



# PLEISTOCENE COALITION NEWS

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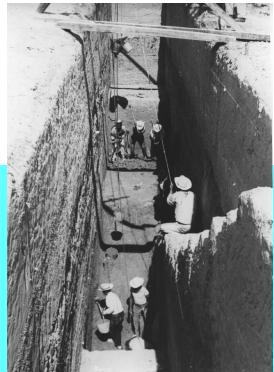
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Virginia Steen-McIntyre

## INSIDE SPECIAL **The Hueyatlaco story by those who were there**

On Page 4 begins a special series from the actual geologists and chemists who produced the dates for one of the most controversial sites in modern archaeology. Hear the inside story from the U.S. Geological Survey team and other professionals who produced similar and consistent results confirming a circa 250,000 yr-old date for the site and from other important players who have worked to bring this information to the public. They each have similar stories: work ridiculed or blocked from publication. Only non-geologists and non-chemists refuse to accept the dates. With the site now bulldozed over, learn the details of what may be the largest archaeological censorship effort in American history.



## The Flagstaff Stone

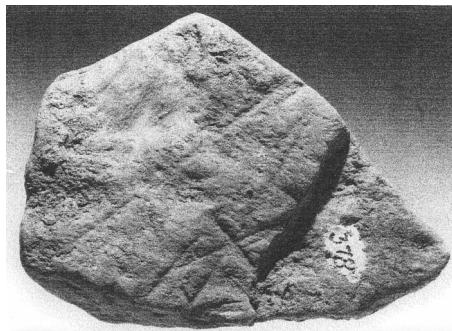
A Paleo-Indian engraved stone from Flagstaff, Arizona

By Jeffrey Goodman

PhD, Anthropology;  
Geological engineer

**In the summer of 1979 in the mountains north of Flagstaff, Arizona,** a flat stone with straight lines engraved on both sides was collected from Pleistocene deposits at my archaeological site, where I had been excavating intermittently since 1973 (**Fig. 1**).

Excavation consisted of a 35-foot-deep shaft with a 15-foot-long tunnel at the bottom. The sediments exposed there were mainly colluvial, interrupted by at least two buried soils: a thin one at a depth of 15 feet and a much thicker, compound soil at 22 feet. The late Dr. Alan Bryan, professor of archae-



**Fig. 1.** The Flagstaff Stone, a piece of engraved volcanic tuff dated c. 70–250,000 years old. 7.5 x 5 x 1 cm (3 x 2 x 3/8 in), found north of Flagstaff, Arizona in 1979. Tuff is a type of rock made from consolidated ash ejected during a volcanic eruption. Photo by Alexander Marshack.

ate students and two assistants found the stone on the screen table. The stone was collected from sediments

brought up from a depth of 23 feet, within the deeper soil.

In October of 1979, Dr. Robert Stuckenrath of the Smithsonian Institution determined a radiocarbon date of 22,490 +/- 420 years BP for the soil at 15 feet. This date is consistent with the radiocarbon date of 25,470 +/- 1,700 years BP that Teledyne Isotopes determined on this same soil in 1973.

The compound soil at 22 feet has not been dated, but is believed to be much older. Geologists working in the area are well acquainted with it, and informally call it "the 100k yr soil" (Sangamonian soil, last interglacial soil, Steen-McIntyre, pers. comm. 2011).

The stone, dubbed here the "Flagstaff Stone" is a piece of indurated or hardened volcanic ash approximately 7.5 cm long (3") by 5

> [Contd on page 2](#)

## Flagstaff Stone (cont.)

**"The geometric arrangement of the grooves, especially the fact that some of the grooves radiate from a common intersection, makes it highly unlikely that the grooves were formed naturally in a stream bed or similar environment."**

- Arend Meijer,  
PhD, professor of  
geology, University  
of Arizona

cm wide (2") by 1 cm thick (3/8"). It was sent to the late Alexander Marshack, a well known prehistorian at Harvard's Peabody Museum, for study. Marshack said at the time that he could not see the straight lines as having occurred accidentally and concluded that the grooves on the stone looked "intentional" (Marshack, letter report, March 17, 1980). He also said that the stone looked similar to many of the Upper Paleolithic engravings he had worked with from Europe (Marshack, pers. comm., March 21, 1980).

There is a scraped area to the upper left on the broken side of the piece, made by the late Dr. Paul S. Martin, Department of Geosciences, University of Arizona when he examined it. Martin commented on the adhering fragments of the buried soil and on the weathering rind encasing the stone.

I took the piece to Dr. Arend Meijer, professor of geology, University of Arizona, a petrographer who specialized in the study of volcanic rocks. He reported that the stone was a well sorted dacitic volcanic ash. While the rock had been indurated by heat or pressure, he noted that the stone was still "friable," i.e. easy to crumble. Based on petrographic studies of the Flagstaff area, I believe the stone to be from the Sugarloaf Ash which has been dated by the potassium-argon method to approximately 280,000 years.

Meijer was able to distinguish between the clay matrix which coated the stone and the clay which resulted from the *in situ* weathering of the original rock.

Finally, Meijer said that "the geometric arrangement of the grooves, especially the fact that some of the

grooves radiate from a common intersection, makes it highly unlikely that the grooves were formed naturally in a stream bed or similar environment" (Meijer, letter report, March 31, 1980). Dr. Thor Karlstrom, a glacial geologist with the U.S. Geological Survey, ruled out the possibility of a glacial origin for the grooves (pers. comm. 1980).

I sought the opinion of a second petrographer, Dr. John Ferry, Geology Department, Arizona State University as to the possible age of the grooves. Ferry added some critical observations. He was able to conclude that the clay within most of the grooves on both sides of the piece was original (pre-excavation) material which was not introduced during the cleaning process. Ferry observed that the undisturbed clay on the bottom part of the stone had a characteristic flakey structure to it (a sort of crater pattern) and noted that the clay in most of the grooves also had this distinct pattern. To Ferry, this meant that all the grooves with clay in them were old.

Ferry, like Meijer, was impressed by the geometric pattern and the generally consistent depth and width of the grooves and was able to show that the lines did not cut down at the edges of the stone and were once part of longer lines. He believes the stone was a fragment of a much larger piece which had been broken after the lines were cut (Ferry, pers. comm. April 30, 1980). See **Fig.2** on the following page for a schematic of the engraved lines.

A third petrographic study of the Flagstaff Stone was made in October 1982. Dr. Virginia Steen-McIntyre, a tephrochronologist (a petrographer who specializes in

the study and dating of ejected volcanic materials), then an adjunct professor in the anthropology department at Colorado State University, conducted a much more detailed study of the piece (Steen-McIntyre 1982).<sup>1</sup> In addition to a petrographic study, she took specific samples of all the weathering products coating the stone and chemically analyzed them in a field laboratory. Steen-McIntyre's more definitive chemical tests were able to distinguish: 1) the "fresh" or unweathered parent rock ('tuff'); 2) the weathered volcanic glass and mineral fragments immediately below the waxy clay; 3) a reddish stain on the surface of the tuff; 4) the waxy clay rind that still partially covered the rock, the result of weathering *in situ*, and 5) a sample of the adhering sandy matrix in which the fragment had been buried and which coated the weathering rind in places. The matrix itself was weathered and clay rich and the feldspar fragments were coated with a dusty tan clay.

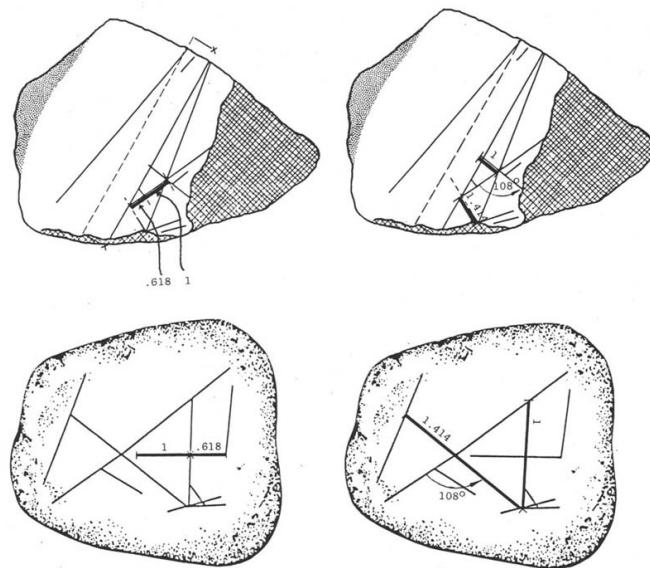
Flakes of the waxy clay weathering rind were still occasionally preserved in the scribed grooves, demonstrating that the grooves themselves were made before the piece was buried and had begun the *in situ* weathering process — fresh glass shards to allophane (an amorphous or short-range ordered crystalline aluminosilicate weathering product) to an expanding-layer silicate clay that would show sharp x-ray diffraction lines; fresh orthopyroxene phenocrysts to shaggy-ended crystals to mere crystal fragments that were almost completely eaten away. In effect, the engraved lines were encased in a time capsule, and weather-

> [Contd on page 3](#)

## Flagstaff Stone (cont.)

**"Flakes of the waxy clay weathering rind were still occasionally preserved in the scribed grooves, demonstrating that the grooves themselves were made before the piece was buried and had begun the in situ weathering process."**

- Virginia Steen-McIntyre, PhD, volcanic ash specialist



**Fig. 2.** Examples of the author's work comparing mathematical properties of the Flagstaff Stone engravings and a similar stone from a Woodland Culture (1000 A.D.) site in Clay Co., Missouri. The author, in collaboration with other scientists and mathematicians, believes that the engravings feature qualities such as phi (1.618) and the square root of 2. Flagstaff Stone drawings by Jeffrey Goodman; Clay County Stone drawings from *Before Smith's Mill*, Smithville Lake Archaeology Report, Clay and Clinton Counties, Missouri, Fig. 6-5.

Steen-McIntyre writes in her report: "The petrographic character of the tephra components, waxy clay coat, and sandy matrix material suggest considerable age. The only samples I have examined that show a comparable degree of weathering were samples dated 250,000 - 300,000 years from the Vallesquillo region, central Mexico. In this region occur several dated layers of dacitic ash. Of these layers, those younger than approximately 20,000 years contain fresh pyroxene crystals and clear glass shards. It is only at approximately 22,000 - 24,000 years that orthopyroxene crystals begin to show signs of etching and the glass begins to cloud. ...The samples from specimen #378 (Flagstaff Stone) are all highly weathered by comparison. This suggests an age for them considerably

greater than 24,000 years."

In addition Steen-McIntyre writes: "Upon further reflection on the appearance of the 'fresh tephra' samples under the petrographic microscope, it seems highly probable that the rock has been fired to a high temperature, and that it is actually a piece of ceramic. The devitrification of the glass shards and

their powdery nature, the small ( $50 \mu\text{m}$ ) clinopyroxene grains (pigeonite?), and the large number of small opaques all would suggest this. If this view is correct, then the reddish stain covering the groove-like markings and red-yellow veinlets on the side of the fragment may have had different origins, the one caused by high heat, the other by weathering. The fact that the specimen had been fired would not alter my estimate as to its age. Etched pyroxenes and thick clay weathering rinds form only after much time has passed. I would suggest a competent ceramist be allowed to examine the sample." (For the complete 1982 report, see Steen-McIntyre's webpage on the Pleistocene Coalition website.)

Lines scribed with intelligence? A possible ceramic? Artifact from before the Last

Ice Age? Found in America near Flagstaff, Arizona? Obviously more work is needed on the Flagstaff Stone and further excavation at the site from which it was taken. We will keep you informed of future developments in the PCN newsletter!

### Reference Cited

- <sup>1</sup> Steen-McIntyre, V. 1982. *Report on numbered specimen 378, a platy fragment of indurated tuff with groove-like markings on two sides*, pp. 1-8. Unpublished report produced for Archaeological Research Associates, Inc.

Note: This is an abridged and updated version of my original unpublished report as presented May 3, 1980, at the 45th Annual Meeting of the Society for American Archaeology (SAA). The Flagstaff Stone is presently slated for further testing including by electron microscopy.

**JEFFREY GOODMAN, PhD**, is an archaeologist and geologist. He has a professional degree in Geological Engineering from Colorado School of Mines, an M.A. in anthropology from the University of Arizona, an M.B.A from Columbia University Graduate School of Business, and a PhD in anthropology from California Coast University. For nearly 10 years, Goodman was accredited by the former Society of Professional Archaeologists (SOPA) from 1978 to 1987. His books, *American Genesis* and *The Genesis Mystery*, included accounts of his discovery of an early man site in the mountains outside of Flagstaff, Arizona. Four seasons were devoted to excavating this site, the last of which included archeologists from the University of Alberta, Canada.

# Hueyatlaco/Valsequillo saga, introduction

By Virginia Steen-McIntyre

PhD, Tephrochronologist (Volcanic ash specialist)

**With the Hueyatlaco, Mexico site gone forever, at least as we knew it,** editor John Feliks thought it

time for the surviving principals in the story to flesh out the history of the site and the Valsequillo saga in general, laying to rest the false information and rumors now in circulation about them.

My involvement goes back more than 45 years (Fig.1a & b), and it has taken six segments and eight thousand-



**"Barney Szabo published his U-series ages for butchered bone and a mastodon tooth fragment from the Hueyatlaco and El Horno sites in 1969. Age? Roughly 250,000 years."**



**Fig.1a** (above). Present day, the author, 2011.

**Fig.1b** (below). The author in the field, 1966. La Malinche volcano in the background. Note the sear landscape; the region was experiencing a prolonged drought.

plus words to even briefly outline what happened. Others, like Sam VanLandingham, Chuck Naeser, and Bill Cote have articles in this issue, that will give their versions, so that between us we can present a true picture of the Valsequillo/Hueyatlaco saga and the scientists and professionals who have been involved in it.

We have had some difficulty setting up the series. There was too much material for an 18-page "Hueyatlaco Special" Issue, and many contributors are still busy writing their first drafts! Nor did we want to usurp the newsletter and slight others who have contributed interesting items in other areas. Our thought

is to use the next several issues to tell the tale.

This issue (11) begins my tale. **Part 1** tells of my introduction to the Valsequillo Project and Hueyatlaco, marriage, and what I learned about the history of the area while living and working in Puerto Rico. Barney Szabo published his U-series ages for butchered bone and a mastodon tooth fragment from the Hueyatlaco and El Horno sites in 1969. Age? Roughly 250,000 years. Outcry! **Part 2** recalls the years at the Denver USGS (United States Geological Survey), the breakthrough in understanding the age of the Valsequillo sites (Fig.2), and the critical 1973 field season at Hueyatlaco.

In **Part 3**, I'll cover Chuck Naeser's fission-track ages (roughly agrees with Szabo's U-series ages), my increasing success using tephra components as rough age indicators, my

growing scientific reputation as a tephrochronologist, and media coverage. Following up will be the setbacks: the tragic death of colleague Roald Fryxell, the difficulty Hal Malde and I had seeing our 1973 field work data into print, my troubles with the political powers-that-be, finally receiving a PhD in geology in 1977, after three separate dissertation attempts! **Part 4** continues the battle to publish the results of our 1973 field work, which finally saw the light of day in *Quaternary Research* (1981). The lack of any response from the archaeological establishment and sudden isolation from my peers set the tone for the next 13 years. During that time I

became acquainted with other embattled scientists and researchers who had had the temerity to suggest they had found Pleistocene and earlier sites in the Americas (Goodman, Carter, Minshall, Davis, Cremo). Part 4 ends with increasing media exposure including Bill Cote's controversial 1996 *Mysterious Origins of Man* film, aired on NBC.

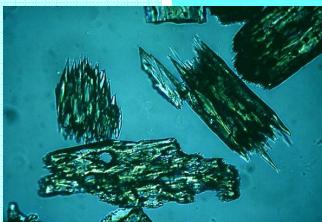
**Part 5** bring us closer to the present. It was back to Hueyatlaco in 1997 to guide Mexican scientists in their collection of tephra samples for more dating attempts; a 1997 trip to Portales, New Mexico to copy the late Cynthia Irwin-Williams' Valsequillo materials (without much luck since most of them had disappeared); and next volunteering data for a proposed film of the Hueyatlaco saga. Diatomist Sam VanLandingham became involved in the Valsequillo Project in 1999, and spent the next decade demonstrating an age for the Hueyatlaco artifacts using diatom stratigraphy (Sangamonian to Illinoian, more than 80,000 to as much as 430,000 years old). Another field season at Hueyatlaco in 2001. Talks in Mexico (2002) and Washington DC (2003). A final field season at Hueyatlaco (as it has turned out to be) in 2004 with a New Valsequillo Project group in charge. (There is serious disagreement about the age of the site between the "Classic" and "New" Valsequillo Project scientists that is still to be resolved.) I end with **Part 6:** Transferring Fryxell's 1973 trench profiles as well as a couple of Irwin-Williams' and one

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# Hueyatlaco/Valsequillo saga, introduction (cont.)

**"And the shocker:...the Hueyatlaco site as we knew it was no more; leveled, landscaped, planted with good-sized coconut palms, and criss-crossed with two-metre-high concrete fences."**

INAH profile from Hueyatlaco to a computer. Discovering the Hueyatlaco film I had been involved with for so many years, although winning an international award for its director, could not be shown publicly "rights issues." Becoming deeply involved with the Malde et al. manuscript on the stratigraphic



**Fig.2.** Shaggy orthopyroxene crystals, tephra layer, Hueyatlaco site. The adhering clay weathering matrix has been removed. Much time is required to etch crystals to this extent. Steen-McIntyre photomicrograph.

phy at Hueyatlaco, to the point of taking on the job as first author after Malde's death in 2007. And the shocker: news received April 1, 2011 that the Hueyatlaco site as we knew it was no more; leveled, landscaped, planted with good-sized coconut palms, and crisscrossed with two-

meter-high concrete fences.

It is a long story, and often a painful one, but one that needs to be told.

VIRGINIA STEEN-MCINTYRE, Ph.D., is a tephrochronologist (volcanic ash specialist) involved in preserving and publishing the Palaeolithic evidence from Valsequillo since the late 1960s. Her story first came to public attention in Michael Cremo and Richard Thompson's book, *Forbidden Archeology* (1993), and in the Bill Cote television special, *Mysterious Origins of Man*, hosted by Charlton Heston (1996).

## Letter to the Editors

Paulette Steeves wrote:

Thanks to Virginia for writing the informative piece: "Data block, the conference from Hell" ([PCN #10](#)). I have noticed a sort of clique in many of these organizations. Specifically that this clique of scholars crosses over into many groups and seems to have great pull within multiple organizations.

It is dismaying that WAC as an organization promoting global inclusion of all people, is apparently run by European scholars. I would expect to see aboriginal or indigenous people at the helm or at least included, but that does not seem to be the case. Perhaps there are other than European scholars involved but if so I am not aware of this.

Even within groups of indigenous scholars, I am deeply saddened by the self-promotion and self-focus I see. They seem mainly con-

cerned about how they look and if they will get tenure. It is not what I would expect from an indigenous scholar. I have always felt that if I were asked to tell my story I would have little to say of myself; the story I'd tell is about the Indigenous nations and people.

At the recent annual SAA (Society for American Archaeology) meeting I was not invited to be a part of any of the Indigenous scholars presentations, even the one on Activism. Yet non-indigenous students, speaking on non-indigenous topics were included in the session.

There were many sessions organized by groups of indigenous scholars that had not invited other indigenous scholars outside of their own specific cliques. And that is ok; it's good to see a diversity of people and topics in one seminar. However, it seems to me that if you speak out for truth and do

not support the neocolonial structure that is current academia then you are on the outside.

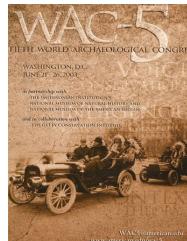
I would suggest it is time to break this mold of power and control. At the next annual SAA meeting in 2012, I am planning a session on Indigenous People in the Western Hemisphere from 200,000 to 12,000 years ago.

If you want to know more or think you have a presentation that would fit in with the theme please email me. I will contact SAA and arrange for a large room and convenient time slot long before the conference takes place.

It seems every year that the early Americas seminars are assigned a small room and end up with standing room only. I hope to at least bring attention to this and perhaps secure a larger room for the 2012 seminar.

Paulette Steeves, M.A., Graduate Student; Clifford D. Clark Fellow 2008-2013; Binghamton University, Anthropology

**"It seems every year that the early Americas seminars are assigned a small room and end up with standing room only."**



## THE VALSEQUILLO SAGA AND HUEYATLACO SITE: BILL COTE'S INVOLVEMENT

By Bill Cote

Documentary filmmaker,  
[BC Video](#)

**When NBC agreed, in 1995, to another special (after our Emmy Award winning documentary *The Mystery of The Sphinx* of 1993) we began work on *The Mysterious Origins of Man*.**

The same team, Carol, my wife, and John Cheshire, my partner, researched sources of evidence that man's origins and rise to civilization may be different than what is taught in schools.

To this end, we found *Forbidden Archeology* by Cremo and Thompson most useful, particularly the section on Valsequillo and the work of Ginger Steen-McIntyre, et al. With a generous budget from NBC, we were able to invite Ginger to join us for filming on location at the Hueyatlaco site in Mexico and captured some images of her at the actual site plus interviews to help tell the story.

The one-hour network special was completed, with Charlton Heston as host once again. The ratings,

while not as high as *The Mystery of the Sphinx*, were impressive, telling us that the public loved it. The academic community's reaction was quite different. To my dismay, we actually received what I can only call "hate mail" from teachers, scientists and professors who seemed mortally offended that we dared to challenge the accepted paradigm. I

we were contacted by a writer from the *Boston Globe*. Staff writer, John Yemma, was intrigued by all the hoopla and wanted to know if we were just troublemakers or had a serious point of view. He spent an afternoon in late 1996 talking with the three of us, then wrote a 12 page article in the *Boston Globe Supplement* entitled: "Science vs.

fiction...Aliens, auras, and the lost continent of Atlantis—they're all part of pop culture these days. But scientists are fighting what's been called the X-Filing of America."

The article was balanced and concluded that while many TV shows do exploit the sensational, there is value in questioning long-held theories.

Meanwhile,

another group was organizing a more far-reaching attack. Some members of SCICOP (Scientific Investigation of Claims of the Paranormal) had founded an organization called "The Council for Media Integrity." A friend who attended their initial meeting in Santa Monica, reported that they were determined to never let a show like *Mysterious Origins of Man* be broadcast (our show was



**Fig.1.** Workers in the 30-foot-deep trench at Hueyatlaco, Mexico, during the late sixties as shown in the 1996 film, *The Mysterious Origins of Man, Part 2: Challenging New Theories*. For the startling context of this image, see picture on the front cover of this issue. From the files of Virginia Steen-McIntyre.

recall one phone call from a Dr. Strange, from Dartmouth. "Bill, I was very upset about that little show you did on NBC last week." "Oh... why," I asked. "Well, after the show, many of my students came to class and began asking so many questions." I was flabbergasted. Wasn't this a good thing? He did not think so.

After filling a notebook with emails calling us names, yelling at us and accusing us of being pseudo-scientists,

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## Bill Cote on Valsequillo and Hueyatlaco (cont.)

**"They were determined to never let a show like Mysterious Origins of Man be broadcast.**

**...The board included Steve Allen and scientists like Steven Jay Gould.**

**Since that time, most television stations have 'advisors' whose job it is to filter out the 'pseudo-science' from proposed shows and thus protect the public from exposure to ideas that are not accepted."**

mentioned several times). The board included Steve Allen and scientists like Steven Jay Gould. Since that time, most television stations have "advisors" whose job it is to filter out the "pseudo-science" from proposed shows and thus protect the public from exposure to ideas that are not accepted.

I became involved with Valsequillo again in 2005, when I was asked by Marshall Payn to complete a video he had started a few years earlier. John Cheshire and I sifted through all the footage, Ginger sent more notes, photos and charts, Chris Hardaker provided the galley to his book *The First American* plus footage of the team's recent dig at the site, and we interviewed Hal Malde at his home.

The result was probably the most complete telling of this controversial story. *Valsequillo, An Archaeological Enigma* is comprised of three, 35-minute chapters. It was designed to be used in the classroom, where each chapter could be played in one session, allowing for discussion afterward. The hope was that sometime, somewhere, a student would find it interesting and want to continue the investigation.

Because of the controversial nature of the topic, and the fact that many release forms were not obtained, several of the key players were reluctant to be included. Thus, it was felt that the video could not be broadcast or publicly televised. But this did not stop Marshall Payn from sending free copies to hundreds of universities all over the world that had de-



**Fig.2.** Steen-McIntyre preparing Hueyatlaco monolith (stratigraphic sample) for extraction as appears in *The Mysterious Origins of Man*, Part 1, *Rewriting Man's History*; and Part 2, *Challenging New Theories*.

partments of geology, anthropology or archaeology.

While the program brings the viewer the full background up to this time, utilizing graphics and animation to illustrate the points made, the story is incomplete. Marshall often described it as a murder mystery with the last chapter missing. We are left with the best arguments from both camps as to why the artifacts are either incredibly old or not. But the verdict seems to rest on obtaining results from a new series of tests, which brings us to the present day.

As Ginger points out, due to recent construction at the site, it seems unlikely that a team can go back and obtain new samples and conduct the conclusive tests. The findings that the spear points found at the Hueyatlaco site could be hundreds of thousands of years old

would force a re-write of man's history in the New World. However, without access to the site for testing, the controversial discoveries near Valsequillo seem destined to remain a mystery.

BILL COTE is a documentary filmmaker producing popular television programs such as the Emmy-winning film, *The Mystery of the Sphinx* (1993), and *The Mysterious Origins of Man* (1996), each hosted by Charlton Heston. The latter film was the first time the public at large had heard about Hueyatlaco and the story of Virginia Steen-McIntyre although they had prior been introduced to the academic community through Michael Cremo's and Richard Thompson's book, *Forbidden Archeology* (1993).

Website: [BC Video: Credible films about incredible subjects](http://www.bcvideo.com/)  
<http://www.bcvideo.com/>

# Thoughts on the geochronology at Hueyatlaco: How solid geochronology got trashed

By C. W. Naeser; Herndon, Virginia

PhD, Geologist

**"I have been involved with the development and application of fission-track (FT) dating in the geological sciences for over 45 years.**

**The ages I determined at the Hueyatlaco site were  $370 \pm 200$  ka (uncertainty  $\pm 2$  standard deviations) on the Hueyatlaco ash and  $600 \pm 340$  ka on pumice in the overlying Tetela brown mud."**



Fig.1. The author, 2011

The geochronological studies (uranium series, fission-track analysis, hydration of glass, and mineral etching) at the Hueyatlaco site in the

Valsequillo region of central Mexico are on a solid foundation, but over the years, they have been questioned and dis-

missed on theoretical grounds. Yet when new tests are run, with both old and new techniques, the ages reported over 35 years ago have been confirmed.

I have been involved with the development and application of fission-track (FT) dating in the geological sciences for over 45 years. The ages I determined at the Hueyatlaco site were  $370 \pm 200$  ka (uncertainty  $\pm 2$  standard deviations) on the Hueyatlaco ash and  $600 \pm 340$  ka on pumice in the overlying Tetela brown mud (Steen-McIntyre et al., 1981). Within analytical uncertainty, typically large on young FT ages, these two ages are concordant. What I find confusing is that these ages have not been questioned on analytical grounds

or the background of the technique, but because they are "too old" and don't fit into the reigning paradigm.

My FT ages were determined just before the Geological Society of America Annual Meeting in Dallas in 1973 and were most likely reported, along with Szabo et al.'s (1969) uranium-series (U-series) age from an underlying bone and artifact bed at Hueyatlaco (see below), as part of Steen-McIntyre et al.'s (1973) talk. Since that time, there have been three negative comments in the literature regarding them. The first was by Cynthia Irwin-Williams at the 1973 GSA meeting (reported in *Geology*, 1974, v. 2, n. 2, p. 77), the second in an article by González et al. (2006), and the third in a book by Meltzer (2009).

By 1973, the FT dating of zircon from volcanic deposits was well established. I was therefore surprised by the following quote regarding Cynthia Irwin-Williams' 1973 comments:

Cynthia Irwin-Williams, who did the original archaeologic work, believes that such a great age is virtually impossible, and that sources of error must be sought in the dating methods.

From then until 2006, my Hueyatlaco FT ages were essentially ignored—I am not aware of any mention of the ages in the literature, and I was never contacted about them.

In 2006, González et al. published a paper that described impressions in the Xalnene Tuff that they attributed to human footprints. They had determined an OSL (optically stimulated luminescence) age of about 40,000 years for the tuff. At Hueyatlaco the Xalnene Tuff (indurated volcanic ash) underlies the Hueyatlaco ash that I had dated many years before. It also underlies the bone and artifact beds that contained the pelvis of a butchered camel dated by Szabo et al. (1969) using the U-series method. Szabo et al. (1969) also dated a tooth fragment from a butchered mastodon found at nearby El Horro. Both the FT and U-series dating suggested ages greater than 200,000 years for the ash and bone beds. Similarly, the comparative dating techniques of mineral etching and tephra hydration at Hueyatlaco (Steen-McIntyre et al., 1981) point to an older age. And VanLandingham (2004) reported that some of the diatom species found in and overlying the artifact beds at Hueyatlaco were extinct by the end of the Sangamon (80,000 years ago), indicating that they must be older than 80,000 yr.

So for their younger age (about 40,000 years) to be accepted, González et al. (2006) had to discredit the ages determined for the beds at Hueyatlaco by five very different dating methods. González et al. (2006, p. 616-617) made the following statement regarding the U-

> [Contd on page 9](#)

## Geochronology at Hueyatlaco (cont.)

**"Gonzalez et al. (2006) provide no data to specifically refute Szabo et al.'s (1969) U-series ages; they just reject them."**

series ages specifically and the other age estimates by association:

However, the dates need to be considered with caution because spuriously old Uranium Series dates are often encountered in bone from situations where the more mobile uranium is leached, increasing the apparent  $^{230}\text{Th}/^{234}\text{U}$  and a priori assumptions of uranium uptake, such as the 'early uptake' model employed at the time to date the Tetela peninsula bones, do not identify, or account for, leaching or recent uptake. They have been shown to be unreliable and potentially are likely to give Uranium Series dates grossly in error (Pike et al., 2002). The large error ranges and the absence of other archaeological sites with similar antiquity within the Americas has led to these very old dates being rejected by the majority of archaeologists and paleontologists.

González et al. (2006) provide no data to specifically refute Szabo et al.'s (1969) U-series ages; they just reject them. They suggest that the older megafossil remains and extinct diatoms had been

reworked into younger beds from older beds. This is highly unlikely to be true of the fossils in the bone beds at Hueyatlaco, which contain



**Fig. 2.** Photomicrograph of fission tracks in a zircon crystal from the Fish Canyon Tuff in the San Juan Mountains of southwest Colorado. The age of the zircon is about 28 million years. The longest of the tracks is about 12 microns (a micron being one-millionth of a meter) or 0.000472 inches. For reference, a single strand of hair is approximately 20 microns wide making the length of these crystals equal to about half the width of a strand of hair.

many articulated skeletons, including one yielding the camel pelvis dated by Szabo et al. (1969). Bones are highly unlikely to remain articulated during redeposition. This would be especially true in the high current environment necessary to transport large animal bones. VanLandingham (2004) presents evidence precluding reworking of the diatoms. There is no discussion in González et al. (2006) of the ages determined by FT, mineral etching, and tephra hydration—the results were thrown out without any discussion or justification.

At about the same time, however, Renne et al. (2005) reported an  $^{40}\text{Ar}/^{39}\text{Ar}$  age of  $1.3 \pm 0.03$  Ma for the Xal-

nene Tuff. In 2010, Mark et al. reported a second  $^{40}\text{Ar}/^{39}\text{Ar}$  age for the Xalnene Tuff of  $1.28 \pm 0.04$  Ma. With the age of the Xalnene Tuff established at about 1.3 Ma, not 40,000 years, the previously rejected geochronological data (isotopic, paleontologic, and comparative) are consistent with the stratigraphy and the geology.

New geochronological data on samples of the Hueyatlaco ash further support the antiquity of the Hueyatlaco site. In 1997, a new study was begun at

Hueyatlaco under the sponsorship of M. Payn. As part of this study a new sample of the Hueyatlaco ash was collected. Zircon splits from this sample were sent to Ray Donelick for FT analysis and to Ken Farley for U-Th/He analysis. Donelick and Farley reported the following new ages to M. Payn (M. Payn, pers. comm. 2011):  $212 \pm 94$  ka and  $250 \pm 104$  ka (FT,  $\pm 2$  standard deviations) and 413 to 505 ka and 406 to 504 ka (U-Th/He, probable age range). In summary, all of the geologic dating studies—now by six different isotopic, paleontologic, and comparative dating methods—place the age of the Hueyatlaco ash and underly-

> [Contd on page 10](#)

## Geochronology at Hueyatlaco (cont.)

**"The conflicts between the geology and archaeology in the Hueyatlaco region must reside somewhere other than the dating."**

ing bone and artifact beds at between 80 ka and about 500 ka.

But in 2009, Meltzer (p. 106) still leaves the impression that the early geochronology of the "lower layer" at Hueyatlaco is suspect:

Geologists had dated that lower layer at 250,000–600,000 years old, based on the then-experimental techniques of uranium-series, fission-track, and tephrahydration dating. However, the archaeologist excavating the site put that layer at just 9,000–22,000 years old, based on results from radiocarbon dating of mollusk shells contained within it. ...Hueyatlaco was a poster child for problems that occur when different dating techniques, especially still-unproven ones, cannot be reconciled.

In fact, the radiocarbon ages referred to by Meltzer were determined on different, younger beds at a different site. The bone and artifact deposits at Hueyatlaco were first dated by Szabo et al. (1969) using U-series dating because no datable carbon could be found in the beds. The radiocarbon ages on mollusks were obtained from younger bone beds associated with an artifact at Barranca de Caulapan, 5 km away from Hueyatlaco. Szabo et al. (1969) using U-series dating obtained ages on bones from the Barranca de Caulapan site similar to the  $^{14}\text{C}$  ages, approximately 22,000 years.

Furthermore, at the time this work was undertaken, certainly the fission-track and tephra hydration techniques were relatively new, but they were far from "experimental"

or "unproven." Fission-track dating of tephras was well established in the geological literature.

Discrediting all of the older ages at Hueyatlaco would require a very convoluted series of events, rather than a simple, straight forward sequence of events beginning with deposition of the bone beds along with tools of probable human origin, followed by the beds being covered by lake sediments, and the deposition of the Hueyatlaco ash and younger sediments. The conflicts between the geology and archaeology in the Hueyatlaco region must reside somewhere other than the dating.

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- CHARLES W. NAESEN, PHD, is a geologist with hundreds of peer-reviewed publications to his credit. He did seminal work in the development and application of fission track dating of apatite, sphene, zircon, and epidote, and had a distinguished career with the United States Geological Survey. Naeser has had no difficulty getting any of his work published except when running up against the anthropological community which could not accept the hard science or dates for an extremely old age for Hueyatlaco early man site.

# VanLandingham on Hueyatlaco

By Sam L. VanLandingham

PhD, Geologist/Diatomist

**"With more than one hundred peer-reviewed publications over the last fifty three years, including fourteen books, many of them dealing with controversial subjects, I had little problem publishing my works until I started the series on the diatom evidence for the great age of the Valsequillo archaeological sites."**

## Introduction

In the process of successfully publishing sixteen peer reviewed scientific works dealing with the diatom stratigraphy of the Valsequillo, Mexico area, and especially those from the Hueyatlaco archaeologic site



**Fig.1.** The author and microscope work in the field, 2001.

I have been subjected to overbearing, illegal, unethical, and unscientific behavior. Good examples of this are given in detail in my publications titled, "Extraordinary Examples of Deception in Peer Reviewing: Concoction of the Dorenberg Skull Hoax and Related Misconduct" (VanLandingham 2009b) and "Blocking Data Parts 1 and 2" (see my webpage: [pleistocenecoalition.com/vanlandingham/index.html](http://pleistocenecoalition.com/vanlandingham/index.html)).

With more than one hundred peer-reviewed publications over the last fifty three years, including fourteen books, many of them dealing with controversial subjects, I had little problem publishing my works until I

started the series on the diatom evidence for the great age of the Valsequillo archaeological sites, including Hueyatlaco.

I would estimate that I have had four to five times as much trouble getting these sixteen articles on Valsequillo published as I have had with all of my other works combined. (**Fig.1**)

The reason is simple. The series challenges American archaeological orthodoxy and the dogmatists wedded to the prevailing paradigm: no people in the New World until the end of the Ice Age.

## History of my involvement

About 1974-1975, I visited the California Academy of Sciences (CAS) facility in San Francisco and examined their Diatom Collection glass microscope slide number 191090 prepared from a cut of a diatom bearing sample attributable to Hugo Reichelt (1900) and taken from inside the Dorenberg Skull (an ancient *Homo*) from the area of Puebla, Mexico.

At the time, I thought that this slide could be used to confirm the great antiquity of intelligent beings in the New World (at least by the Last Interglacial or Sangamonian = 80,000 - ca. 220,000 yrs BP) because it had five diatoms that were extinct before the Last Ice Age.

Because the age of this skull was much older than any known human skull from North America, I decided that it needed some further investigation. The study of potential pre-Clovis sites (i.e., Early Entry of humans in North America vs. Late Entry or Clovis orthodoxy) was not encouraged in the

70s, and those who did subjected their own careers to significant risk.

I knew well of the close-minded behavior of many North American archaeologists and thought a detailed investigation and publication of the Dorenberg Skull materials might be a threat to my career. I was busy with other projects at the time and decided that it would be wise to wait until later to work on the Dorenberg Skull project, perhaps after I had retired.

Such a time arose in 1999 when I read about J. Armenta Camacho, H.E. Malde, V. Steen-McIntyre, and the Hueyatlaco/Valsequillo artifacts in Cremo and Thompson's book *Forbidden Archeology*. After fieldwork at Hueyatlaco in 2001, I found high correlation factors between CAS slide number 191090 and some artifact-bearing diatomaceous samples collected by Steen-McIntyre, H.E. Malde, and myself.

## The Case Against Ignoring the Diatom Evidence at Hueyatlaco/Valsequillo

VanLandingham (2000, 2004, and 2006) contributed significant diatom evidence for a minimum age of Sangamonian for the artifacts from Hueyatlaco and for their autochthonous deposition.

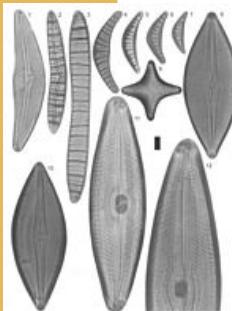
No other region in the world is associated with such a variety of age and environmentally diagnostic diatoms, and in such profusion, as the Valsequillo Reservoir area, Puebla, Mexico and the archaeological sites found there, including Hueyatlaco.

Those who would wish to argue against the case for

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## VanLandingham on Hueyatlaco (cont.)

**"Because so much lithostratigraphy is compressed into such a relatively short time in the Valsequillo sequences, there is much more available biostratigraphic information and evidence than usual to determine the age and environment of deposition of the Valsequillo artifact layers."**



**Fig.2.** Samples of extinct diatoms. VanLandingham 2004.

the great antiquity (prior to the Last Ice Age) of humanity in the New World by attacking the veracity of the compelling diatom evidence at Hueyatlaco/Valsequillo have picked the wrong place to make such an argument (VanLandingham 2009a).

The biostratigraphy and paleoecology of the numerous diatom and cyst taxa negate the likelihood of any redeposition, inset, or unconformity claims directly associated with the artifact beds at this site (VanLandingham 2006, 2009a, and 2010).

Frequently archaeological sites offer little specific fossil evidence to interpret the age

and history of deposition. However, some American archaeological sites are well known to be associated with fossil diatoms/cysts, and archaeologists usually accept diatom/cyst age relationships (e.g., from the Clovis and Lubbock Lake sites) when they agree with the status quo of Late Entry of humans in North America.

On the other hand, when the diatom/cyst evidence is in disagreement, it usually is ignored or a dispute about that evidence, typically without any merit, is likely to occur.

Dates supplied by diatom/cyst communities are usually in good agreement with dates derived by other methods, such as the case with Ar/Ar dating in the Miocene/Pliocene Petaluma Formation of California.

Not only do extinct diatom taxa far outnumber the extinct vertebrate and invertebrate taxa at Valsequillo and

elsewhere, but fossil specimens of diatoms are probably many thousands of times more common than vertebrate and invertebrate specimens (**Fig.2**). Because so much lithostratigraphy is compressed into such a relatively short time in the Valsequillo sequences, there is much more available biostratigraphic information and evidence than usual to determine the age and environment of deposition of the Valsequillo artifact layers.

At Valsequillo, 147 diatomaceous samples from twenty two beds covering 1.5 million years are compressed into less than 30 meters. Twenty of these beds, five of which are artifact-bearing, have at least one diatom-bearing sample which is diagnostic of a minimum Sangamonian age (VanLandingham 2008 and 2010).

### The Detractors

The Center for the Study of the First Americans (CSFA) at Texas A & M University postulates an "inset" at the Hueyatlaco site, where a much younger stream cut through the older, dated sediments, and deposited the artifact-bearing layers. Their "inset" is what is known as "a vacant hypothesis," because it cannot be proven: no evidence for its existence remains (it has been eroded away = destroyed.)

If the advocate for a hypothesis cannot provide proof in support of that hypothesis, then that advocate might have a tendency to ignore any proof provided by others against it. So it seems in this case.

At first CSFA scientists apparently ignored all of the evidence including that provided by diatoms (Reichelt 1900, VanLandingham 2000) for humans in the Valsequillo/Hueyatlaco region,

Puebla, Mexico prior to the Last Ice Age.

Next, the redeposition excuse was used, dispelled by VanLandingham (2004, 2006). Diatom and chrysophyte cyst paleoecology and biostratigraphy offer such good evidence for age that the Hueyatlaco site is probably the best spot on earth to refute the redeposition/reworking hypothesis (VanLandingham 2008, 2010).

Finally CSFA scientists created the theory of a much younger set of beds "inset" into older sediments to discount the diatom, stratigraphic, and radiometric, evidence for the great age of the artifacts at Hueyatlaco (see website: [www.centerfirstamericans.com](http://www.centerfirstamericans.com)).

The alleged young "inset" at the Hueyatlaco site advocated by the CSFA is negated by thirty seven distinct lines of diatom correlation: seven of these lines pass directly through and the remaining thirty pass within 3 m of this supposed unconformity at the Hueyatlaco site. All but two of the thirty seven lines of correlation link to samples within the artifact-bearing B, C, E, and I units of C. Irwin-Williams. And all of these lines of correlation corroborate a minimum age of Last Interglacial (Sangamonian) for all of the artifact beds connected with them.

In the thirty-seven lines of correlation, total diatom taxa extinct at the end of the Sangamonian range from five in lines nine and thirty-six to seventeen in lines one and thirty (VanLandingham 2009c). Most of these diatomaceous samples, on both sides of the "inset," which form the thirty-seven lines of correlation are vertically less than 2 m apart.

> [Contd on page 13](#)

## VanLandingham on Hueyatlaco (cont.)

**"The odds against linking by chance all of these samples through and near the alleged inset/unconformity within a diameter < three m are astronomical."**

Six distinct diatom correlation criteria were used in compiling the thirty-seven lines of correlation:

- (1) percentage correlation factor of taxa,
- (2) taxa extinct at the end of the Sangamonian (**Fig.2**),
- (3) earliest known first occurrences of taxa,
- (4) pennate (elongated) to centric (rounded) taxa ratios,
- (5) dominance/ subdominance associations of taxa, and
- (6) paleoecology of deposition of the diatoms (based on pH, nutrient, salinity, and current spectra).

Because of the many diverse factors of these thirty seven lines of correlation, the odds against linking by chance all of these samples through and near the alleged inset/unconformity within a diameter < three m are astronomical. The proposed unconformity also is not supported by the detailed field work of H.E. Malde (1964-1973), and Steen-McIntyre et al. (1981).

### Conclusion

Most members of the North American orthodoxy would like to ignore or forget about Hueyatlaco. Now with the site no longer available for study, perhaps they are breathing a sigh of relief! In the last 35 years the Hueyatlaco site has been assigned dates which are several times older than the limits of the Late Entry paradigm of ca. 13,000 years BP by means of five different methods performed independently, including radiometric methods, biostratigraphy, and tephrochronology.

Factors which influence the accuracy of these various methods of geochronology are so different that it is extremely unlikely that all of them could significantly

overestimate the age of the Hueyatlaco artifacts.

Why would archaeologists go out of their way to try to discount or ignore the abundance of evidence, including diatom evidence, for the great age of the Valsequillo artifacts? Many of us non-archaeologists are waiting for an answer to that question (see VanLandingham 2008 and 2009).

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- SAM L. VANLANDINGHAM, PhD, is a consulting environmentalist and geologist with over a hundred peer-reviewed papers to his credit. He is also an expert on microfossils in meteorites publishing in the journal, *Nature*, and co-discoverer (along with W. C. Tan) in 1966 of acid resistant filamentary microstructure and electron dense bodies in the famous Orgueil meteorite from France, publishing several electron microscope photographs.
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# Member News

## Archives of Cultural Exchanges

**"Paulette Steeves... is organizing a special conference session on Indigenous People in the Western Hemisphere... to help create a more balanced representation of the evidence and interpretations of the evidence."**

**Carl L. Johannessen's** website, *Archives of Cultural Exchanges*, featuring a treasure trove of evidence for trade between the two major hemispheres long before Columbus is now fully operational. Johannessen, PhD, a prolific writer and expert in geography and biological organisms, never had any trouble publishing his work until he started bringing forward evidence for very early cultural contacts across the Pacific and Atlantic oceans. With the potential of uprooting standard anthropology Johannessen has had to endure unscientific treatment. The image of an ear of corn depicted in a pre-Columbian Hindu temple in India, for instance, provided as inscrutable evidence was denied that it could possibly represent an ear of corn. Learn of many more proofs that the old paradigm is false on his website. He also invites authors to submit relevant articles for publication.

## Indigenous People in the Western Hemisphere 200,000-12,000 BP

**Paulette Steeves**, anthropology at Binghamton University, N.Y., is organizing a special conference session on Indigenous People in the Western Hemisphere 200,000 to 12,000 for the *Society for American Archaeology (SAA) 77th Annual Meeting* to help create a more balanced representation of the evidence and in-

terpretations of the evidence. If you would like to know more about this project or might wish to participate with a presentation on the theme please e-mail her. Steeves plans on trying to secure a larger room than is usually allotted. The annual meeting will be April 18-22, 2012, in Memphis, Tennessee.

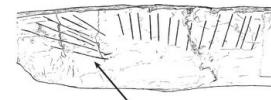
Paulette Steeves PhD candidate,  
Clifford D.Clark Fellow 2008-  
2013, Binghamton University,  
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## The Graphics of Bilzingsleben

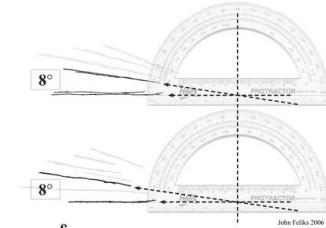
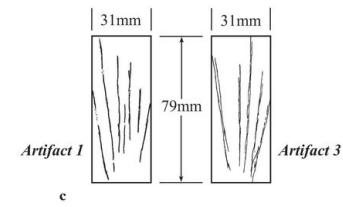
**John Feliks**, PCN Editor-in-Chief: After a 6-year battle with scientific authorities in Europe, Australia, and the United States over the blocking of a XV UISPP 2006 conference program from publication, the paper, "The Graphics of Bilzingsleben: Sophistication and Subtlety in the Mind of *Homo erectus*," has finally been published in *British Archaeological Reports (BAR)*. BAR and its editor, David Davison, were very helpful and long-suffering as mediators showing a high standard of ethics including for evidence challenging the mainstream science community. The UISPP session's Chair, Robert G. Bednarik, called the invited paper, "absolutely outstanding and stunning," yet within one week of the conference politics quickly set in. In a published overview purportedly listing all presentations in the session in sequence, neither of the author's two presentations



on the advanced cognitive abilities of *Homo erectus* were listed, forcing the author into accountability with the 11 sponsors who made the presentations possible. The paper was even referred to as of, "no scientific merit." Now that it is finally available those interested can decide for themselves the



**Side fan motif of *Artifact 1***  
Drawing after photograph by Robert Bednarik, 1997.



state of honor in modern anthropology. The 19-page thesis with its 16 very clear and easy-to-understand geometric figures can be ordered from *Archaeopress*.

# The Valsequillo Saga and Hueyatlaco Site: VSM Recalls

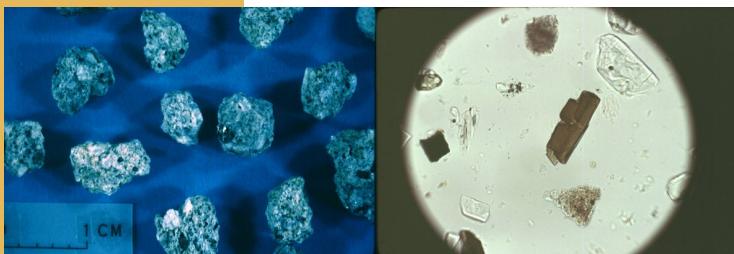
By Virginia Steen-McIntyre

Tephrochronologist (Volcanic ash specialist)

**"It started simply enough: I**

## PART 1 My Story Begins

I first heard of the Valsequillo and Hueyatlaco Mexico sites in early 1966. Hueyatlaco is pronounced way-AT-la-co, according



**Fig. 3a (left):** Cleaned fragments of frothy pumice, about the size of peas. The shiny dark areas are biotite mica phenocrysts. The volcanic glass itself is actually clear, but appears white because it is charged with minute bubble cavities (vesicles). **Fig. 3b (right):** Fragments of an un-cleaned tephra sample mounted in immersion oil and viewed through the microscope. The largest are the size of grains of table salt. The brown and black crystals are phenocrysts of hornblende and an opaque mineral; the clear grain with high relief at the upper left is the pyroxene mineral hypersthene. Transparent grains with lower relief are feldspar. The irregular shaped fragment at the left is a shard of volcanic glass. Distorted vesicles make the dark streaks.

**cleaned and sieved a series of tephra samples that Hal Malde had collected from the Hueyatlaco area and from the volcano and examined their petrographic properties with the microscope."**

## to Juan Armenta Camacho.

I was cleaning some volcanic ash samples in the converted kitchen/laboratory of Pine Manor, new home of the



**Fig. 1.** The Valsequillo Reservoir (red) Washington State University Laboratory of Anthropology when my boss, Roald Fryxell, stopped by to discuss a new tephra project.

It seems Hal Malde and Cynthia Irwin-Williams had a series of archaeology sites by a reservoir 100 km east of Mexico City (**Fig. 1**, location map).

They thought the sites were very old — 20,000 years or so — but they were having trouble dating them directly. No carbon was preserved there, and all the bones were permineralized, partially turned to stone. One site, Hueyatlaco, was snugged up against a bluff that had tephra layers in it.

Hal had already done some

mapping on La Malinche, a nearby volcano, and had dated several tephra layers there using charcoal from soils burned and buried by the eruptions (See **Figs. 2 & 4** on the following page).

The dated layers of pumice and volcanic ash ranged from roughly 8,000 to 23,000 years. Would I be willing to use my microscope to examine the tephra sequence on La Malinche and find which dated layers correlated with the Hueyatlaco bluff sequence? Would I! And since tephrochronology was a new field and I was getting into it at ground level, I could use my research as a PhD dissertation at the University of Idaho a few miles away.

So began the Valsequillo Pro-

ject tephra studies, an exciting project for a young woman geologist, but supposedly only a way-stop on her development path as a volcanic ash specialist. Instead, it has turned into a full-blown saga with soap-opera overtures that has consumed most of her professional life for the past 45 years and which is still ongoing.

It started simply enough: I cleaned and sieved a series of tephra samples that Hal Malde had collected from the Hueyatlaco area and from the volcano and examined their petrographic properties with the microscope: the shape and refractive index of the volcanic glass shards, the type and appearance of the phenocrysts (tiny mineral crystals that had been growing in the liquid magma at the time of eruption.) See **Fig. 3**.

One thing I noted was how weathered the tephra from the Hueyatlaco bluff layers appeared when compared to the Malinche sequence, but I put that down at the time to a warmer micro-climate.

I flew down to Puebla and the Valsequillo Reservoir area that spring, and Hal took me on an extended field trip to acquaint me with the geology at the reservoir, and on La Malinche (**Fig. 4**). The red Land Rover became almost a second home as Hal maneuvered it around large boulders and up the flat-floored, steep-sided barrancas to his sampling sites. One, R14, was at Barranca Caulapan, close to the reservoir, where Cynthia Irwin-Williams earlier

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## Valsequillo Saga: VSM Recalls (cont.)

had found a single artifact, a worked chert flake. Not much of a site, but that find was associated with 14C and U-series dates of ca. 22,000 years, more than twice as old as the oldest New World site then accepted as valid.

We all thought the dates also would apply to the artifacts from the Hueyatlaco site, but the intervening sediments had been stripped away, leaving a highly eroded badlands with discontinuous outcrops. No chance to correlate by field evidence, hence the focus on the tephra layers.

It was back to Pullman, Pine Manor, and the tephra samples; but not for long. I had become engaged. Fiancé David McIntyre had just finished his PhD and had signed on as a field geologist with the US Geological Survey. First post? Puerto Rico!

Dave left for the island in May, 1966; I followed in January, 1967, accompanied by the microscope, basic lab equipment, and all those tephra samples!

### The Puerto Rico Years

Microscope research in the tropics posed some problems. Ambient temperature was usually higher than my refractive index oils were accustomed to, and cockroaches loved the taste of the glue recommended to hold individual tiny crystals on the tips of

slim metal spindles for spindle-stage analyses.

One always needed to protect

the optical equipment from the ubiquitous black mold. Fortunately, the local USGS office kindly offered me a

small (air conditioned!) space in which to work, and research continued: 1967, 1968 (another field excursion to

to the north, but no correlation with the Hueyatlaco tephra.

In the late 60s communication between Puerto Rico and the mainland was slow by modern standards. One could call (very) long distance, but that was expensive, and funds for the project had run out in 1968. No public communication satellites yet, or computer networks. We wrote letters and sent them air-mail. It was by that means I learned from Hal Malde of the ongoing episodes of what I began to call the Valsequillo Saga.

I had been told during the early stages of my involvement in the Valsequillo Project of the trouble Cynthia Irwin-Williams and colleague Juan Armenta Camacho had had



**Fig. 2.** Hal Malde, 1966, Xotanacatla Barranca, La Malinche, pointing to base of a thick tephra unit.



**Fig. 4.** Virginia Steen and Land Rover, La Malinche in

collect even more samples, along with helping Hal lead a Geological Society of America field trip to La Malinche and the Valsequillo area), 1969... I discovered a lot about the volcanic glass and phenocryst suites of the La Malinche eruptions, some about tephra from Popocatépetl, the big volcano across the valley to the west, and the ca 30,000 year old nuée ardente (glowing ash cloud) eruption on the flanks of Iztaccihuatl volcano farther

with a very prominent and powerful Mexican official, J.L. Lorenzo. The man, an emigrant from Spain with a Marxist background and a contempt for women scientists took an intense dislike to the project and its two principal investigators. What official barriers he could place in their path he did, especially as the Valsequillo sites grew in prominence. He excavated a set of deep parallel trenches a

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## Valsequillo Saga: VSM Recalls (cont.)

**"He excavated a set of deep parallel trenches a few metres south of Irwin-Williams' 1966 trenches at Hueyatlaco to find artifacts of his own..."**

**Twice he destroyed evidence of hers."**

few metres south of Irwin-Williams' 1966 trenches at Hueyatlaco to find artifacts of his own.

Twice he destroyed evidence of hers, the association of a lithic tool and a butchered fossil bone, by pulling the artifact from the stabilized sediment block in which it had been displayed. He confiscated Armenta's collection of modified bones and lithic artifacts, amassed over several decades, and moved them from the university at Puebla up to Mexico City. Armenta was officially forbidden from doing any more field work, ever.

The Valsequillo Saga continued to develop aspects of a television soap opera.

In 1969, Barney Szabo, a geochemist with the U.S. Geological Survey in Denver, published his U-series ages for fossil bones and teeth. His paper, with co-authors Malde and Irwin-Williams, included samples from the Caulapan barranca

and the Valsequillo sites El Horno and Hueyatlaco.

The ages for the proboscidian bone associated with the worked artifact from the Caulapan barranca agreed with 14C ages on associated shell — roughly 22,000 years. But oh! The others! They were well over ten times older, roughly 250,000 to more than 280,000 years, and from measurements on parts of butchered animals!

Irwin-Williams totally rejected these "impossible" ages and would allow Barney's research to be published only in a journal few archaeologists would ever read: *Earth and Planetary Science Letters*.

"Poor Barney" we all thought. "His methods don't work on terrestrial materials."

Research on the tephra samples continued, 1969, 1970. I had spent four years of intense microscope work looking for a correlation that

would help date the Hueyatlaco site. Perhaps one didn't exist? One cannot use a negative correlation for a PhD dissertation. Things were looking grim.

Then a short hiatus. Dave finished his Puerto Rico geologic map and we were transferred stateside, to Denver, Colorado. Happy to be back in the west and in a climate with definite seasons we settled in—he with a new mapping project in the wilds of central Idaho and I to my microscope and the ever present dating problem.

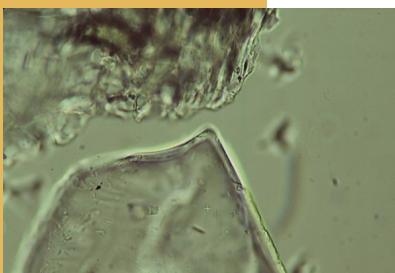
**VIRGINIA STEEN-MCINTYRE, PhD,** is a tephrochronologist (volcanic ash specialist) involved in preserving and publishing the Palaeolithic evidence from Valsequillo since the late 1960s. Her story first came to public attention in Michael Cremo and Richard Thompson's book, *Forbidden Archeology* (1993), and in the Bill Cote television special, *Mysterious Origins of Man*, hosted by Charlton Heston (1996).

## The Valsequillo Saga and Hueyatlaco Site: VSM Recalls

By Virginia Steen-McIntyre

Tephrochronologist (Volcanic ash specialist)

### PART 2



**Fig.1.** Platy shard of volcanic glass, approximately 3,000 years old, highly magnified. The thin light-colored rind is the hydration rind. It concentrates the light because its refractive index is higher than both the glass core and the immersion oil in which it sits.

#### The Denver USGS Years

Another phase of the work had begun! I had landed a part-time job as a physical science technician cleaning tephra samples at the Denver U.S. Geological Survey complex. "A foot in the door!" thought I. (I had never heard of the term "tenure track.") Ray Wilcox was my boss. He and Howard Pow-

ers had become interested in volcanic ash layers as time-stratigraphic marker horizons years before, and were developing different methods to "fingerprint" and date the ejecta from major eruptions so that they could be recognized and used as time indicators by geologists mapping far afield. They would be inundated with ash samples at the end of each field season and needed someone for grunt work: cleaning, sieving, and making mineral separations using heavy liquids. I qualified as an expert there! Meanwhile, I was free to pursue my own research on my own

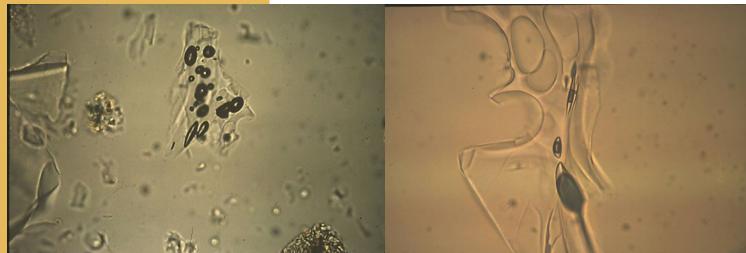
time, with all that lovely equipment available and with various world-famous experts in their cubbyhole offices just down the hall.

It was a time of professional growth. I became acquainted with Irving Friedman and learned of his success rough-dating obsidian artifacts by measuring their hydration rinds, research I relied upon later when applying a similar method to volcanic glass shards (**Fig.1**).

John Westgate, a Canadian colleague, had taken on the immense task of compiling a

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## Valsequillo Saga: VSM Recalls (cont.)



**Fig. 2a.** Shard approximately 20,000 years old from the Tlapacoya site near Mexico City. The ovals are enclosed bubble cavities. Their dark rims show they have no water in them (negative relief). **Fig. 2b.** Shard of Yellowstone tephra around 1,200,000 years old. It has accumulated water in both ends of spindle-shaped vesicles.)

**"I plotted curves for the shard counts, then plotted curves for dated volcanic glass shards of similar chemical composition chosen from Ray Wilcox' vast reference collection. The plots for the Hueyatlaco bluff tephras (Hueyatlaco ash and Buena Vista lapilli) fell in the 250,000 year range."**

bibliography of tephra references, and Ray had agreed

croscope inspection, using techniques developed over 100 years previously, it became evident that, though similar, the two series of samples came from two different eruptions. Another negative correlation: another scrapped dissertation project.

Down, but not out! At coffee I had learned of another USGS geologist, Ed Roedder, who found

he could rough-date silica-rich volcanic glass shards by observing the amount of water that had accumulated in the enclosed vesicles (bubble cavities). It was a very slow process. After the glass had become completely hydrated, the water continued to seep into the vesicles, molecule by molecule. Depending on the environment, it could take millions of years before all the bubble cavities were completely filled with liquid (**Figs. 2a & 2b**).

With new energy and growing excitement, I re-examined volcanic glass shards from the dated Malinche sequence and compared them with shards from the Hueyatlaco bluff tephra. Sure enough, except for the oldest tephra in the Malinche sequence (ca 23,000 years) the glass shards were only partially hydrated and even the smallest spindle-shaped bubble cavities were empty.

By contrast, the Hueyatlaco

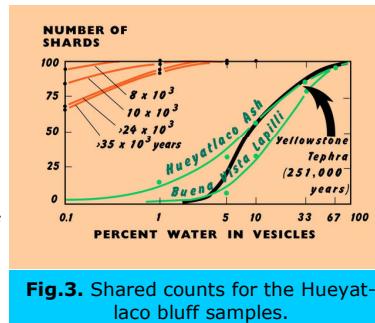
bluff samples were all completely hydrated and water had begun to accumulate in the narrow tips of the spindle-shaped vesicles. I plotted curves for the shard counts, then plotted curves for dated volcanic glass shards of similar chemical composition chosen from Ray Wilcox' vast reference collection. The plots for the Hueyatlaco bluff tephras (Hueyatlaco ash and Buena Vista lapilli) fell in the 250,000 year range (**Fig.3**). It appeared as though Barney Szabo's "impossible" U-series ages for the Hueyatlaco and El Horno sites could be correct!

### The Breakthrough

The dam had burst and things really started to move in 1973. My tephra hydration/superhydration age results for volcanic glass from the Hueyatlaco bluff tephra roughly agreed with Szabo's uranium-series ages for a butchered bone and tooth fragment from the Hueyatlaco and El Horno sites. At least my curves on the graph didn't fall in the 20,000 year range! It explained why I could never find a correlation for the bluff tephra. The equivalent layers were buried deeply within the flanks of La Malinche, covered over by a couple-hundred-thousand years of younger material. No way could Hal Malde and I ever have reached them to sample them.

The stratigraphy at the Hueyatlaco site now became critically important: Did the sedimentary layers with artifacts pass beneath the bluff with tephra layers directly to the south and thus be older? Or were they younger,

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**Fig.3.** Shared counts for the Hueyatlaco bluff samples.

## Valsequillo Saga: VSM Recalls (cont.)

**"We were joined by my old boss from the WSU Laboratory of Anthropology, Roald Fryxell. Fryx had become world famous for his ability as a microstratigrapher... working for NASA on the lunar regolith samples and training Apollo astronauts in sample collecting techniques. We couldn't have asked for a more experienced colleague."**



Fig.4. Workers at Hueyatlaco cutting trench.

### The 1973 Field Season

Hal and I obtained permission in early 1973 from the Mexican government for a geological excavation at Hueyatlaco, Irwin-Williams provided critical profiles for her southernmost 1966 trench wall and for the INAH excavations (Instituto Nacional de Antropología e Historia), and we went down to the site that



Fig.5. Cynthia Irwin-Williams' cross trench showing artifact-bearing sedimentary beds passing beneath the bluff sequence (her older bed I, with unifacial tools), or were cut out and in turn overlain by a younger bed that, itself, passed beneath the bluff (her channel-deposit beds with bifacial tools.)

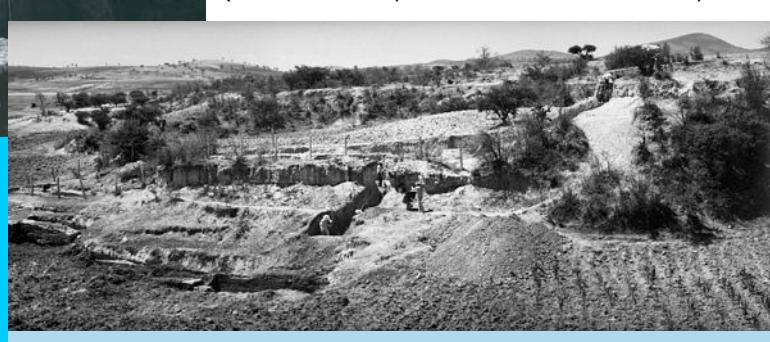


Fig.6. One of the large-format stereographic photographs of Hueyatlaco as taken by Hal Malde.

spring. We were joined by my old boss from the WSU Laboratory of Anthropology, Roald Fryxell. Fryx had become

nested against the bluff and deposited by a stream at a much later date? Only more fieldwork would tell.

world famous for his ability as a microstratigrapher, ferreting out the history of the smallest sedimentary layer, and had been working for NASA on the lunar regolith samples and training Apollo astronauts in sample collecting techniques. We couldn't have asked for a more experienced colleague. Workers were hired and the hand digging began. They unearthed Cynthia's southern- and western-most trench walls, still standing vertically after seven years, and we picked out her bedding units. Next the workers cleaned out the western half of the INAH trenches and cut a north-south connecting trench between them and Cynthia's (Fig.4). Hal located her datum point (survey benchmark) and based on it, Fryx and I constructed the metre-interval nail-and-string grid on the trench walls. A quick look at the cross trench (Fig.5) showed that Irwin-Williams' artifact-bearing sedimentary beds did indeed pass beneath the bluff sequence (her older bed I, with unifacial tools), or were cut out and in turn overlain by a younger bed that, itself, passed beneath the bluff (her channel-deposit beds with bifacial tools.) Those artifacts were at least a quarter-million years old! We knew it; now we had to document it!

Fryxell began immediately to scribe the bedding contacts directly on the trench walls, metre square by metre square. Malde meanwhile, as chief geologist of the Valsequillo Project, met with Mexican officials and established friendly relations. He also gathered necessary materials for the work and took large-format stereographic photographs of the site in black and white (Fig.6). I acted as Fryx's assistant in the trenches, doing whatever was required, marveling as I saw those ancient sedimentary beds spring to life as his trowel sharply traced their outlines along the excavation walls. In spare moments I also used my camera. The colored slides proved to be more than a personal record when Fryx's new camera malfunctioned and all his transparencies turned out black. His series of high-resolution b/w photos of the trench wall stratigraphy, on the other hand, made from 2 1/4 x 3 1/4-inch negatives, came out well.

We had a literal picture of the stratigraphy outlined on the trench walls. Next we needed a physical record of it. This was preserved in the form of a series of stratigraphic monoliths, stabilized columns of sediment, some up to two metres tall each tied to a

heavy board and pulled from the wall, then wrapped in burlap and placed in a

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## Valsequillo Saga: VSM Recalls (cont.)



**Fig.7.** Steen-McIntyre preparing Hueyatlaco monolith. See enlargement on page 7, Bill Cote article.

wooden crate (**Fig.7**). Two series were taken, one for us and one for the INAH in Mexico City. They covered the whole six-plus metre sedimentary section exposed at Hueyatlaco. I also took series of individual samples, from sedimentary beds of interest for later paleomagnetic work by Joe Liddicoat. Hal Malde at this time had to return to Denver to work on his other projects.

With supervision from us, Fryxell and I set the workers to excavating, sta-

bilizing, and removing the stratigraphic monoliths from the trench walls while we concentrated on the most critical part of the project: transferring the trench-wall stratigraphy to paper. This was Roald's forte. Under his artistic touch those stratigraphic units lived once again, this time in two dimensions. I acted as his assistant for the most part, except for finishing a tiny section of drawing in the lower trenches. Fryxell himself had run out of time and had to return to Pullman before the last trench profile, Profile 4, was completed.

I was left to finish the work and close down the site. This meant several days of traveling back and forth from Puebla by native bus and supervising the men as they pulled and crated the last of the monoliths, then filled in the trenches. Was it foresight that caused me to take small sub-samples of the critical sedimentary units back with me in my suitcase? A good thing I did. Never again did we see the large bags of individual samples I had collected, and it took 29 years before the monoliths themselves next saw the light of day!

## Avocational archaeology

### The importance of amateurs

By Virginia Steen-McIntyre

**"The unsung hero who should be recognized is often an amateur... who first recognized what later turned out to be a famous archaeological site, dutifully notified the authorities of same, and then forgotten in the excitement."**

Due to the news of Hueyatlaco archaeological site being closed down, publishing the history of the site by those involved who are still alive took precedence this issue of the newsletter and the Avocational Archaeology page had to go onto the back burner. However, I look forward to developing this page.

I see the page as filling an ecological niche, one that can be of benefit both to the amateur and to the professional archaeologist.

Given the constraints of major educational and scientific institutions, few professional archaeologists have the luxury of randomly surveying remote areas and private property on the off chance that they may discover something entirely new and unexpected.

Does the average professional even know of the many surface concentrations of Levallois flakes that have been found, both in the Southeast and the Midwest? Such flakes have not been seen in Clovis and younger sites or have been overlooked. Mark Corbitt and Rick Doninger have brought this to our attention.

Are the professionals aware of the pecked, ground, polished, and sometimes painted lithic pieces, the worn stubs and discards which Ron Alexander finds strewn on ancient campsites along the upper reaches of the San Juan River in southwest Colorado? The lack of angular debitage makes these sites easy to overlook even if one is aware of their existence.

Then there are the human

skulls. Apparently there are a lot of them, reported in the literature sixty years or more ago and since forgotten. Text editor David Campbell has found a few references for us.

The unsung hero who should be recognized is often an amateur, rancher, farmer or tourist who first recognized what later turned out to be a famous archaeological site, dutifully notified the authorities of same, and then forgotten in the excitement. Human nature, I know, but perhaps we can rectify matters somewhat here.

All this will require input from our readers. I'm a volcanic ash specialist, remember, and most of what you write is news to me! Please share your knowledge so we all can benefit.



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