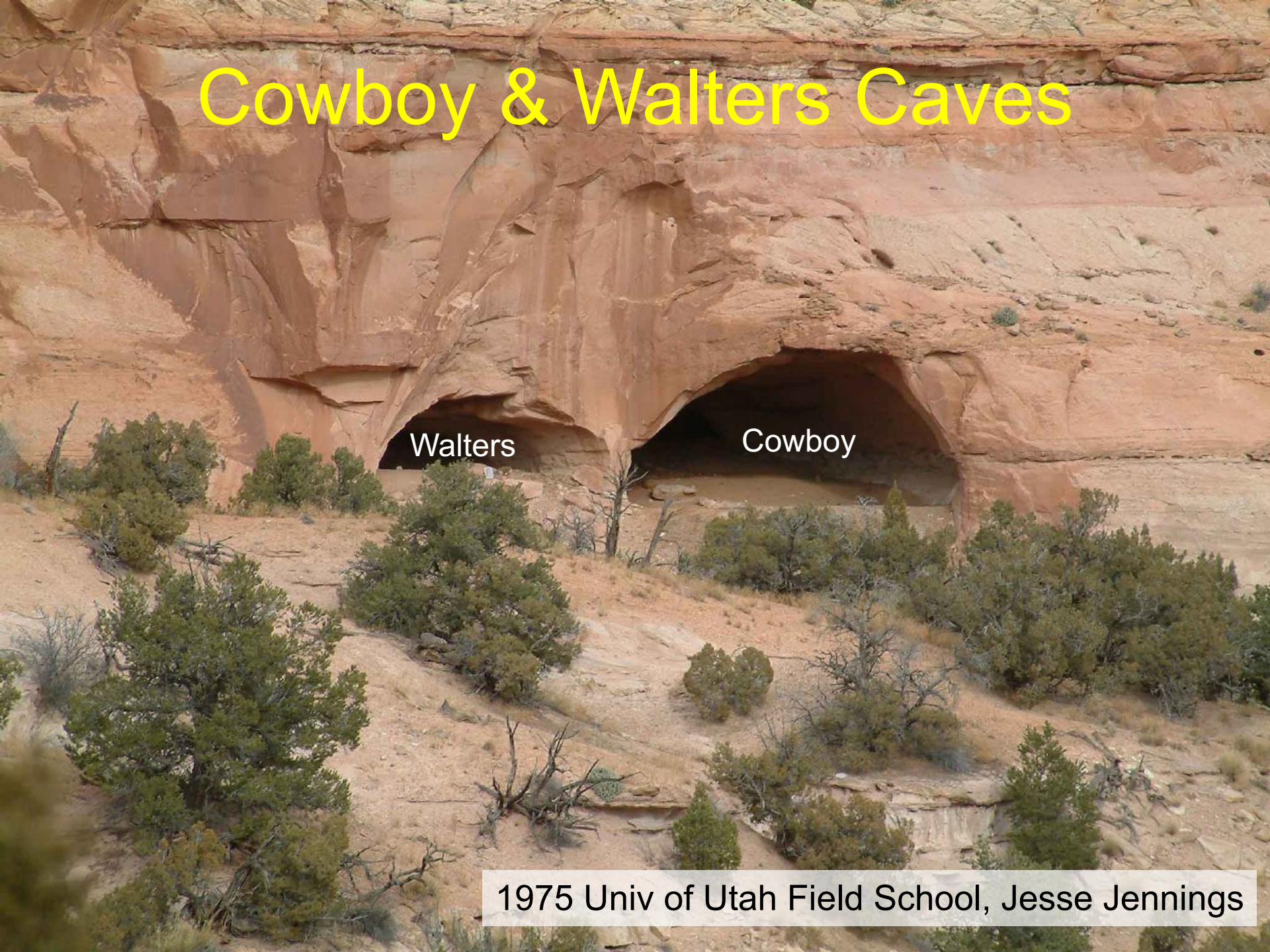
Walters Cave



Cowboy Cave



# Cowboy & Walters Caves

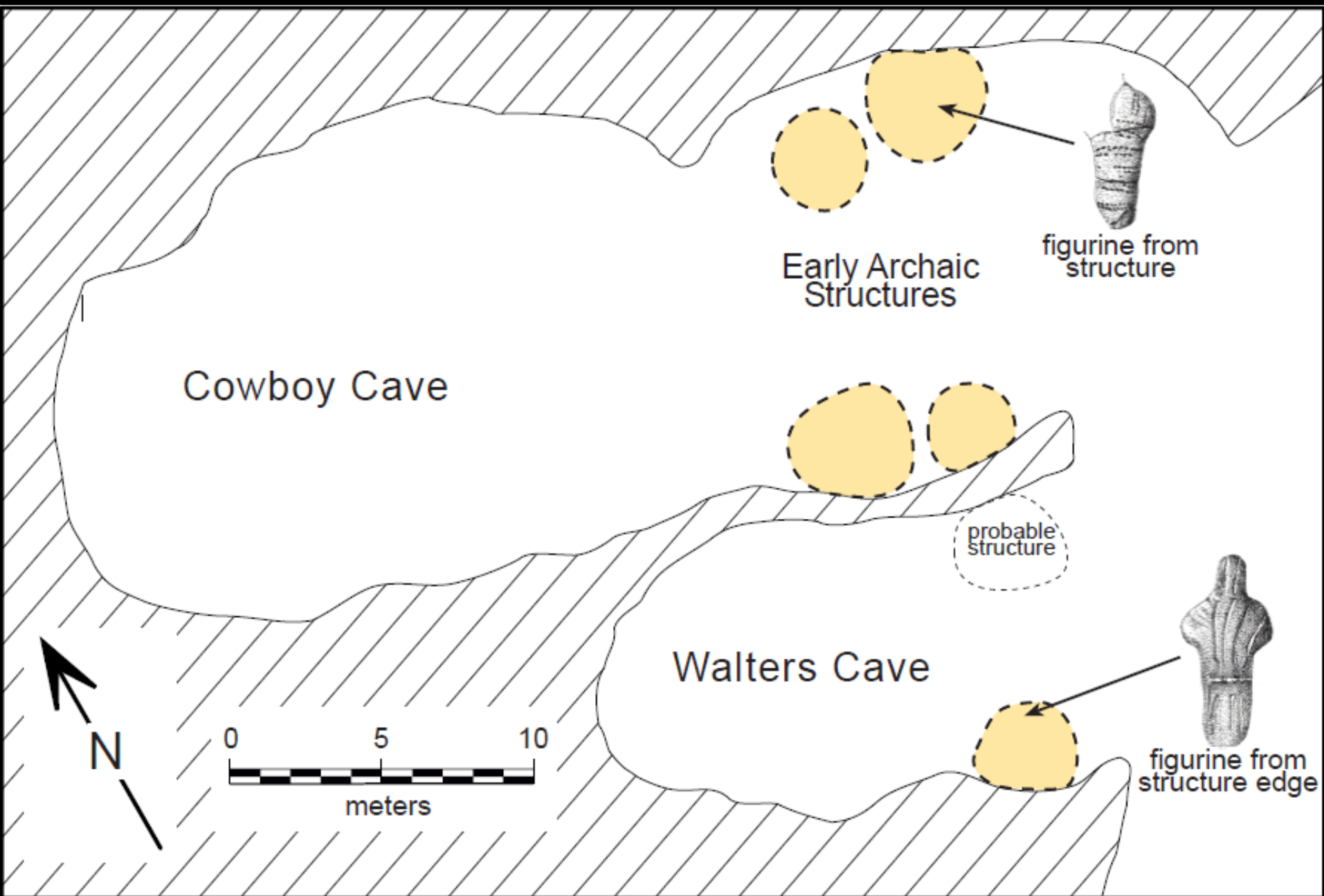
A photograph of two cave entrances in a red sandstone cliff. The left entrance is labeled 'Walters' and the right entrance is labeled 'Cowboy'. The foreground shows a sandy slope with green shrubs.

Walters

Cowboy

1975 Univ of Utah Field School, Jesse Jennings



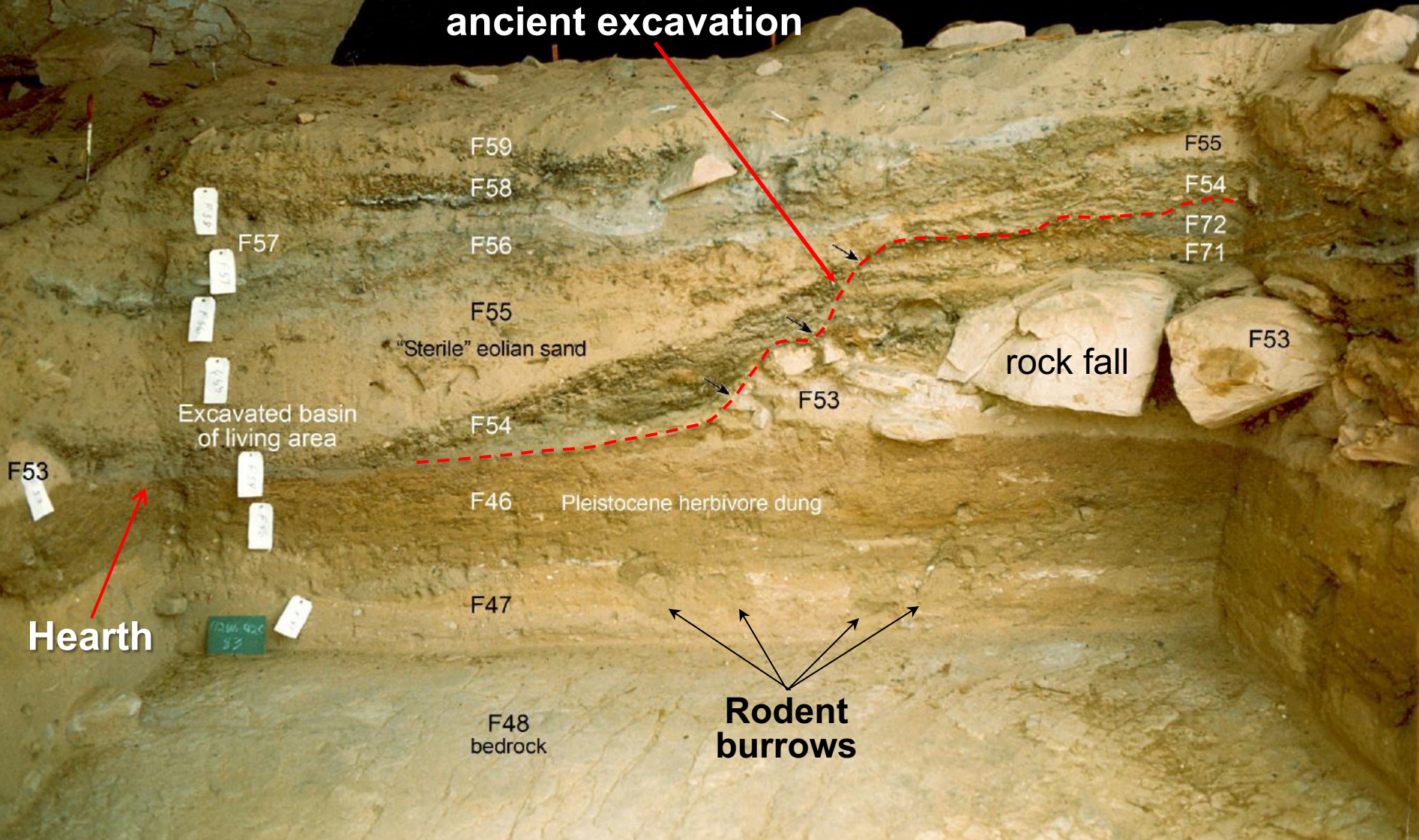




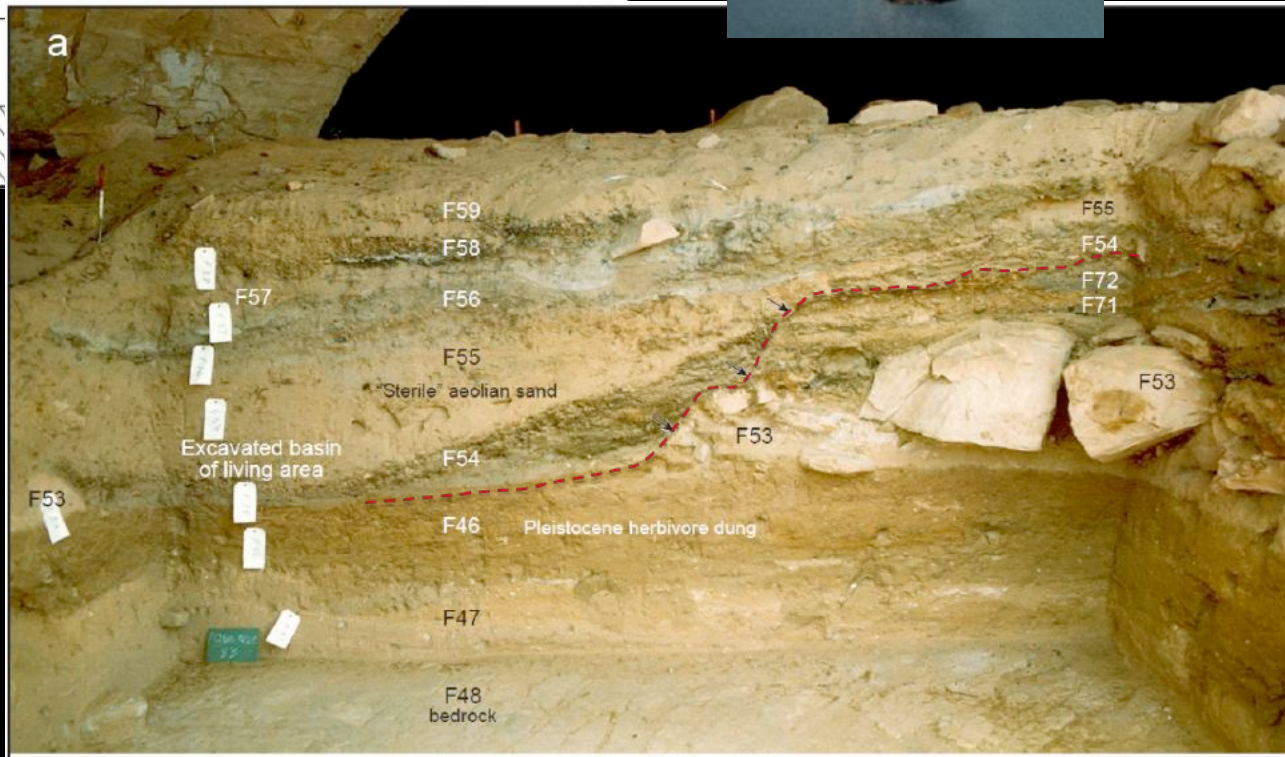
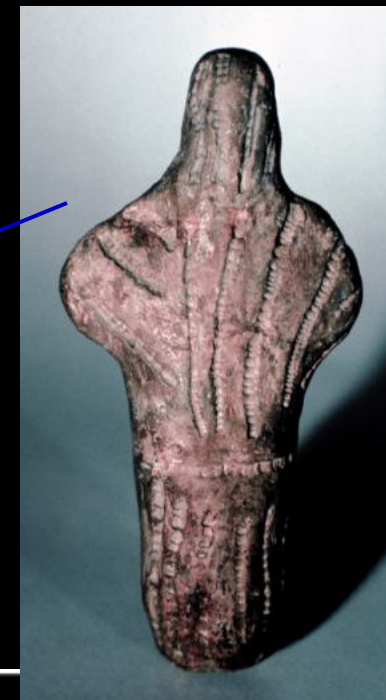
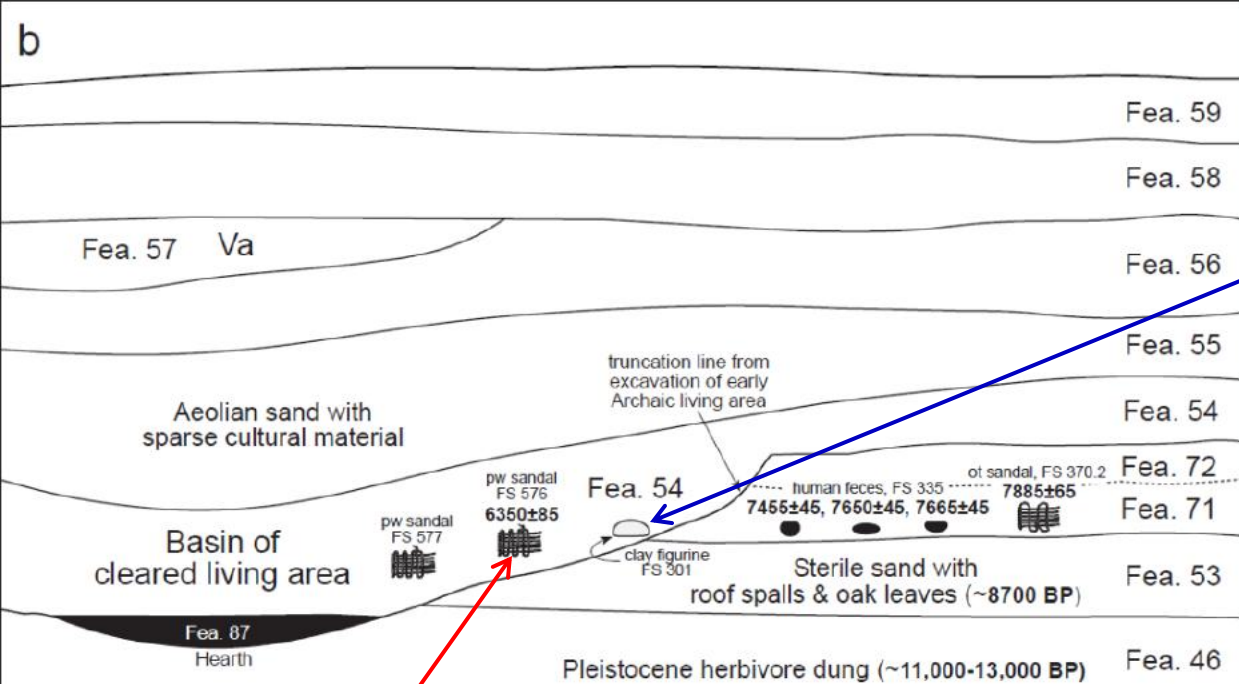
# Walters Cave

## 'West' Wall Profile @ End of Excavation

Truncation line of  
ancient excavation





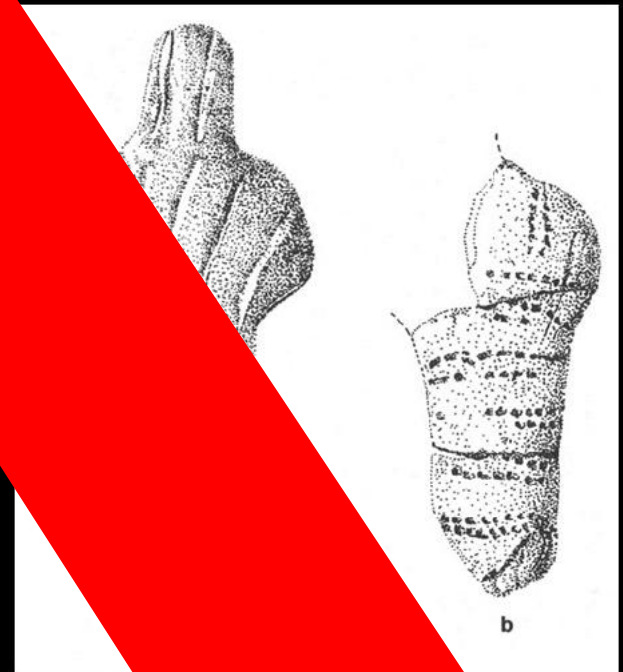




# BCS and Archaic Age

- Portable and analogical layers radiocarbon dates between 6000 & 5000 BC at Caves of the Walters Cave.
- Also at Sudden S from a similar and
- Radiocarbon pigment also and Archaic and

Then





# PNAS Article 2014, vol. 111(36) 12986–12991

## Age of Barrier Canyon-style rock art constrained by cross-cutting relations and luminescence dating techniques

Joel L. Pederson<sup>a,1</sup>, Melissa S. Chapot<sup>a,b</sup>, Steven R. Simms<sup>c</sup>, Reza Sohbat<sup>d,e</sup>, Tammy M. Rittenour<sup>a</sup>, Andrew S. Murray<sup>d</sup>, and Gary Cox<sup>f</sup>

Departments of <sup>a</sup>Geology and <sup>c</sup>Sociology, Social Work, and Anthropology, Utah State University, Logan, UT 84322; <sup>b</sup>Geography and Earth Sciences, Aberystwyth University, Aberystwyth SY23 3DB, United Kingdom; <sup>d</sup>Nordic Laboratory for Luminescence Dating, Department of Geoscience, Aarhus University, DK-4000 Roskilde, Denmark; <sup>e</sup>Center for Nuclear Technologies, Technical University of Denmark, DK-4000 Roskilde, Denmark; and <sup>f</sup>Canyonlands National Park, Moab, UT 84532

“The only prior hypothesis not disproven is a late Archaic origin for BCS rock art, although our age result of **AD ~1–1100** coincides better with the transition to and rise of the subsequent Fremont culture.”



# Utah's famous Canyonlands rock art unexpectedly recent

*USU team analyzed light to date the Great Gallery panel and concluded the pictographs are at most 2,000 years old.*



Smithsonian  
MAGAZINE

## New Research

# New Analysis Suggests Utah's Famous Rock Art Is Surprisingly Recent

The impressive Barrier Canyon Style images hold clues to the identity of their mysterious painters

Marissa Fessenden

August 26, 2014

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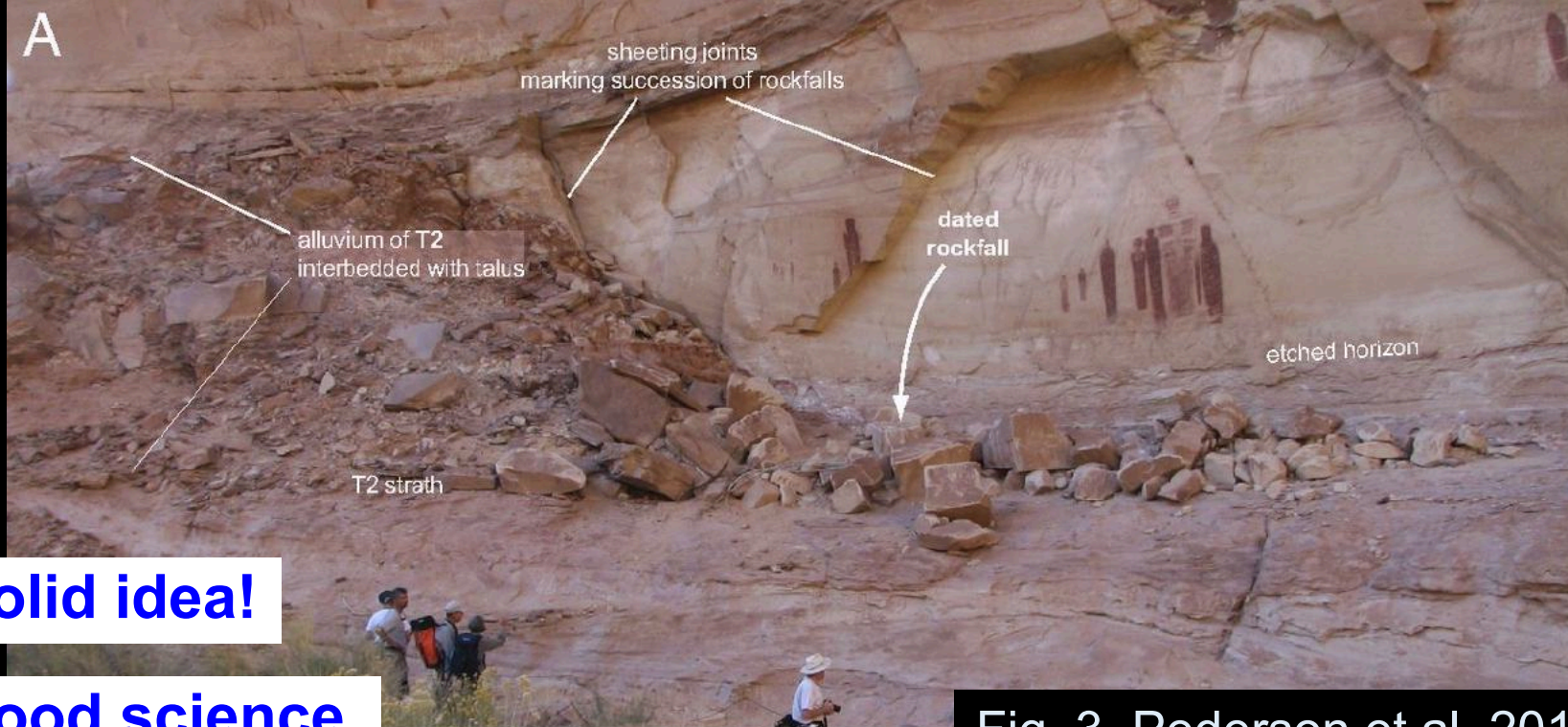
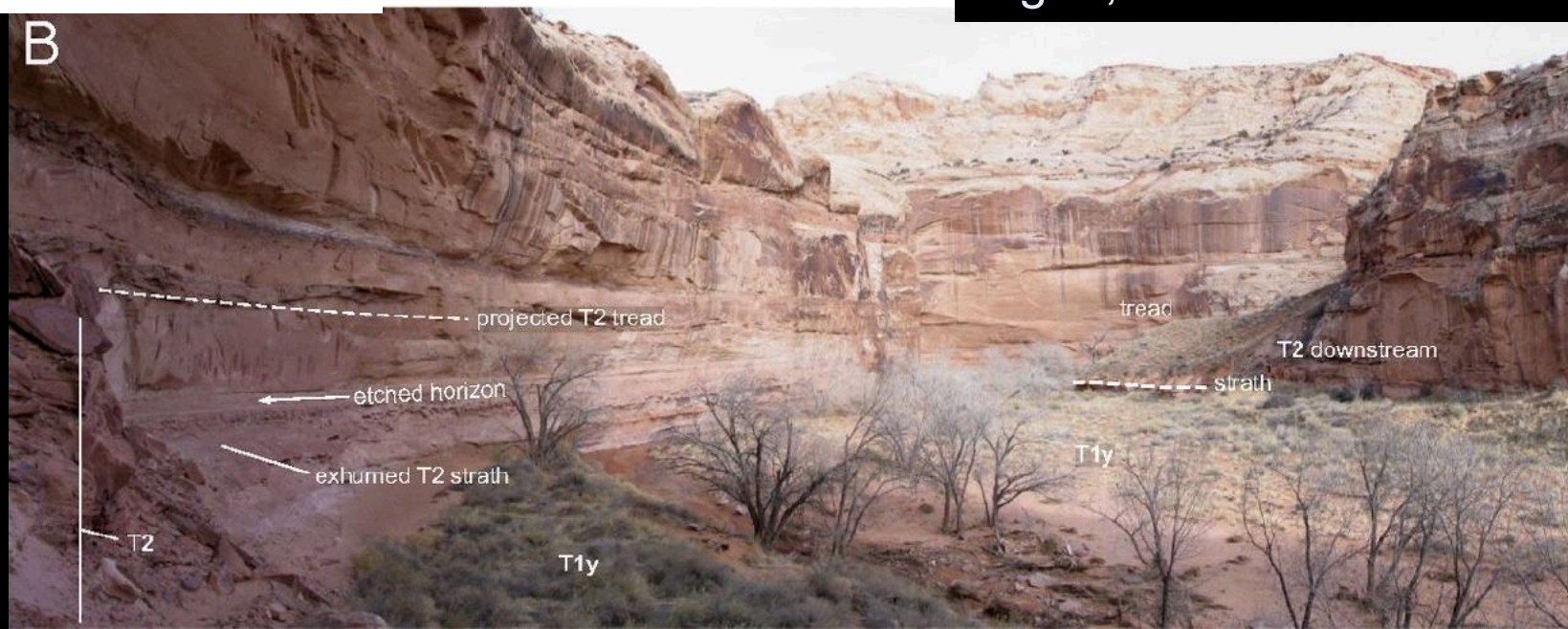


Fig. 3, Pederson et al. 2014





# OSL Dating: Optically Stimulated Luminescence

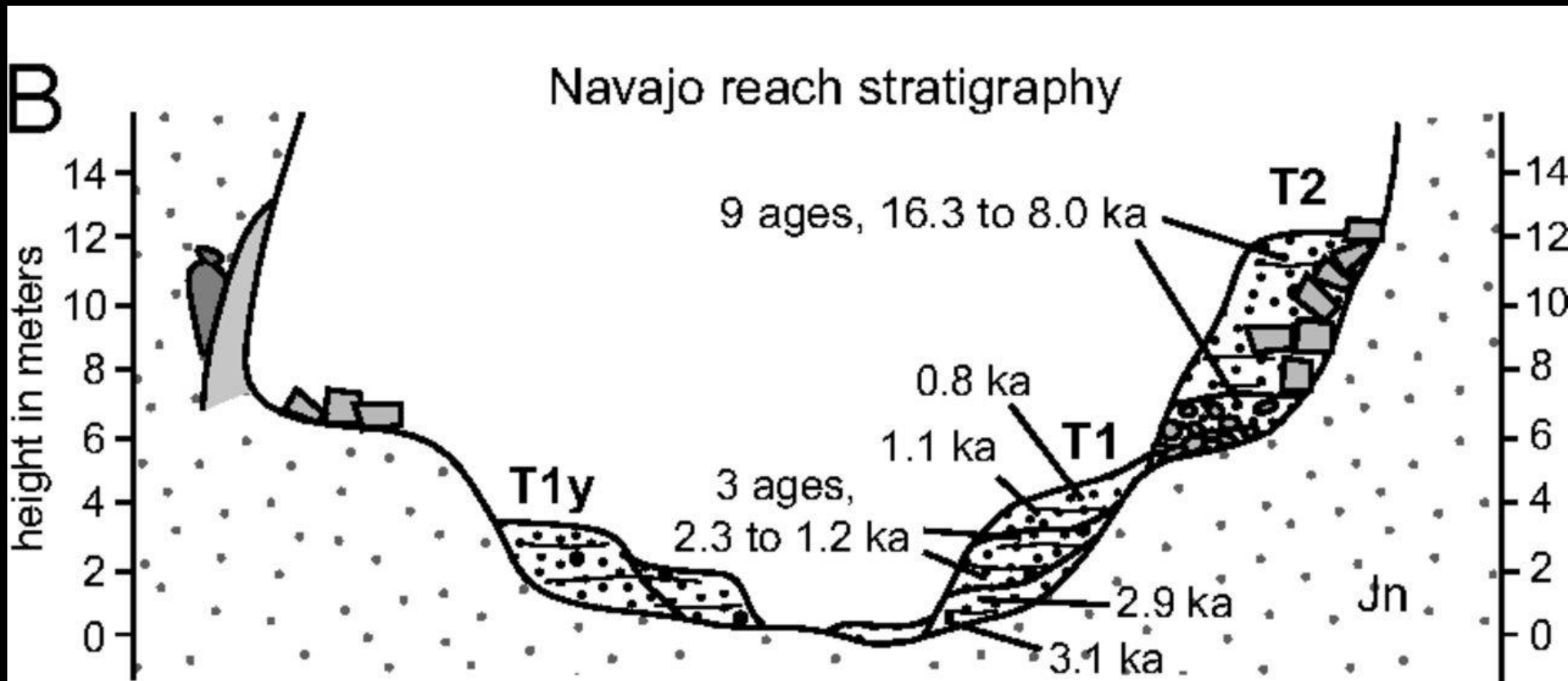


Fig. 4, Pederson et al. 2014



# Maximum Age Constraint (OSL Dating)

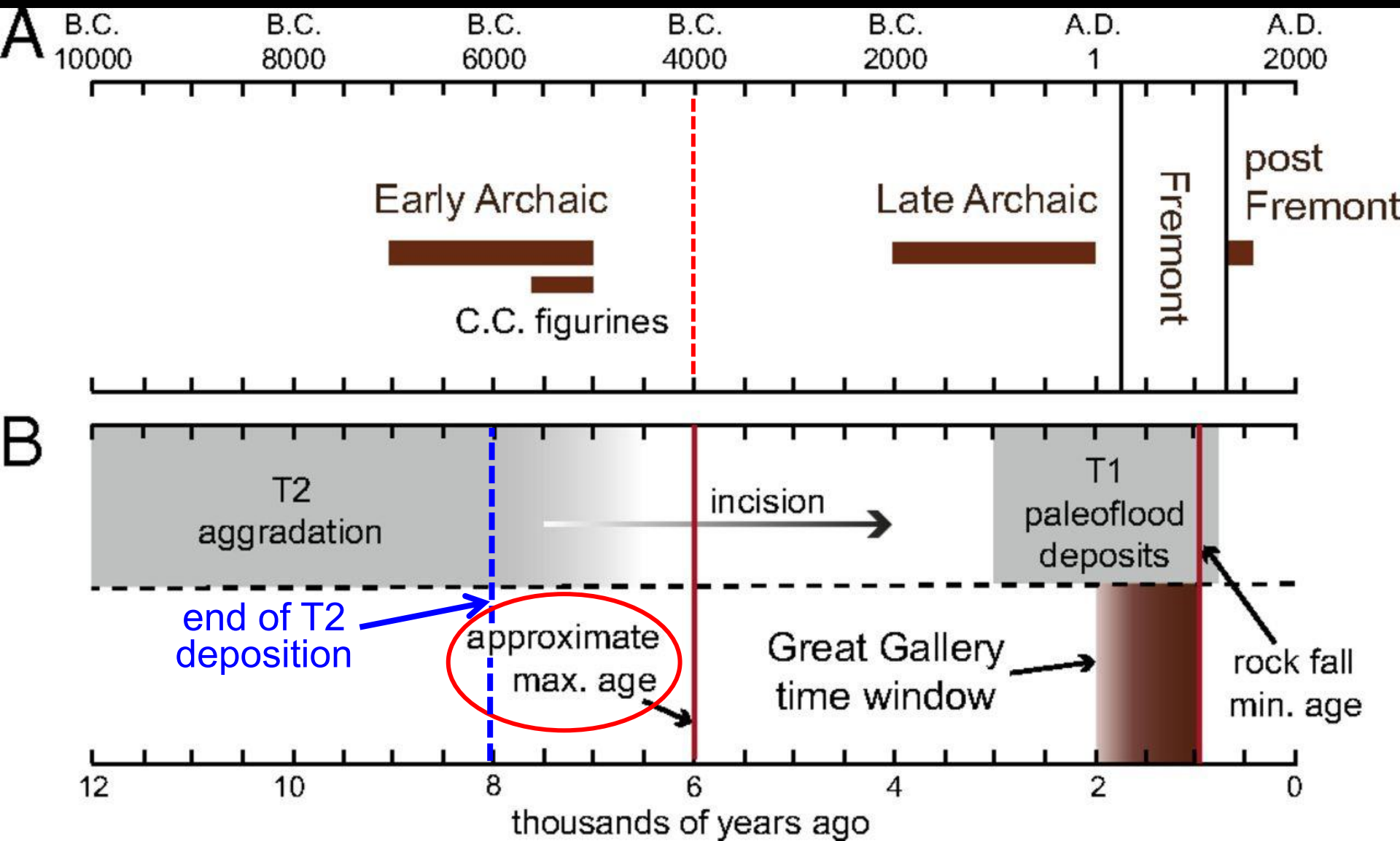
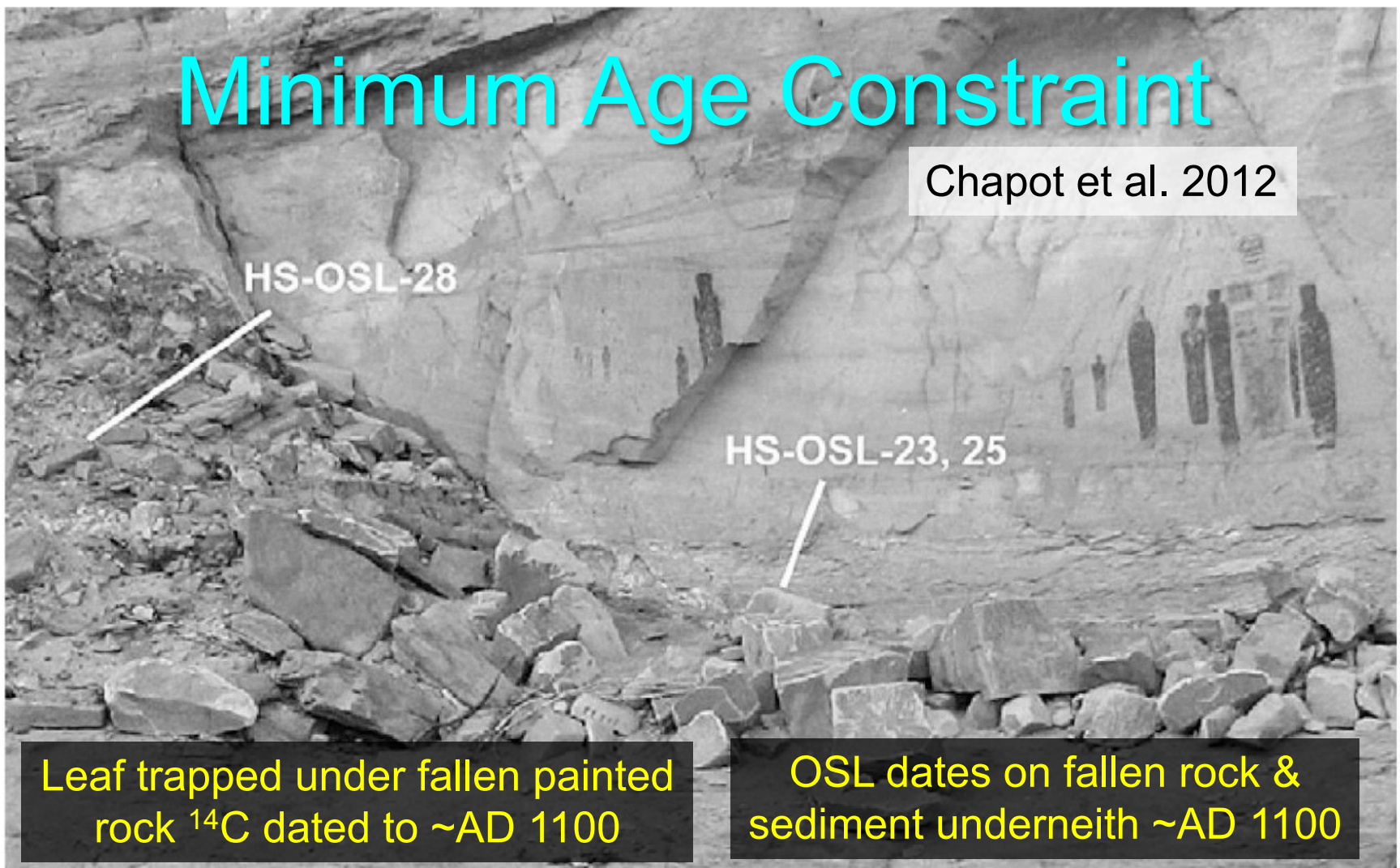


Fig. 2, Pederson et al. 2014



# Minimum Age Constraint

Chapot et al. 2012



**Fig. 2.** A photograph of the Great Gallery rock art panel showing the rock art, rockfall, and sample location. The elongate anthropomorphic figures are approximately 2 m in height and the boulder associated with samples HS-OSL-23 and HS-OSL-25 is 40 cm thick.

Chapot et al. 2012



# Minimum Age Constraint

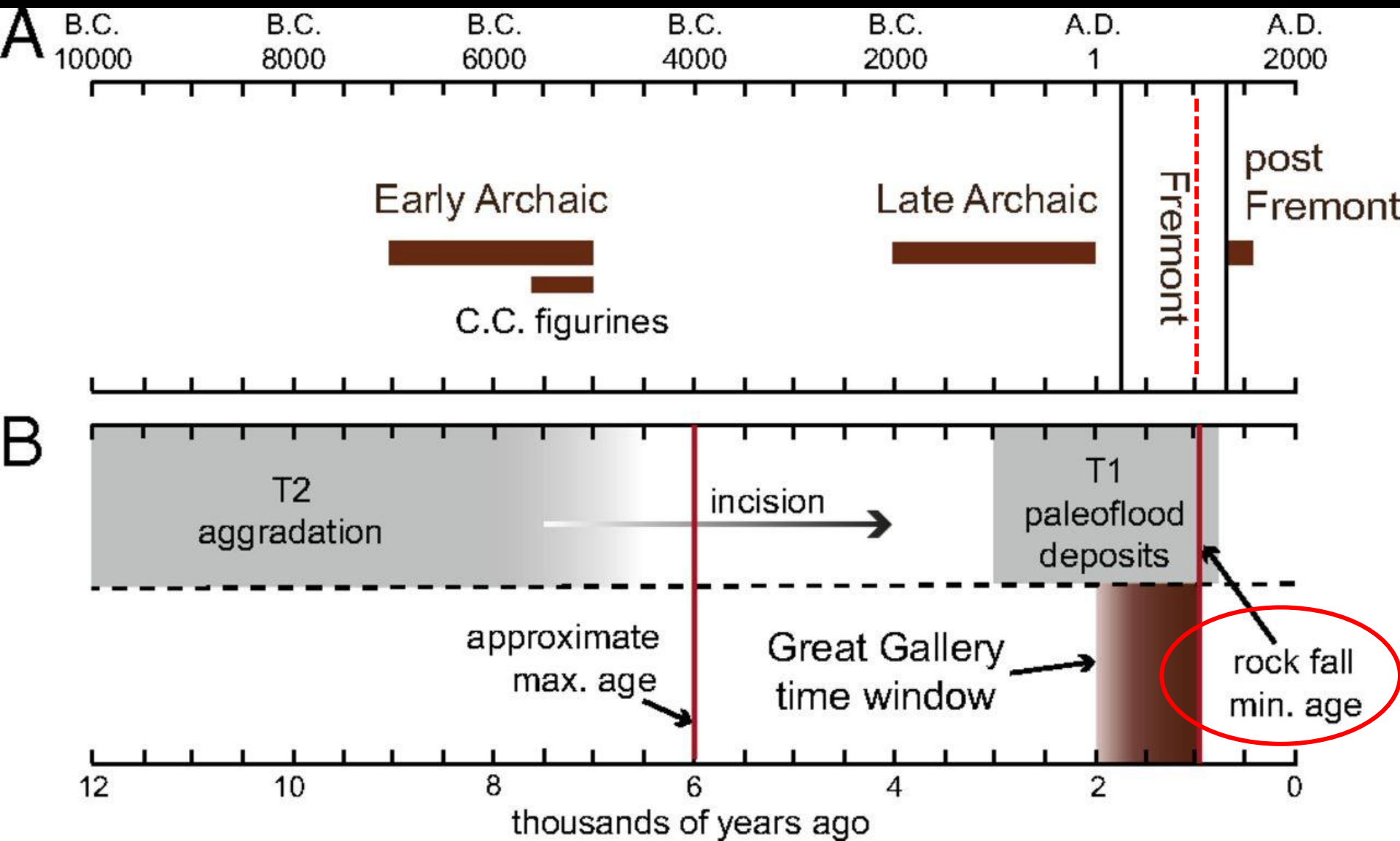
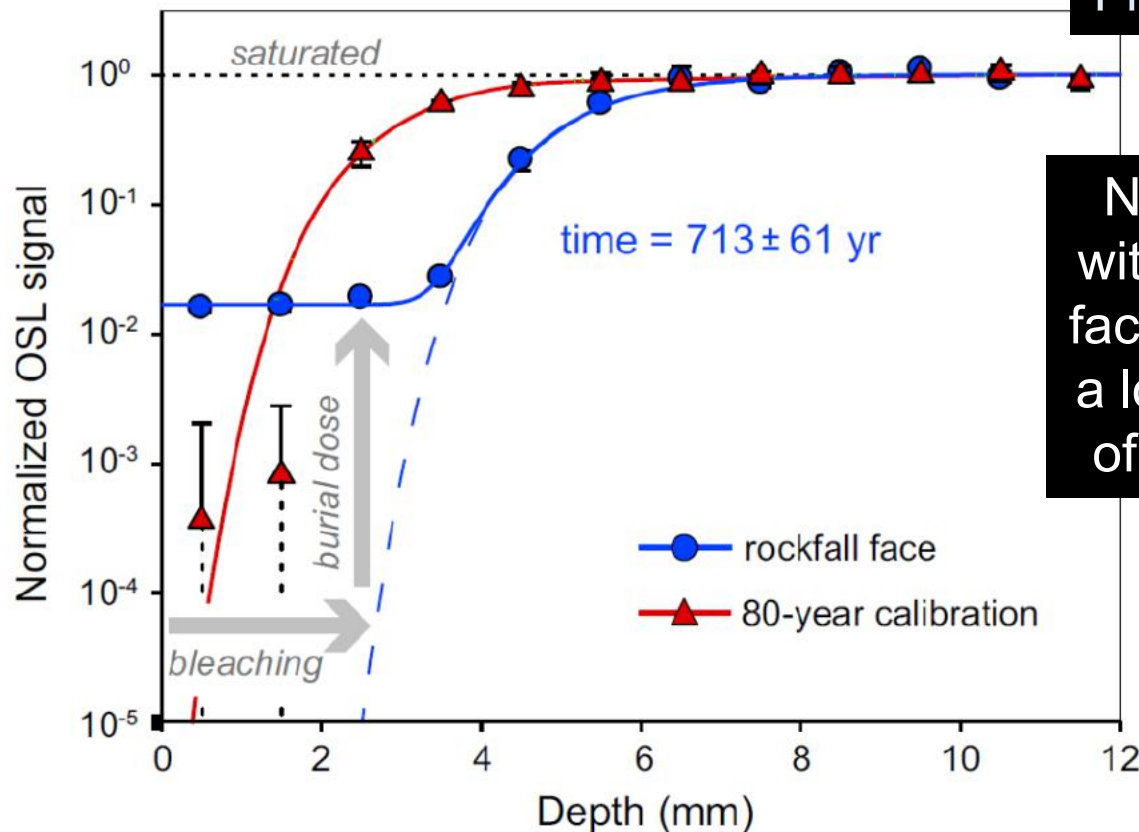


Fig. 2, Pederson et al. 2014



# Time Window

Fig. 5, Pederson et al. 2014



Normalized OSL signal with depth into the buried face of the painted clast & a local calibration sample of known exposure age.

“The rock surface some Great Gallery figures were painted upon had been exposed for only several centuries (713 year model result from bleaching to dashed blue line) before the burial dose accumulated after the dated rockfall.”



# Time Window “AD ~1–1100 conservatively”

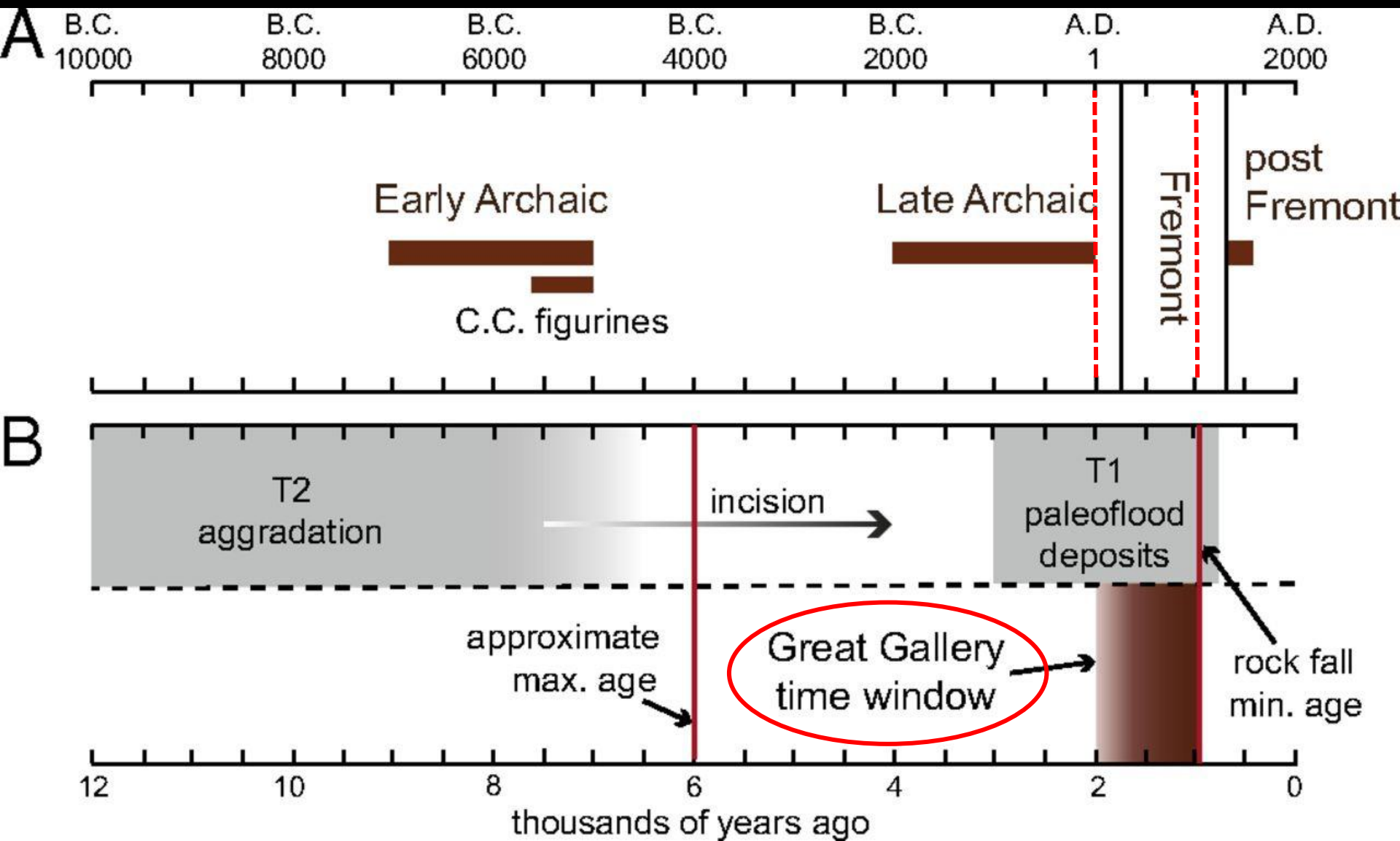


Fig. 2, Pederson et al. 2014



# Time Window “AD ~400–1100 strictly”

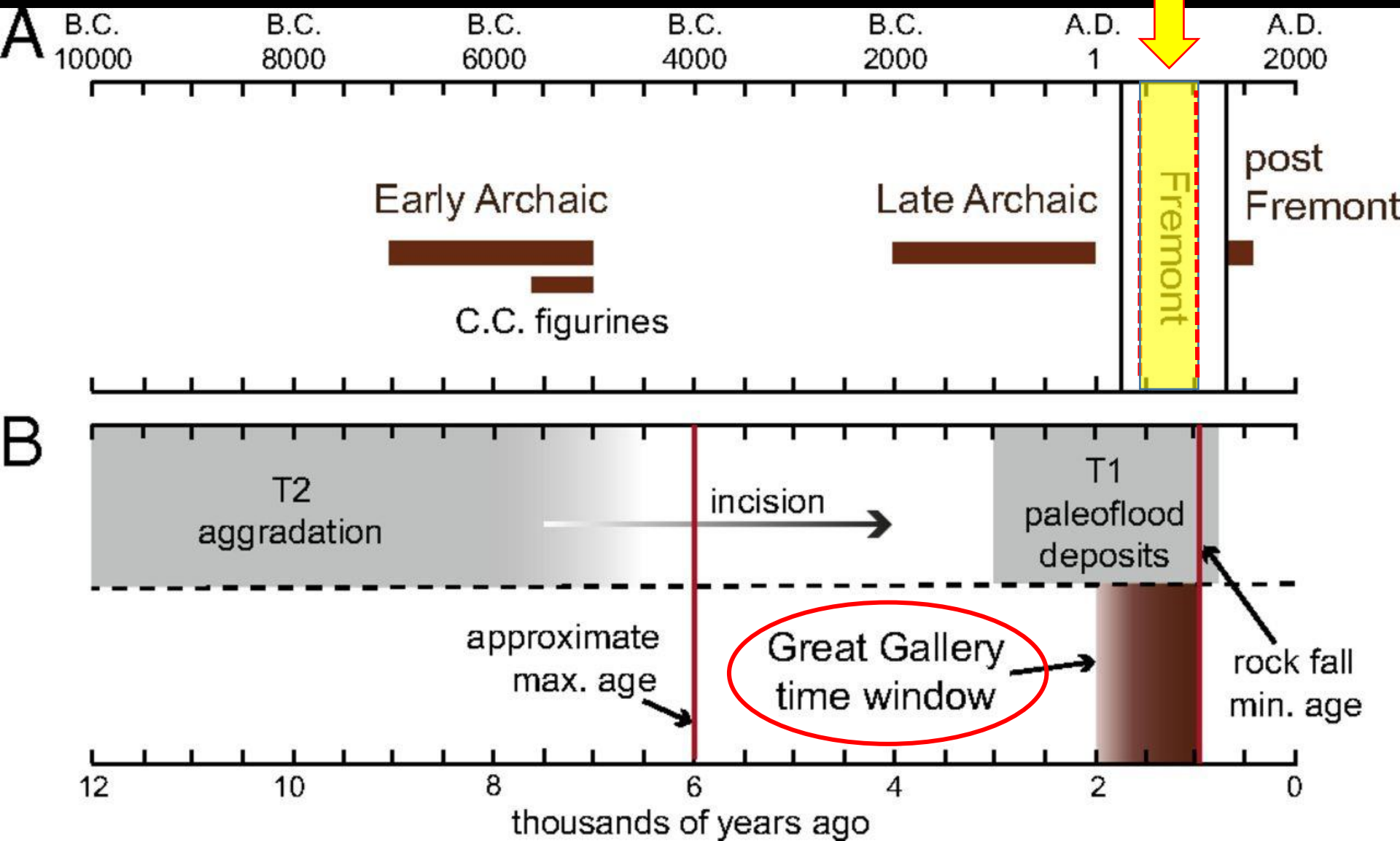


Fig. 2, Pederson et al. 2014



# Either Way: AD ~400–1100 strictly but AD ~1–1100 more conservatively

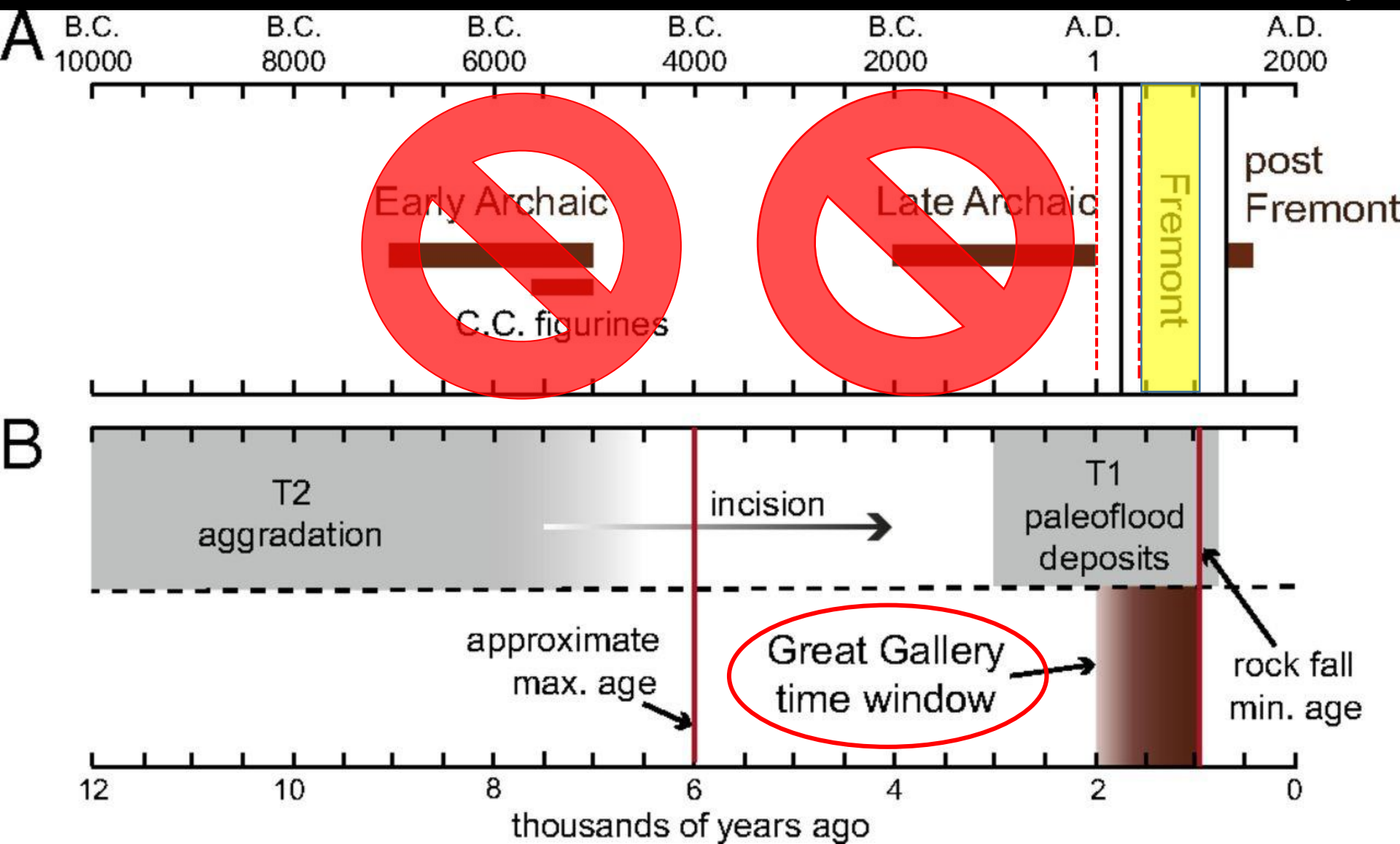


Fig. 2, Pederson et al. 2014



# Critique of the OSL Dating Argument

The OSL dating of the alluvial cut-and-fill sequence is a **significant contribution**.

Acknowledging this **does not** exclude Early Archaic authorship.

- 1) Maximum Age Constraint invokes unrealistic estimates for length of time to expose rock face.
- 2) Maximum Age Constraint & Time Window ignore previous  $^{14}\text{C}$  dates directly on pigment samples.
- 3) Time Window does not account for modification of sandstone face before & after painting, nor recently.



# BCS Represents a Long Tradition

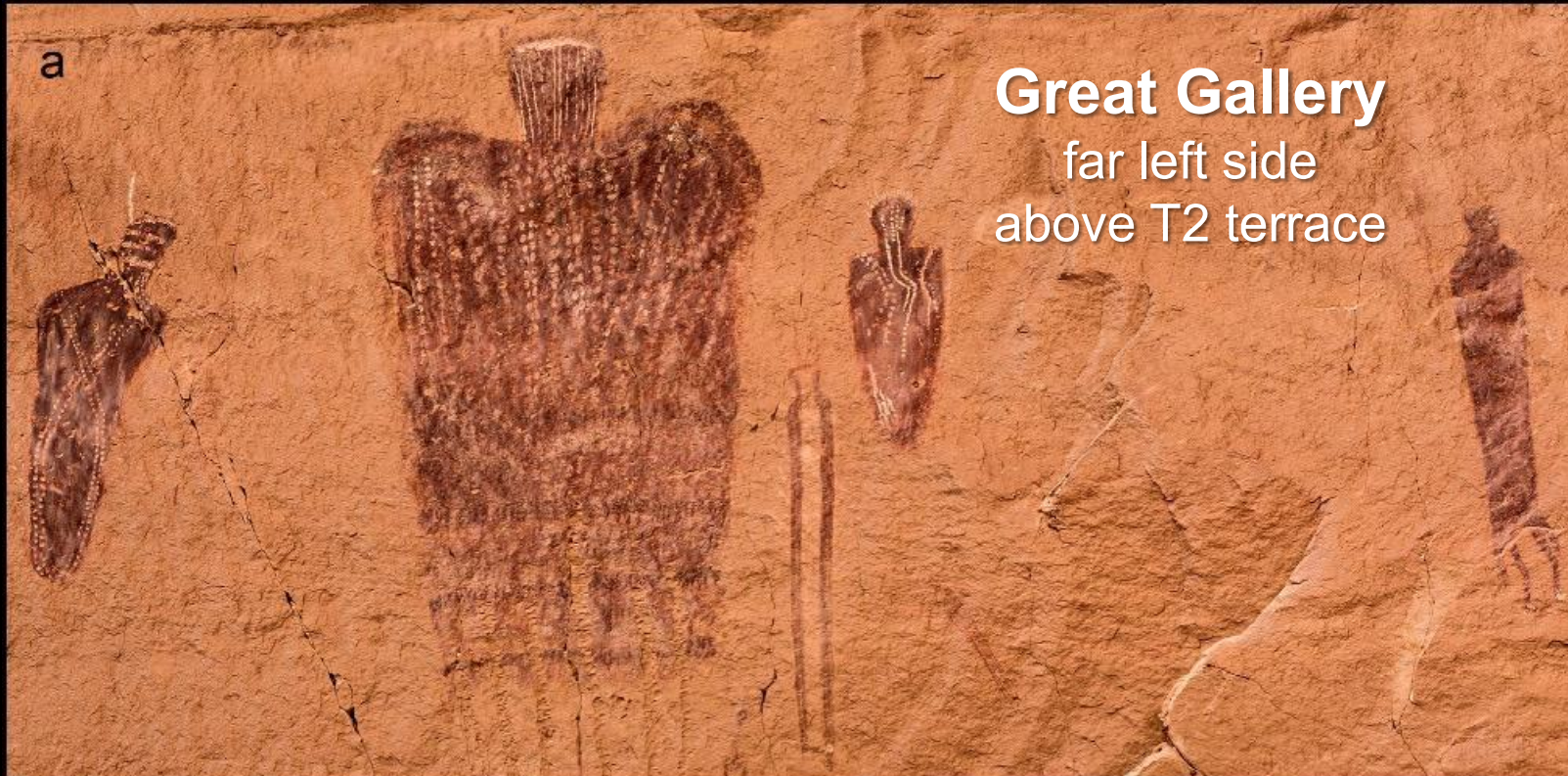
- Painting the Great Gallery was not a single event.
- An age estimate on one part is not a date for all parts.
- Any dates on this panel should be placed into the context of other BCS panels in Horseshoe Canyon.





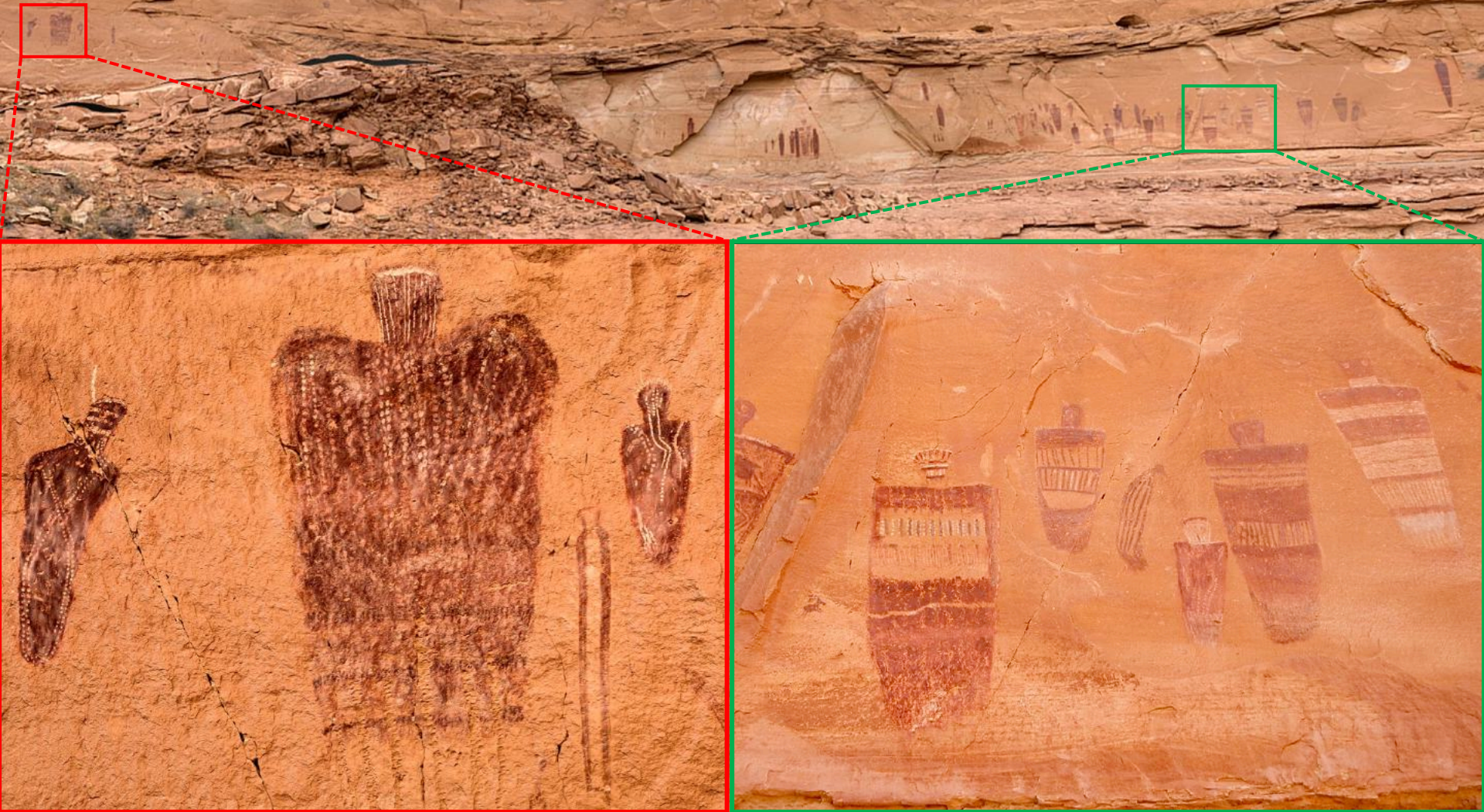








# Left-Side & Right-Side Contrasts



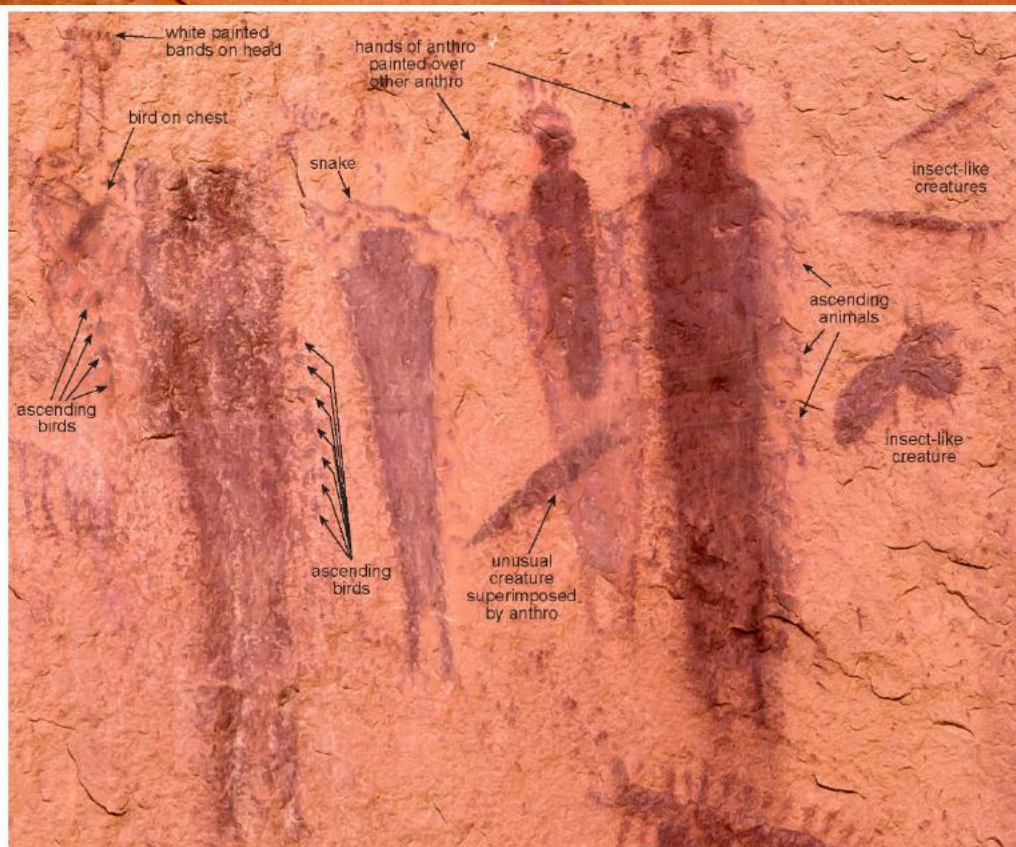


# T2 Alluvium Placed No Maximum Age Constraint on the High Gallery



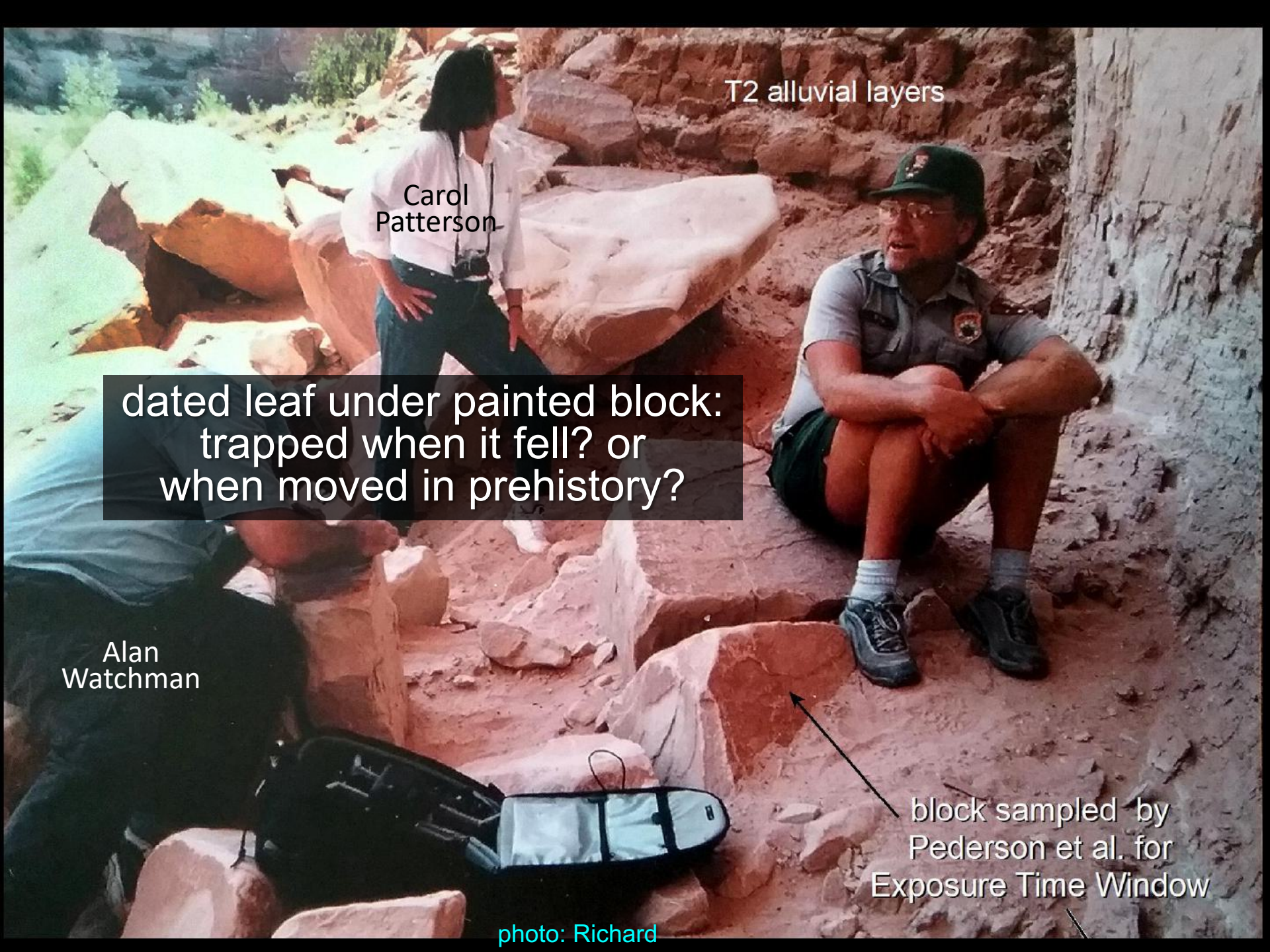


# High Gallery



People could have  
started painting here  
as soon as they  
were so inclined!





T2 alluvial layers

Carol  
Patterson

dated leaf under painted block:  
trapped when it fell? or  
when moved in prehistory?

Alan  
Watchman

block sampled by  
Pederson et al. for  
Exposure Time Window

photo: Richard



# Previous Direct $^{14}\text{C}$ Dates on GG Pigment

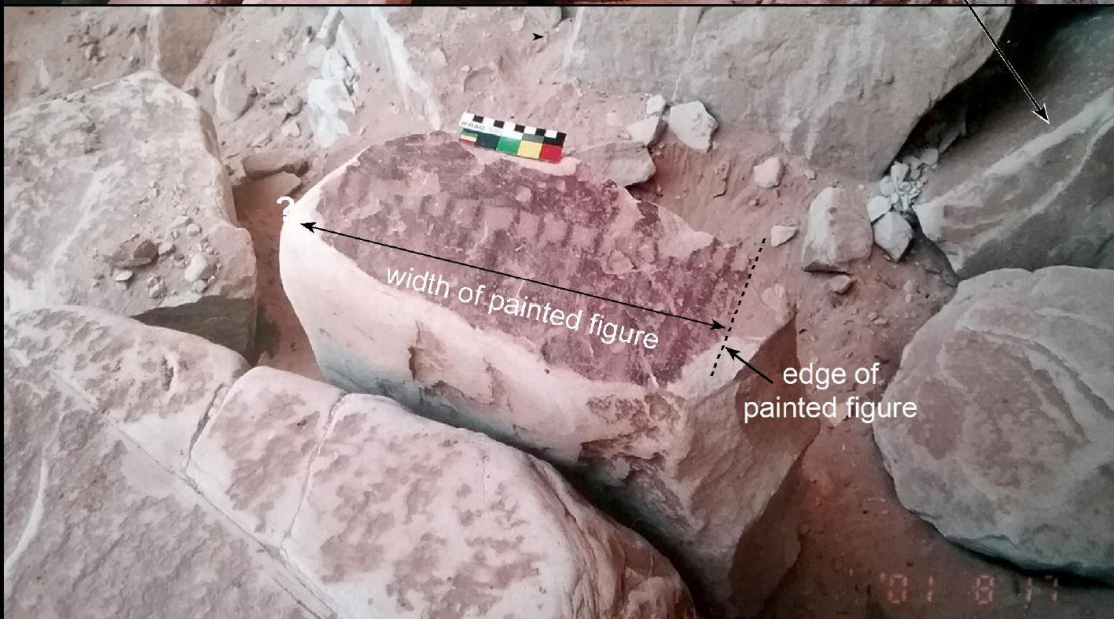
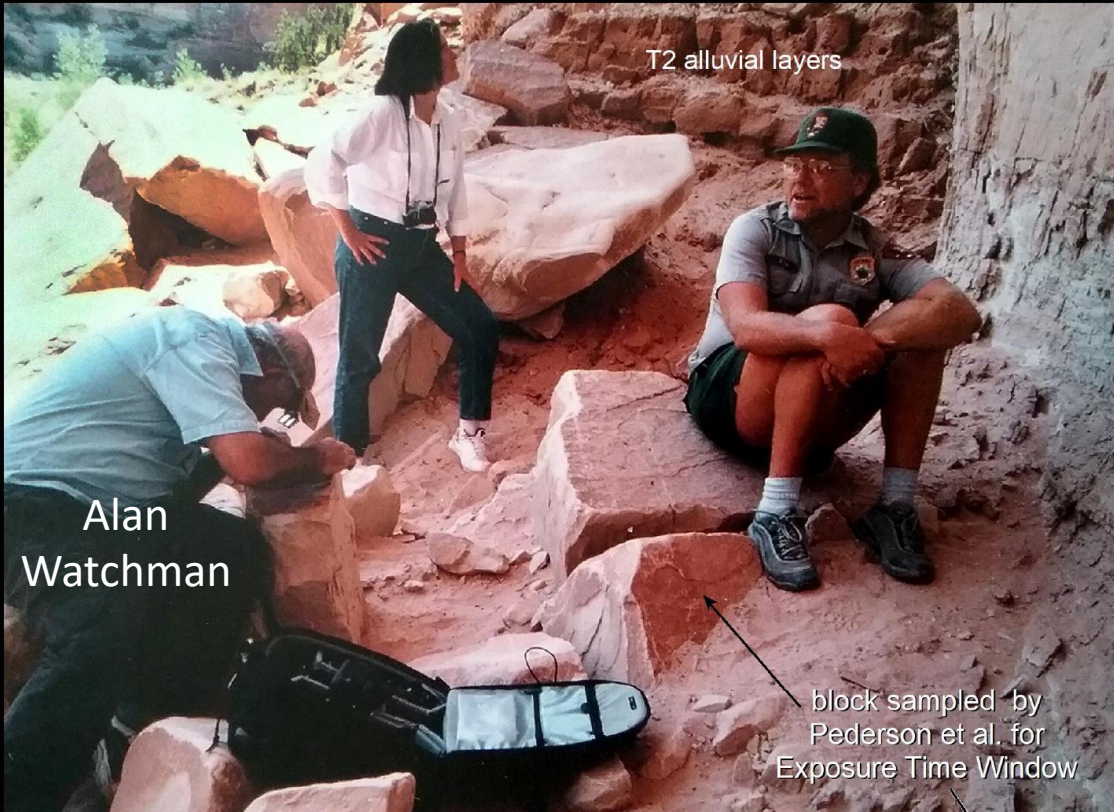
2 painted sandstone blocks from below the spalled area.

- 1<sup>st</sup> sample dated  $3400 \pm 65$  BP, roughly 1700 BC
- 2<sup>nd</sup> sample dated  $8655 \pm 210$  BP, roughly 7700 BC



1st sample  
refit to this small figure





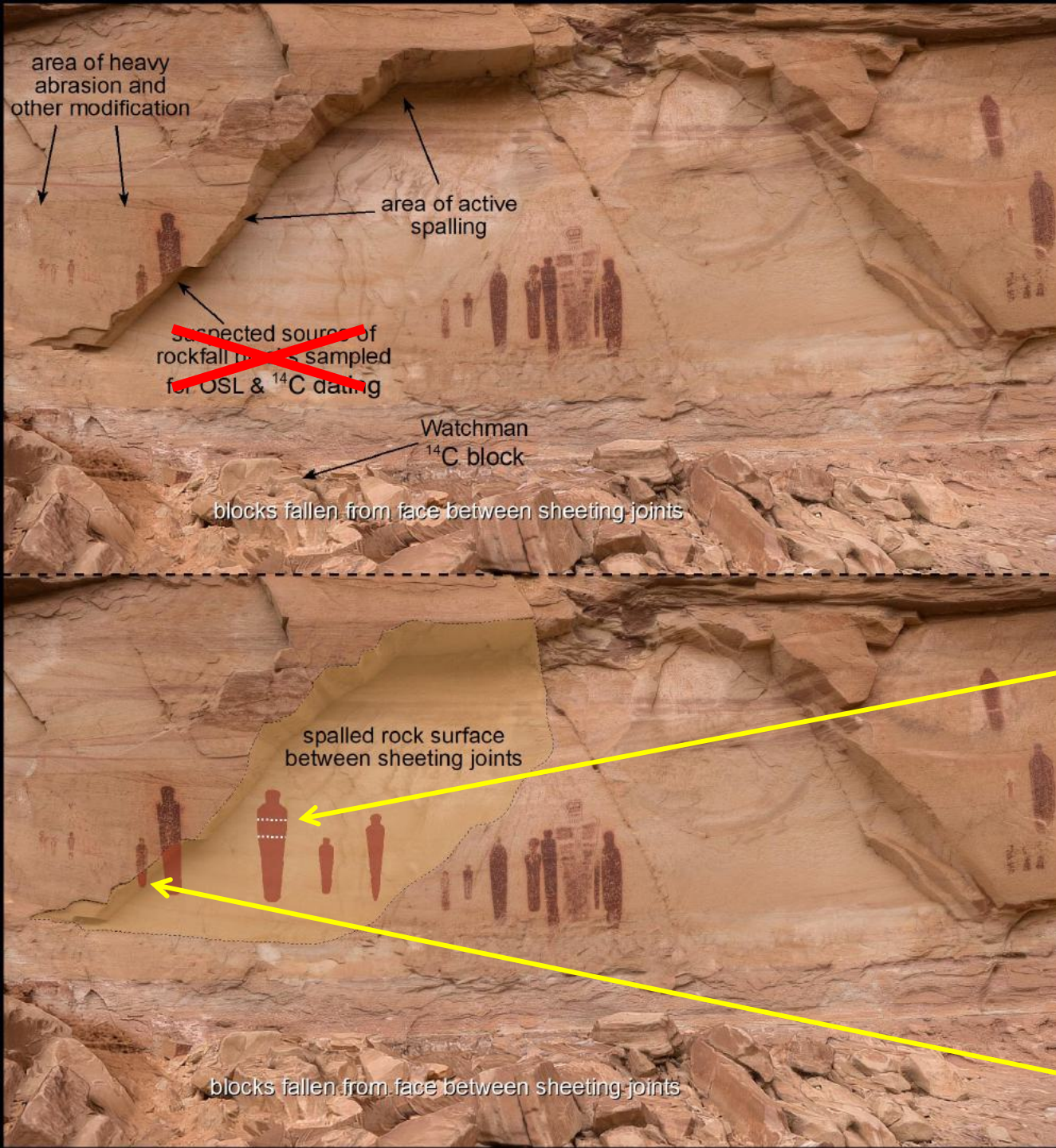
# Painted Fallen Block of 2<sup>nd</sup> Great Gallery Pigment Sample

Alan Watchman

- 2 contemporaneous  $^{14}\text{C}$  dates on this sample from independent labs.
- NOSAMS & Rafter
- Average of both assays is  $8655 \pm 210$  BP
- Calibrated interval @  $2\sigma$  is 8285–7295 BC

photos: Richard Reed



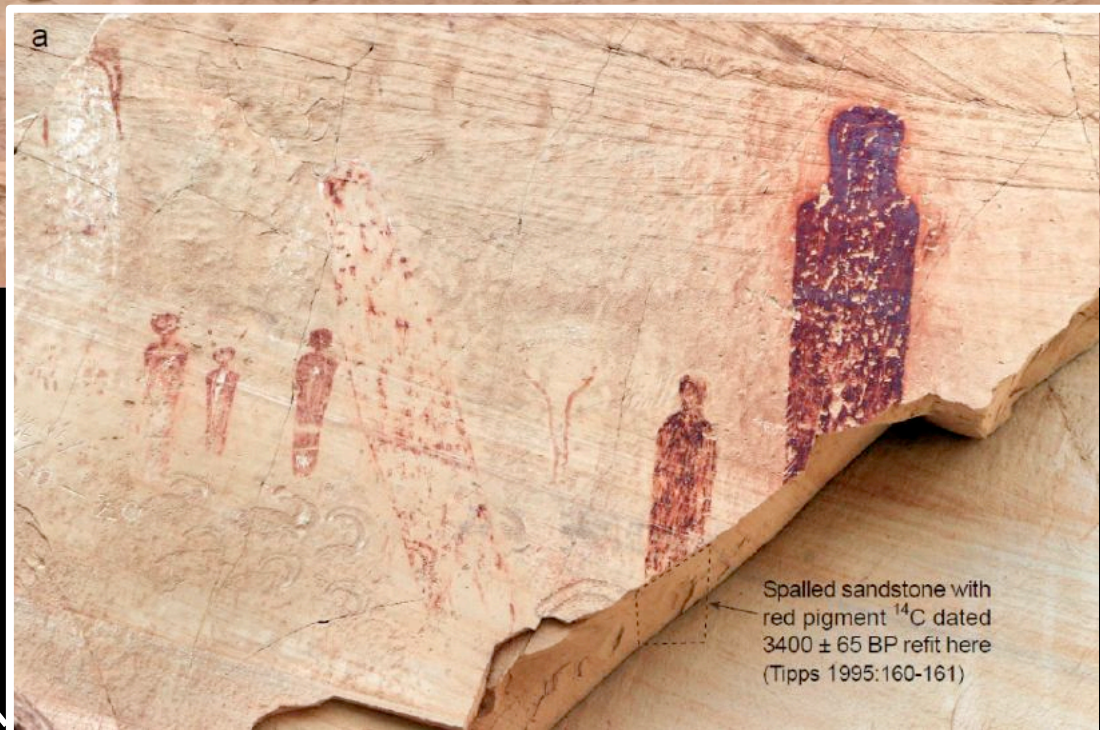


## Source of Pictograph Spalls Sampled for $^{14}\text{C}$

2<sup>nd</sup>  $^{14}\text{C}$  sample from a totally missing figure located approximately here.

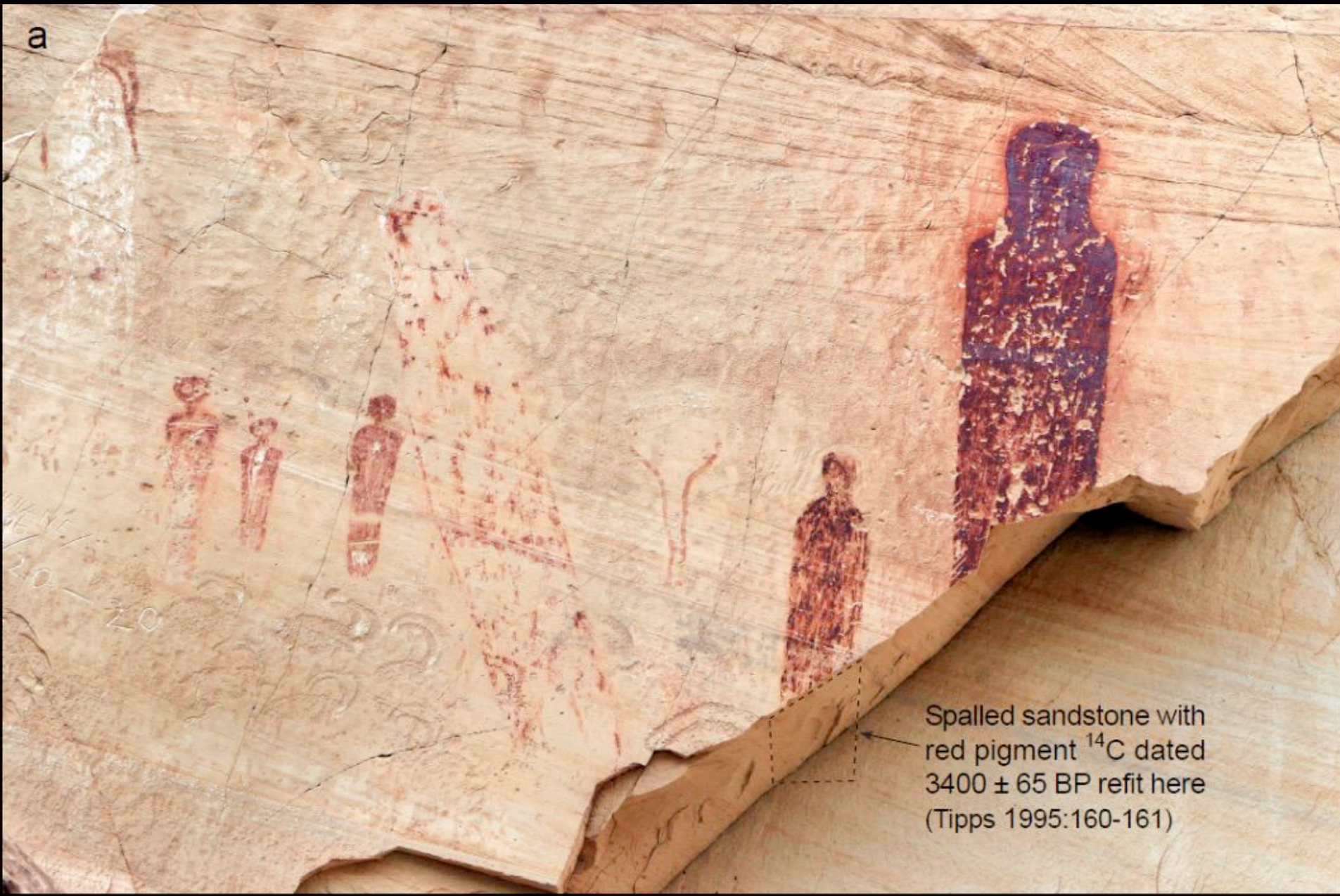
1<sup>st</sup>  $^{14}\text{C}$  painted sample refit to this partially spalled figure.







# Entire rock surface abraded before & after painting



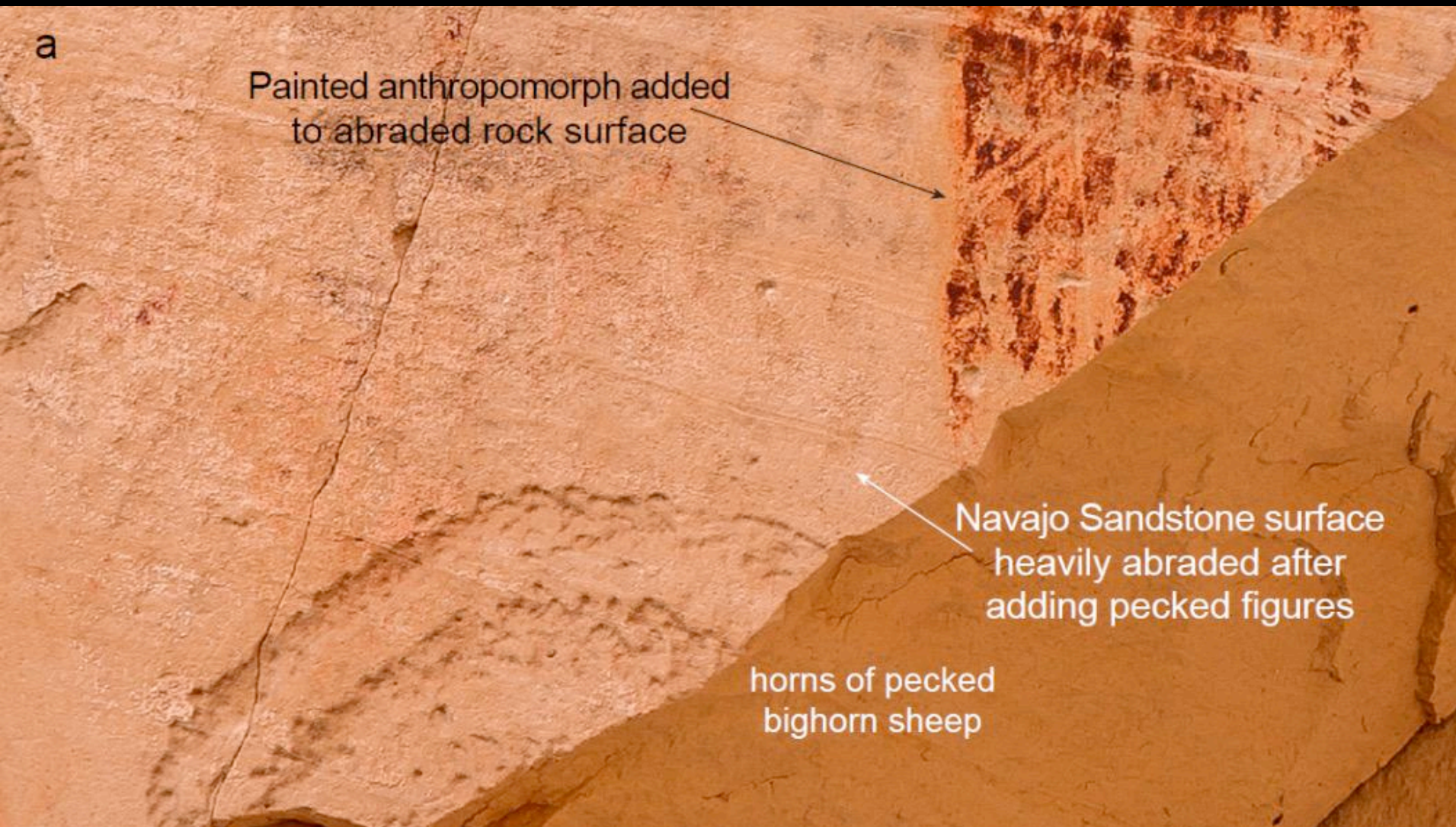


# Multiple additions & deletions of rock art images

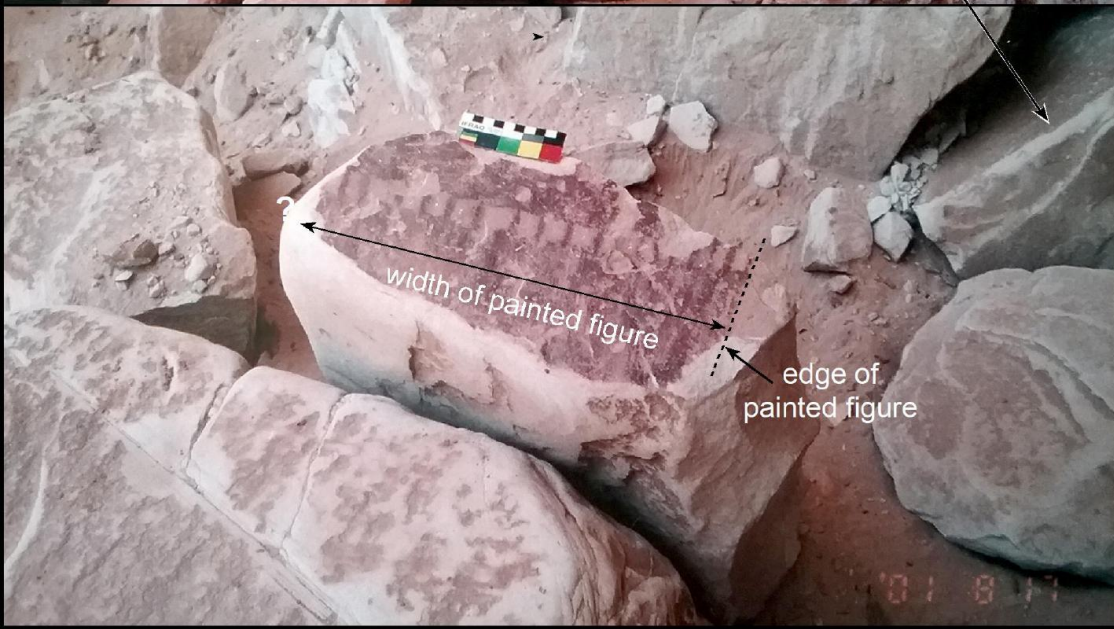
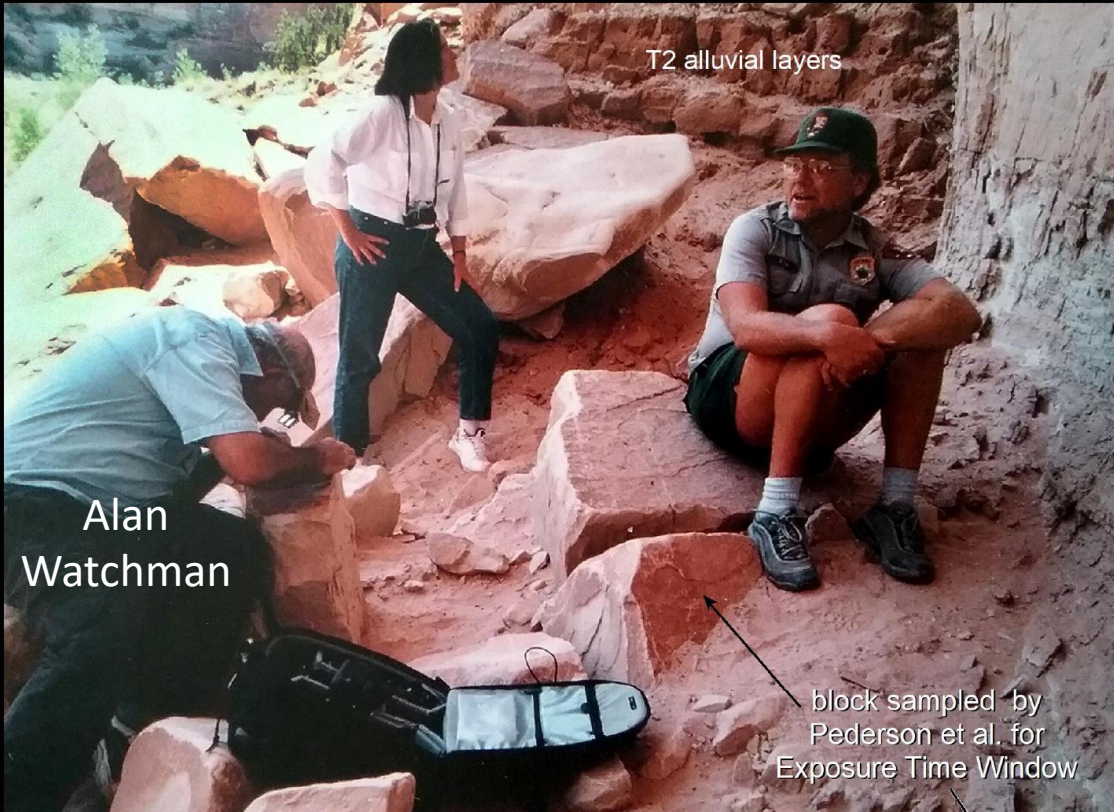




# Several mm of rock surface abraded away





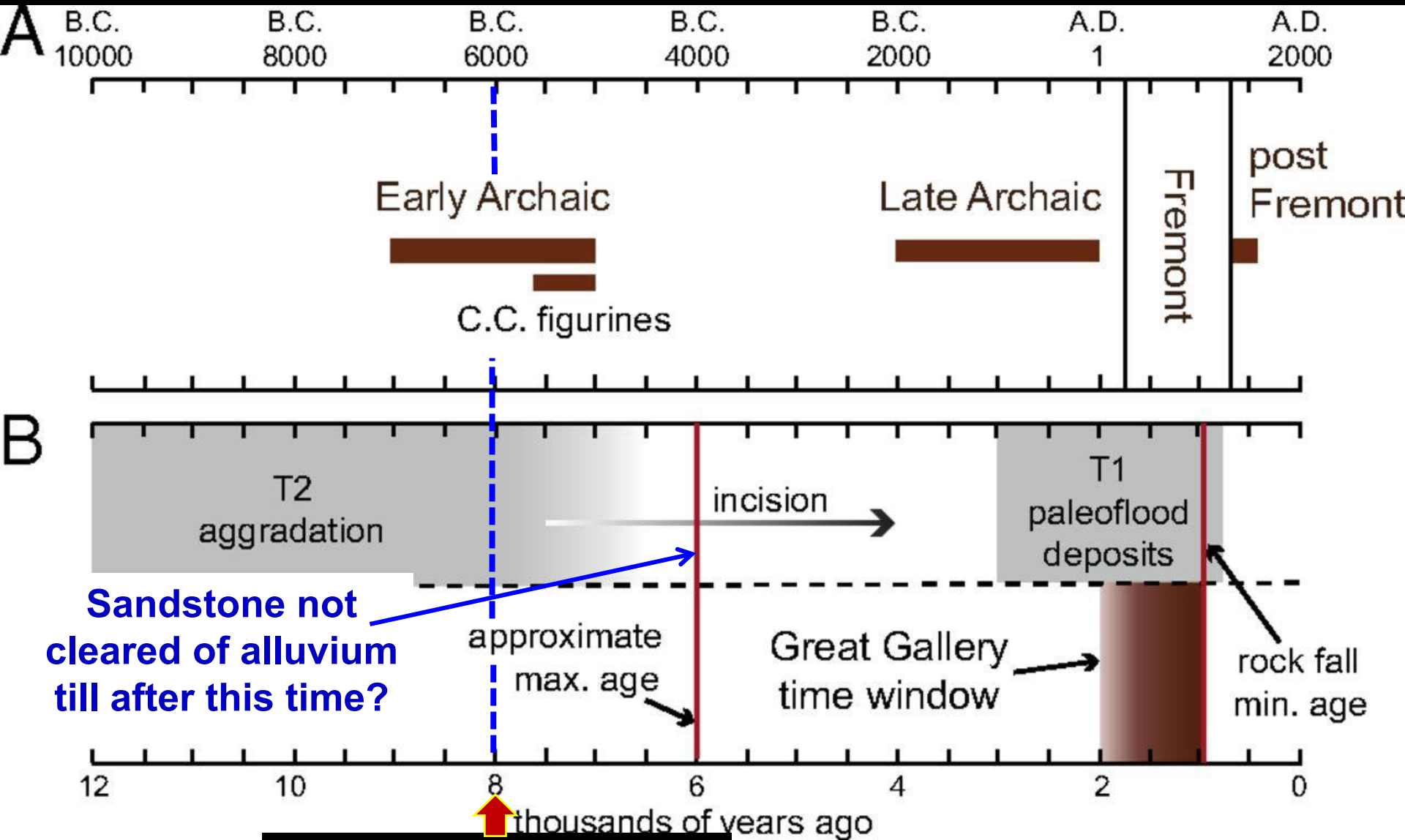


# No Photo Documentation of the Painted Fallen Block used for OSL Dating

- Was the rock surface also heavily abraded?
- What did the painting look like?
- Did it match the style of this  $^{14}\text{C}$  dated block?
- Had the OSL dated rock been moved historically? Or, in the ancient past?



# 2000+ years until Great Gallery exposed for painting?



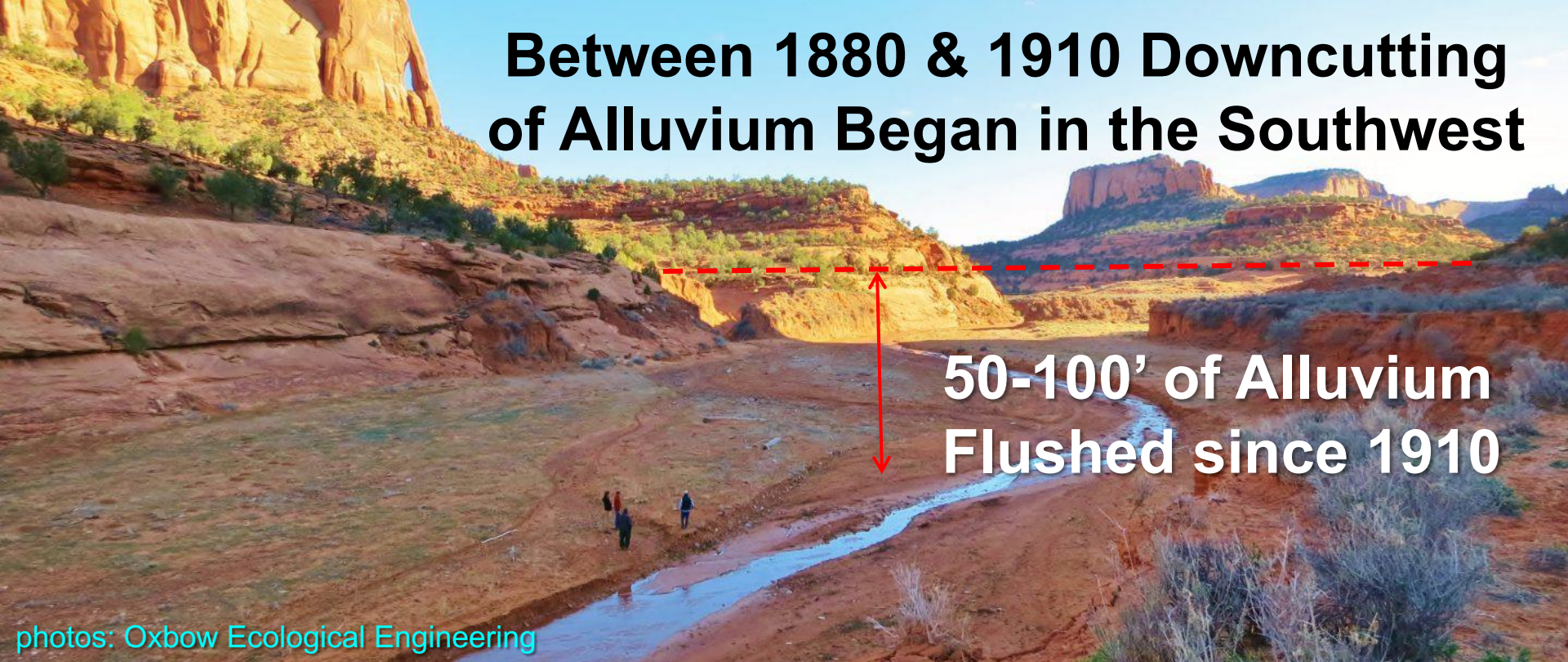
**End of T2 Deposition**

8010 +/-1130

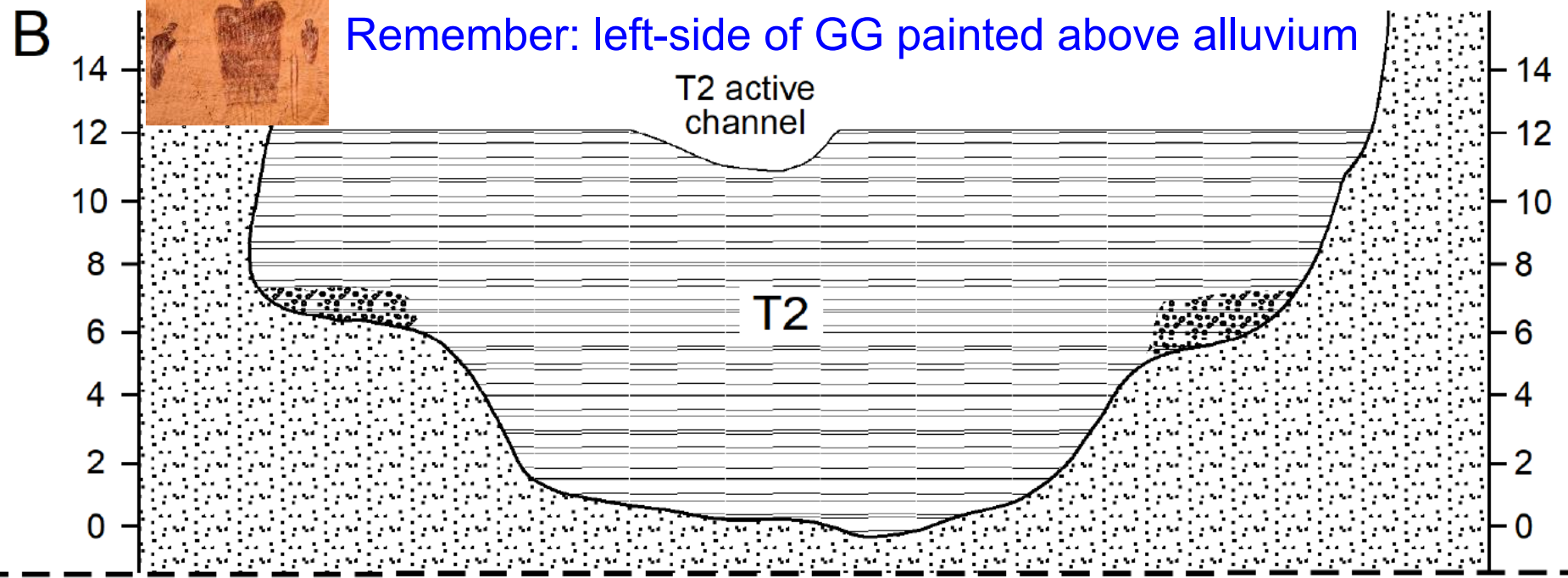
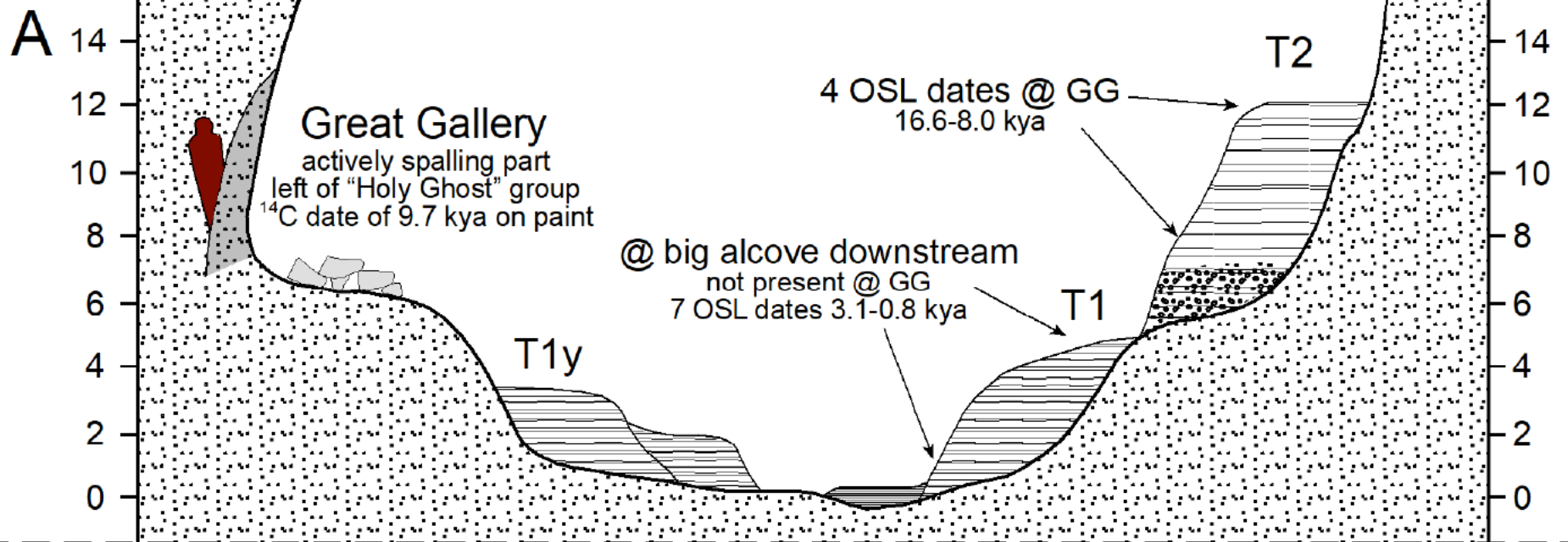
Fig. 2, Pederson et al. 2014



# Between 1880 & 1910 DOWNCUTTING of Alluvium Began in the Southwest

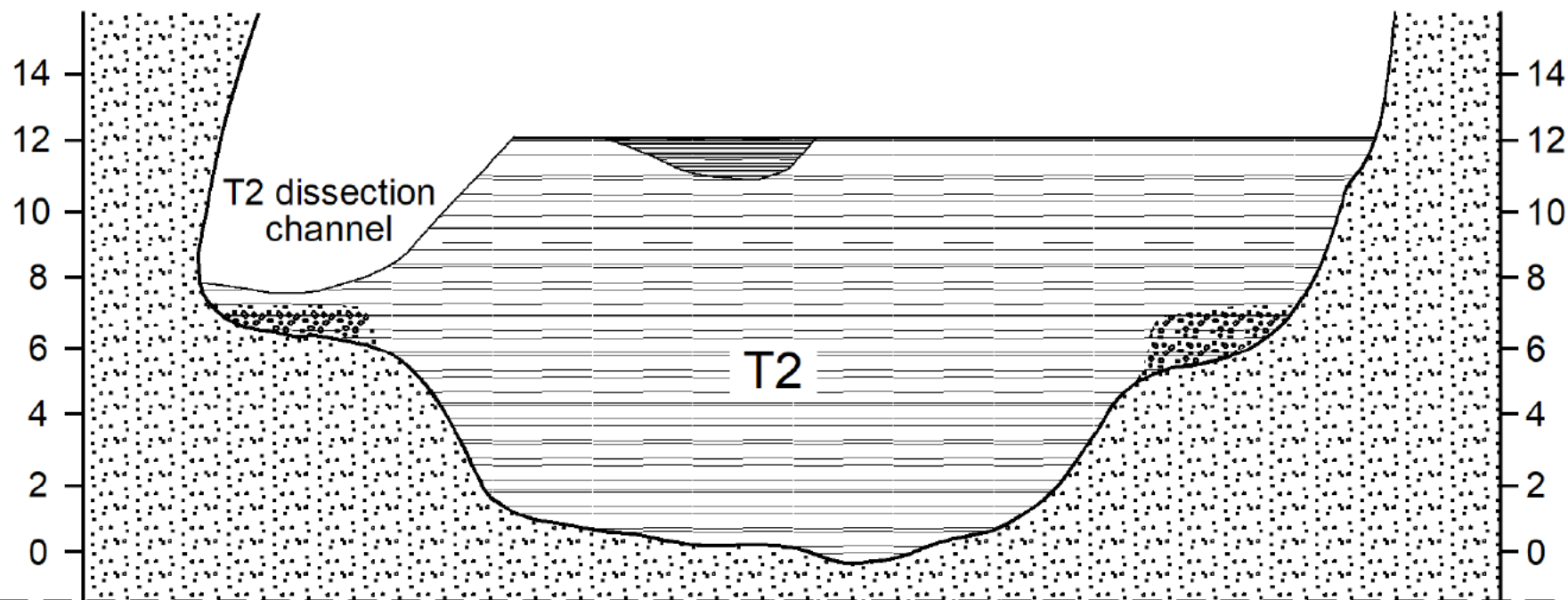




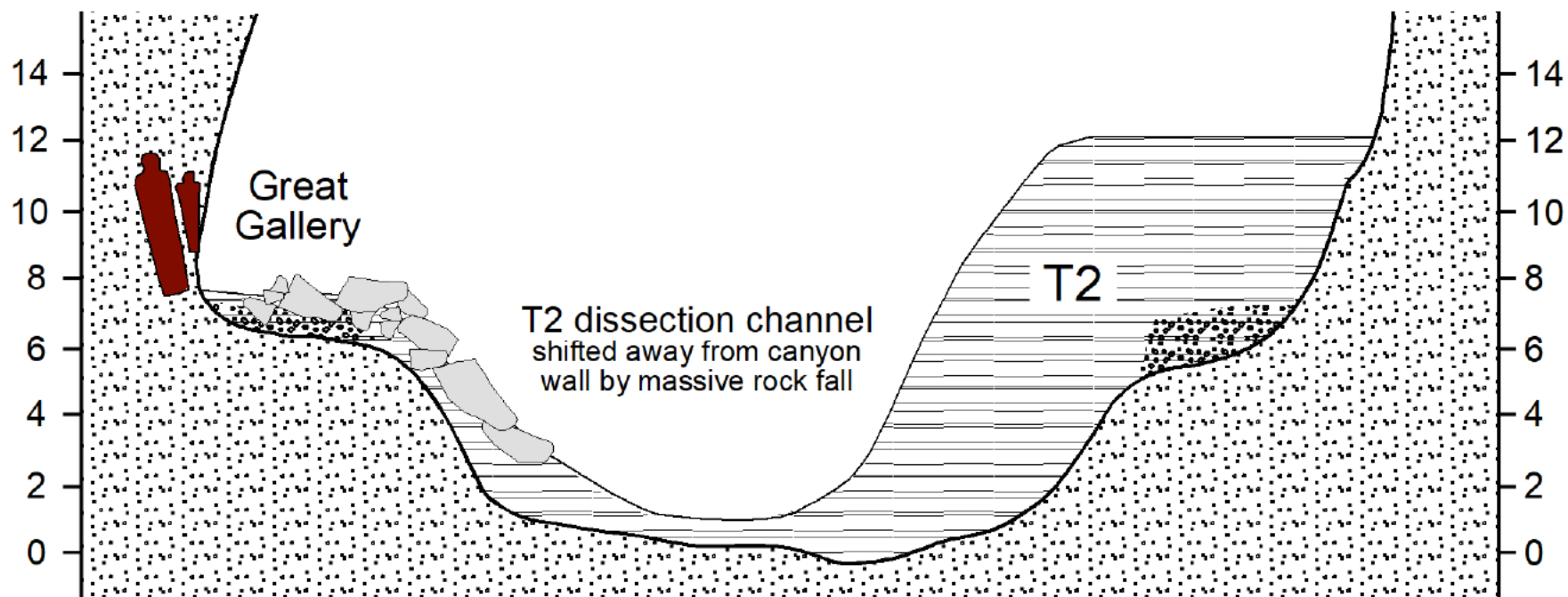




C



D





a

approximate top  
of T2 alluvium

erosional surface  
in T2 alluvium  
covered by talus

T2 remnant

projected top of T2 erosional surface

etched  
horizon

photo: Richard Ansley





Eroded T2 alluvium buried  
by massive rock fall





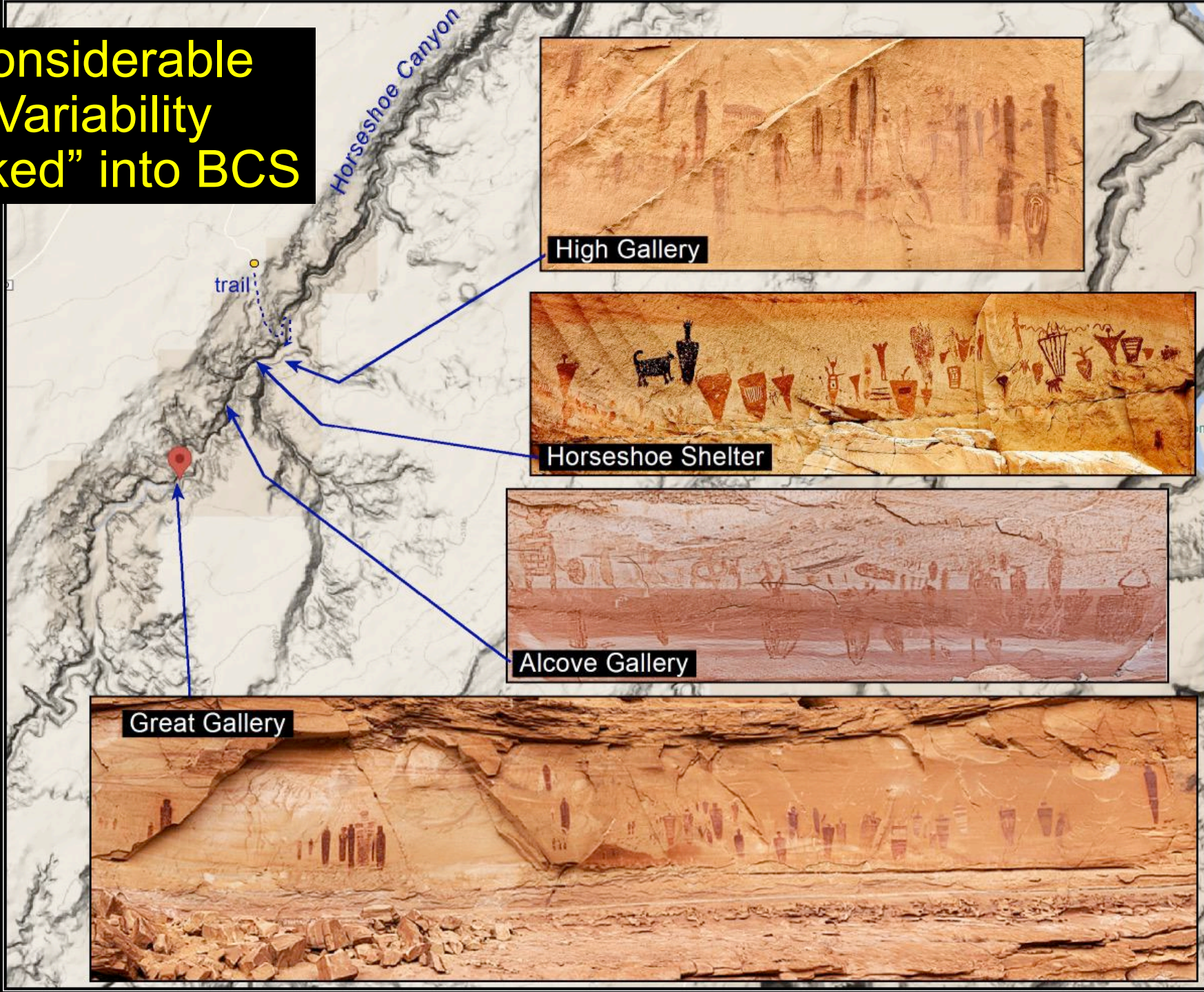
b

projected top of T2 erosional surface

etched  
horizon



# Considerable Variability “Baked” into BCS





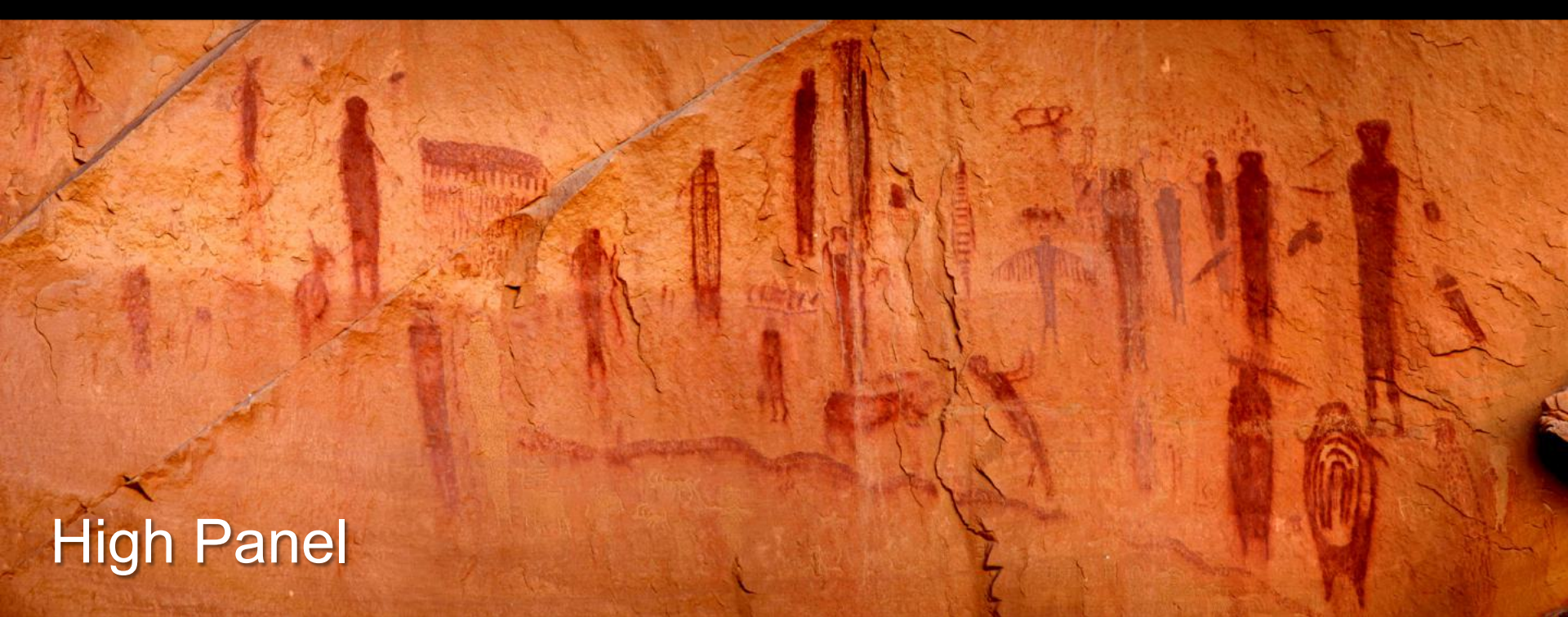


High Panel



Great Gallery





High Panel

Directly across the canyon from each other but worlds apart



Horseshoe Shelter



Horseshoe Shelter couldn't be painted until T2 was eroded & perhaps not till T1 was mostly in place





The cut & fill sequence of Barrier Canyon alluvial accounts for why excavating this shelter had no relevance to the age of BCS rock art





The living area of Horseshoe Shelter was covered by alluvium when paintings were being added to the sandstone wall just downstream.



Old Ground Surface  
on alluvial fill



# Alcove Gallery

image from Pederson et al. 2014 Fig 53, Supporting Information

Late Holocene Alluvium T1

3000 – 800 years ago

Alluvial stratigraphy provides a solid reason for why Horseshoe Shelter lacked evidence relevant to the rock art.

shelter

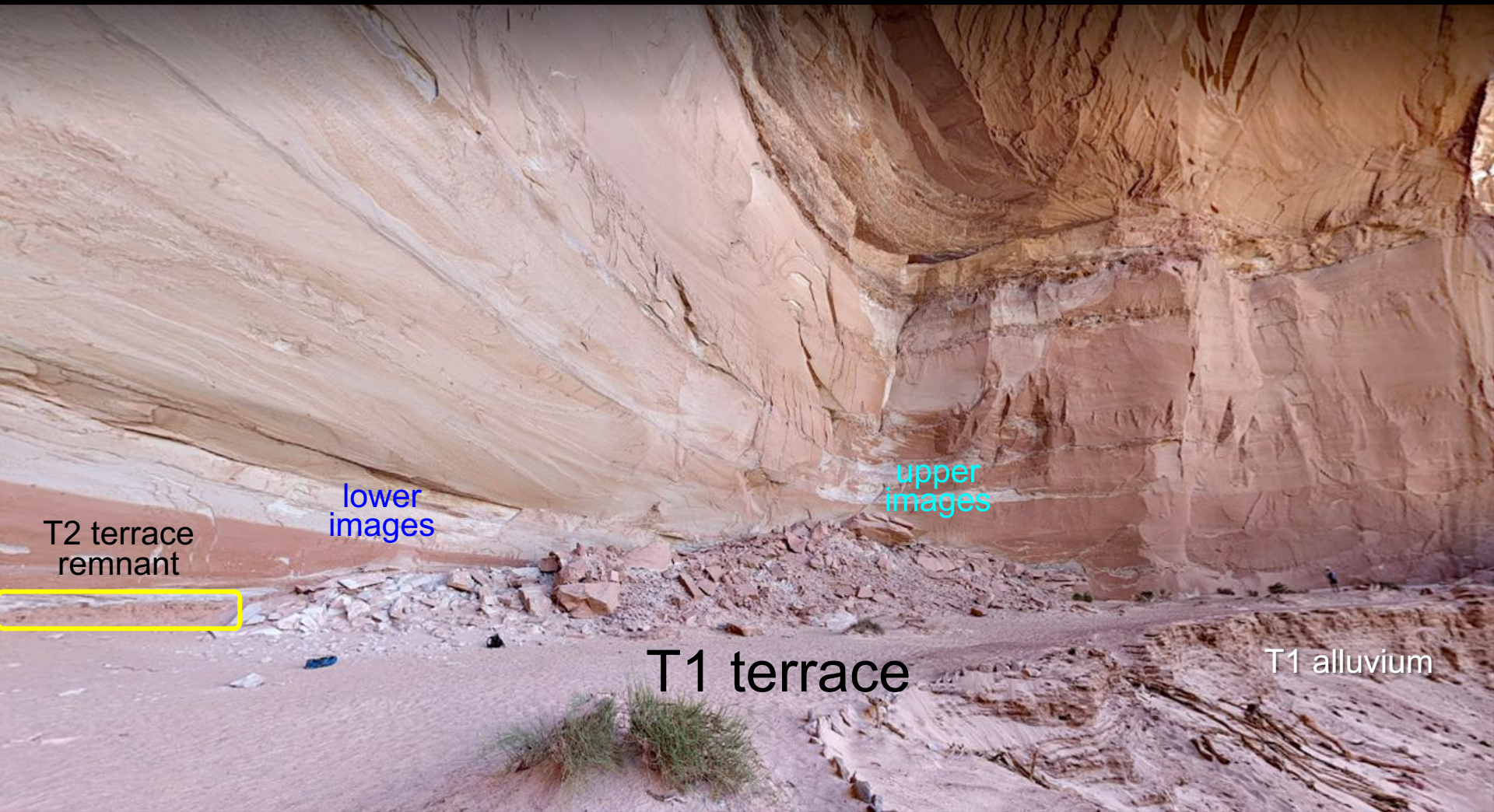
T1 once present here

rock art



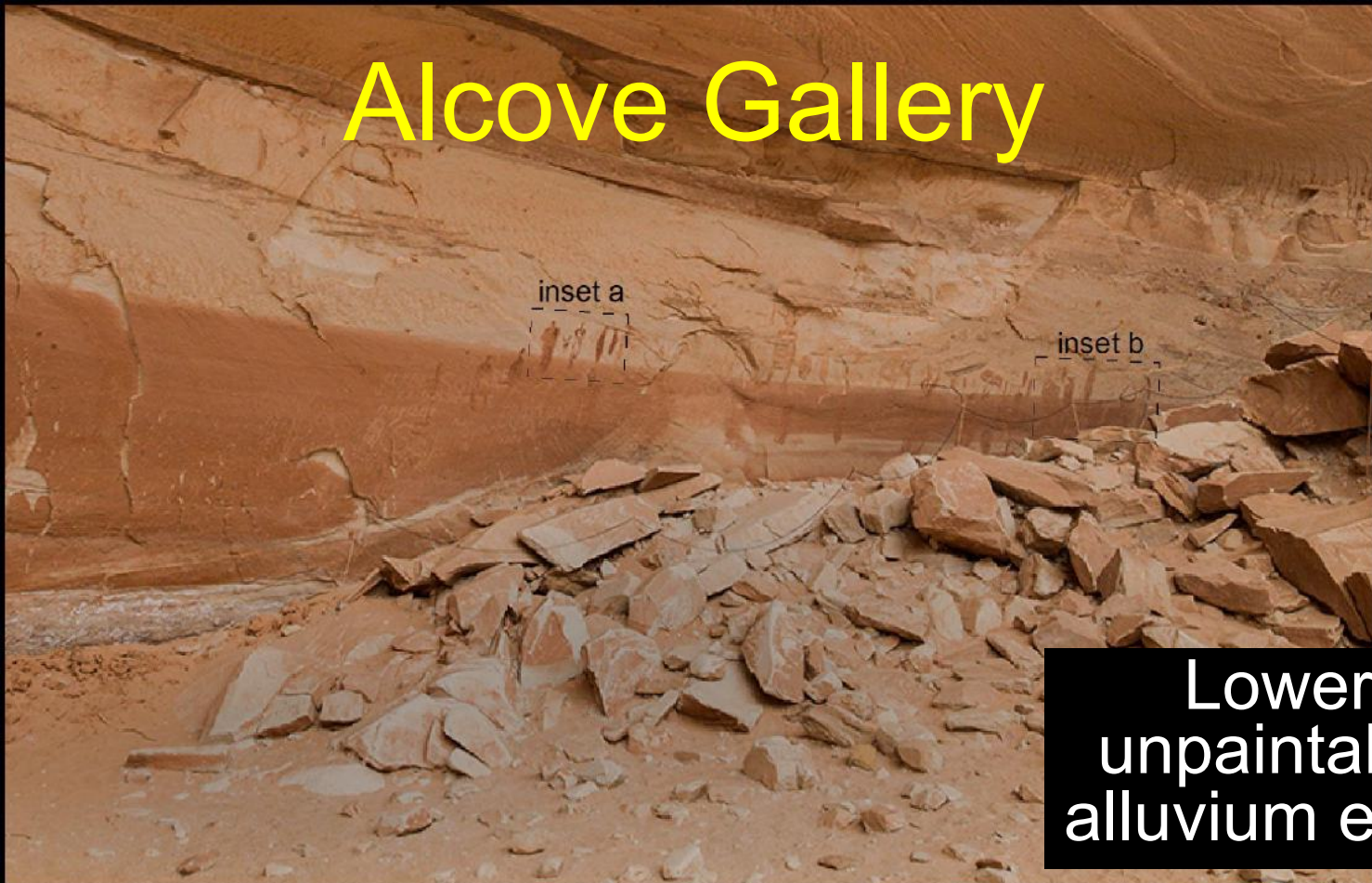


# Alcove Gallery





# Alcove Gallery

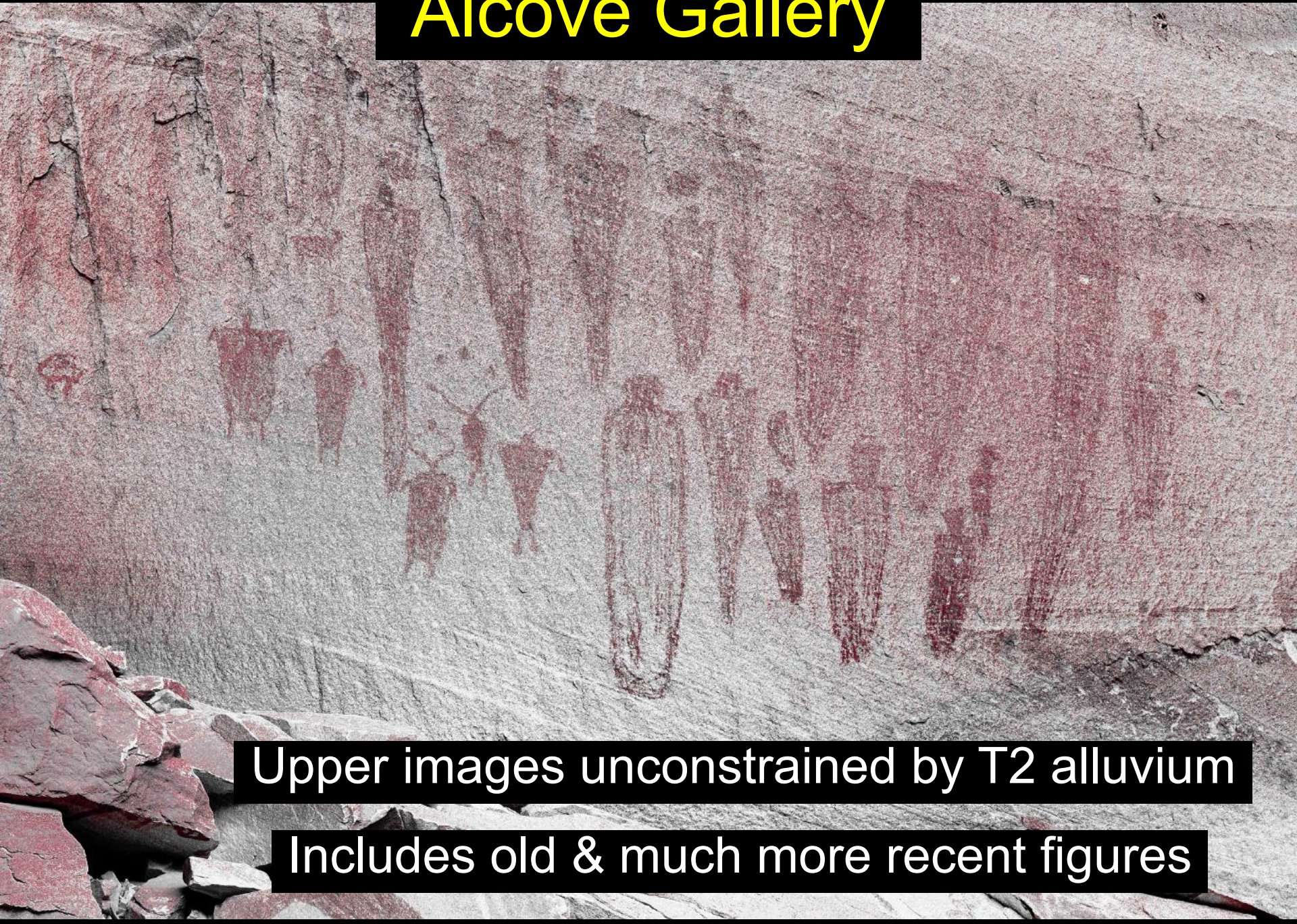


Lower images  
unpaintable until T2  
alluvium eroded away





# Alcove Gallery



Upper images unconstrained by T2 alluvium

Includes old & much more recent figures

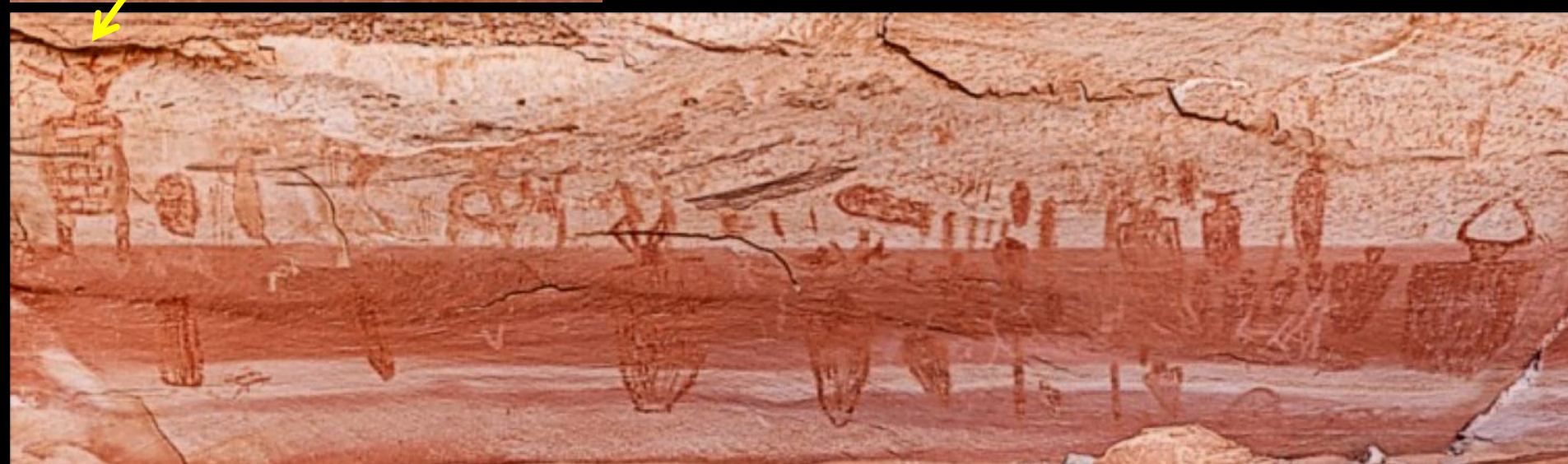


# Alcove Gallery

Is this an authentic Native American image or a cowboy attempt at mimicry?

If Native American, then from a time long disconnected from BCS.

Should it be part of the BCS repertoire?





# Why

We will never know the specifics of what this painting means.

But we can use ethnographic analogy to make informed conjectures as to the general reasons for such a painting.



# Sekl'nam of Tierra del Fuego in Ritual Costume



photos: Martin Gusinde





# Material Culture



Tools to manipulate the physical world to ensure survival & reproduction.



Tools to manipulate the supernatural world to ensure survival & reproduction.



# Material Culture



These won't matter if supernatural forces aren't appeased

Tools to manipulate physical world to ensure survival & reproduction.

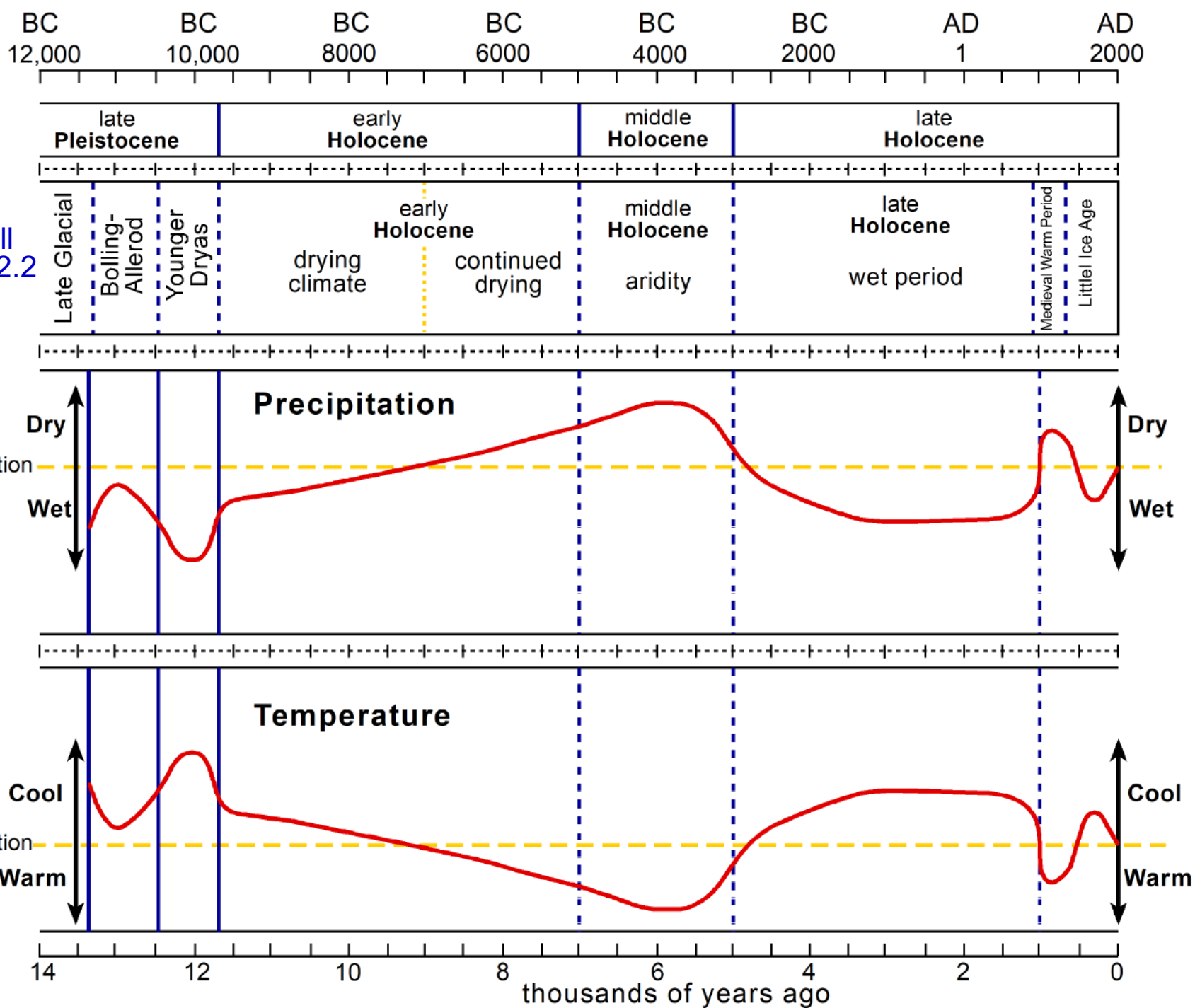


Tools to manipulate the supernatural world to ensure survival & reproduction.


More critical from an emic perspective



from Hall  
2018:Fig 2.2







‘This country is no good anymore; everything is dry;  
the creeks are cut deep; the food plants are all gone.’

A Southern Paiute woman told Isabel Kelly after seeing her  
old homeland along the Escalante River 40 years later.



Thanks  
for Listening!

