

# Earthdrawn: Aerial Site Research

## Strategies of Jay von Werlhof

Harry Casey

### Abstract

Jay von Werlhof led a very unusual research campaign that began in the late 1970s and would last for over 30 years. Light aircraft were used to discover, photograph, and document geoglyphs and rock alignments in the southwestern United States and northern portions of Mexico. This massive endeavor was not a premeditated effort. Rather, the impetus that was to evolve was the result of some rather unique recording methods. This immense project was undertaken without the benefit of sponsorship or financial grants. No preset goals or timetable dictated when or if the study would ever be completed. Physical and political boundaries proved to be no deterrent. The enthusiasm of the participants led to expanded research efforts. Success garnered success.

### Jay Crawford von Werlhof

Jay C. von Werlhof (Figure 1) was an experienced archaeologist, rock art researcher, anthropology instructor, and museum director. As a captivating and mesmerizing instructor, his students would enroll in the same field classes year after year. Usually, field classes met on Saturdays, but occasionally it was necessary to utilize an entire weekend due to distance or the complexity of specific sites. Many experienced field workers repeatedly enrolled in the class and performed as a crew to walk and record sites on the ground.

Jay always gave generous praise for work well done. That, combined with the exhilaration resulting from new discoveries, kindled renewed enthusiasm to continue the exploration campaign year after year. Aerial recording was done in the form of photographs taken from an airplane. However, Jay always had his field

book, even in flight, and would make his comments therein (Figure 2.). Flights were usually scheduled prior to ground recording attempts in order to secure photographs of the site and terrain of the immediate area. Surface recording was more accurate and thorough when recent photographs could offer perspective and ground features. The use of aircraft to find and record earthen art proved to be the foremost reason for the success of the more comprehensive earthen art recordings.

Jay's rise to eminence in the geoglyph and alignment fields was rapid. As more earthen art was discovered, Jay was to acquire a better overall insight into the quantity, location, and meaning of this little-understood art form. Jay's infectious enthusiasm to learn more about the earthen art of the indigenous peoples of our desert was to stimulate others to do the same.

Jay's many contacts in the archaeological community proved to be an invaluable aid in gathering large quantities of previously recorded earthen art research material. Emma Lou Davis, Julian Hayden, Ken Hedges, Boma Johnson, Russell Kaldenberg, Ron Dorn, and Dan McCarthy are but a few who offered their support and contributions in this lengthy campaign (Figure 3).

### The Environment

Large portions of the southwestern deserts are covered with a thin mosaic of blackened gravels called "desert pavement." Most geoglyphs are located on this type

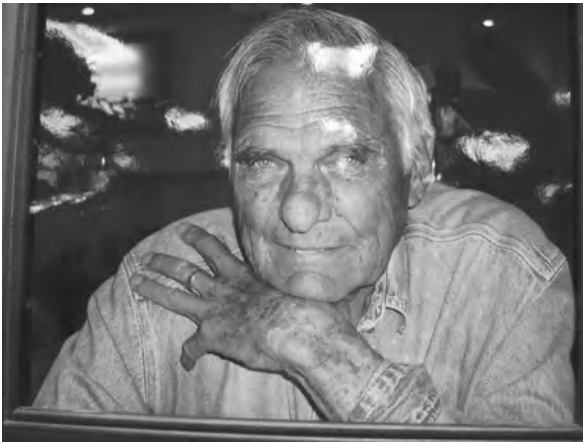


Figure 1. A favored family photograph of Jay von Werlhof taken by Sherilee von Werlhof.

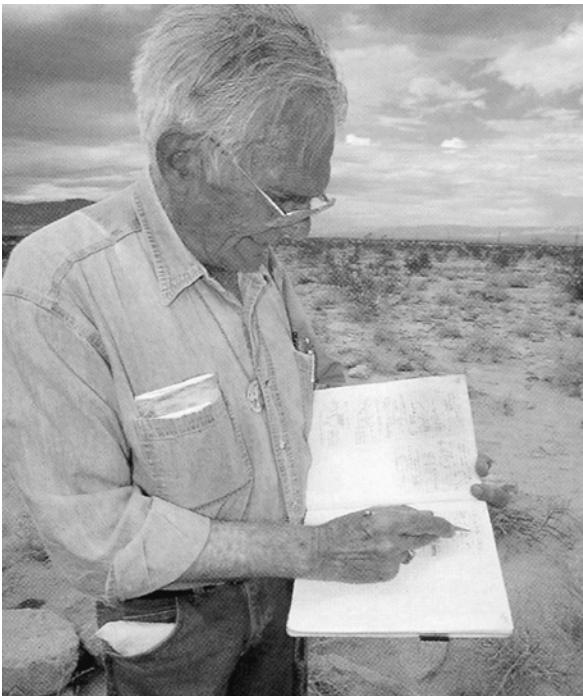


Figure 2. Jay von Werlhof with his notebook. Photo by Russell L. Kaldenberg.

of surface. It is very stable, with little wind or water erosion, and vegetation is sparse. Any disturbance of this surface leaves an indelible scar, which may last for hundreds, if not thousands, of years. This was the

canvas of the geoglyph artist. Earthen art sites are rarely isolated, and other geoglyphs or relevant site features may be found nearby.

Jay was to concentrate his earthen art research at these locations. He spent many years searching for clues to discover why the art was at a given location and what it may have symbolized or denoted for a culture. Initial surveys from aircraft to locate earthen art, trails, habitation sites, and water sources were vital to his study. Thorough surface documentation followed. All sources of information proved to be important. Jay had many Native American friends from whom he solicited advice on the meanings of various forms of earthen art and location significances. He understood the importance of examining both the tangible evidence found at the sites and the more ethereal mythological significance for their existence.

### Mythology

The oral mythology of some of the extant Indian groups along the lower Colorado and Gila rivers seems to offer explanations for the creation and meaning of several geoglyphs. Both the Mohave and Hopi have legends offering reasons for the construction of the Blythe Giants figures (Figure 4). The Mohave indicated to Jay that the figures represent an evil giant who lived in that area and harassed the Natives. To summon courage to kill the giant, they danced for three days and nights around a geoglyph representing that giant.

One Hopi story told to Jay asserts that two clans living in the area got into a serious argument. One clan drove the other away and made the large effigy of their clan deity to keep the vanquished clan from returning. Additionally, along the Gila River in Arizona, are the Race Track site, near Agua Caliente, and the Sacaton site (Figure 5), southeast of Phoenix. Both appear in corresponding myths of Indian groups located in those areas. As more sites were discovered and recorded,



Figure 3. Emma Lou Davis and Daniel McCarthy in Panamint Valley in 1991. Photo by Harry Casey.

Jay intensified his scrutinizing of the mythological beliefs that might connect with the theme of the new-found glyphs.

Interestingly, Indian museums often provide important perspectives on particular geoglyphs. As an example, during the 1980s the Quechan Indian Museum located in Yuma, Arizona, displayed several hand drawn pictures of a figure painted in red, white, and black colors. These drawings bear a striking similarity to a geoglyph discovered on a flight with Jay in 1984.

### **The Aircraft**

A 1946 Piper J3 Cub owned by the author, more than any other single piece of equipment, was responsible for attaining the overall scope and accurate perspective for the geoglyph sites (Figure 6). The great downward visibility and safe, slow flight characteristics made this aircraft well suited for the long recording



Figure 4. Aerial photograph of the Blythe Giant figures near the Colorado River. Both the Mohave and the Hopi have legends suggesting reasons for the construction of these geoglyphs. Photo by Harry Casey.



Figure 5. Sacaton, Arizona geoglyph. Pima and Tohono O'odham (Papago) mythology suggests that this geoglyph was constructed to commemorate the death of an evil giant (Hâäk Vâäk). Photo by Harry Casey.



Figure 6. The antique 1946 Piper Cub that was used for nearly 40 years to locate archaeological sites. Photo by Harry Casey.

campaign. Over 20,000 aircraft of the yellow J3 series were built by the Piper Aircraft Corporation after World War II. This particular Cub was flown more than 850 hours on hundreds of flights over the last 30 years solely to find and photograph earthen art. The aircraft has a welded metal tubing structure covered with fabric. Unfortunately, since it has no electrical system, it has to be hand propped.

The Cub carries two in a tandem seating arrangement. The interior is very austere, with few creature comforts. The 85-horsepower continental engine propels the aircraft at a maximum speed of 80 mph; a slight headwind can result in road vehicles passing the aircraft. When this Cub was rebuilt nearly 40 years ago, a second fuel tank was installed in the left wing. This extra fuel dramatically extended its range, allowing flights of four hours duration. The wide window and door on the right side of the cabin section can be opened or closed in flight, offering virtual unrestricted visibility out of the right side. A hole was cut into the floor of the cabin, allowing for a crude form of vertical photography.

The Cub is relatively safe to fly, having no serious "vices." It can be flown safely at speeds between 45 and 80 mph. Stalls are predictable and mild, with rapid recovery and little altitude loss. In 1946 a brand new J3 Cub could be purchased for \$1,950.00. This aircraft is still so popular that two U.S. companies are currently building replicas. However, the cost today is close to \$120,000.00! At this price, it comes with battery and starter.

Jay was a little frustrated that he never learned to fly. Other members of his family had become pilots. Jay purchased three aircraft during the 30-year recording campaign. Two of the aircraft were of the fragile, ultralight, noncertified variety. One of these was a single-seat machine. We have no idea how Jay thought he was going to learn to fly that airplane. His last aircraft was a four-seat, fabric-covered, post-World War



II model. We would listen to his stories about his new acquisitions, but we never saw or offered to fly any of them. At times Jay was most secretive about his flying endeavors. We believe he occasionally took flying lessons but doubt that he ever actually soloed.

### **The Cameras**

The cameras used for the first 25 years were the standard 35-mm film variety. Plus-X (ASA 125) and Kodachrome 64 were the films of choice. The lenses best suited for aerial photography proved to be 50-mm and 105-mm lenses. Three cameras were carried at all times. The lenses were of the manual-focus variety. They were preset at infinity and secured at that setting with tape.

Years of trial and error, including remotely mounted cameras, resulted in eventually using the simplest method, which was to open the window and door and shoot handheld at low altitude while circling the site. Subsequent darkroom procedures allowed for correcting errors in framing. Vertical photographs from a low flying aircraft proved useful in the ground recordation of larger sites.

Vertical photography is much more difficult than oblique photography. Not only must the camera be mounted to shoot straight down, but there is a need to overlap the photos to insure a proper mating of each enlargement. The aircraft must be flown in a straight line at a specific altitude, and the shutter must be released at properly timed intervals. These individual enlargements are then cut and taped together to form a long, continuous mosaic. This overlapping sequence of photographs can easily be rolled up and taken to the field for on-the-site use.

With the advent of Google Earth and Microsoft Virtual Earth, time-consuming, costly vertical photography procedures are now not as necessary. At this time a series of satellite image printouts from even the most

elementary computer/printer set up can easily be taped together to achieve virtually the same results, but at a lower resolution.

Over this 25-year period thousands of 8-x-10-in, black-and-white enlargements were generated. Several years ago, most of the enlargements were transferred from storage at the Imperial Valley College Desert Museum to the Museum of Man in San Diego. Here they can be more easily studied by other earthen art researchers.

The arrival of the digital age necessitated some procedural changes. The darkroom was dismantled, and digital cameras replaced the film cameras. The new digital cameras were about the same size as the 35-mm versions. The lenses of choice now appeared to be 18-55-mm and 55-200-mm versions. The new digital cameras with zoom lenses can be a distraction to the low-flying pilot. Setting the zoom lens for the proper field of vision and slowly depressing the shutter release to properly activate the focus mechanism can be time-consuming and dangerous diversions.

The advent of the GPS (Global Positioning System) equipment is a tremendous aid to everyone recording locations. The new GPS units are small, accurate, and reasonably priced.

The current goal is to chronicle everything once more, using the new digital cameras and also recording the longitude and latitude of each site. The new venture will require many years, as there are over 300 widely scattered ground drawings just in the extreme southwestern United States. During this effort, it is certain that many new elements will be discovered and will have to be recorded, too. Had we known in the beginning the magnitude of this undertaking, it is doubtful whether we would have ever attempted it. After several years of experience using flight to find and photograph archaeological sites, we began acquiring more positive results.

### Jay's Help

News of Jay's recording success resulted in requests for help in recording problem sites. Several memorable situations were to result from Jay's generous attempts to help others record difficult situations.

On one such occasion another archaeologist asked Jay for help getting aerial photographs of rock alignments in a volcanic area. To photograph black rocks on a black surface is very difficult. Jay wanted to get photographs of the alignment. Photographing an alignment is best done in early morning or late afternoon, when shadows will be at their longest. Unfortunately, the site was located north of Twentynine Palms, inside a restricted area, R-2501-N. Its location should have been an indication of possible problems.

Airborne at dawn and flying north over some very desolate terrain, two hours later, the aircraft was over Bristol Lake bed south of Amboy, California, about 20 mi east of the alignment and ready to enter the restricted area. To the west, where the alignment was located, were many plumes of smoke, and dust was everywhere. Repeated calls on the assigned military frequency produced no response.

Not wanting the Cub to be mistaken for an expendable target drone or to become a casualty of a "mock war," the aircraft stayed well outside the restricted area. At Barstow-Daggett Airport, the officer-in-charge of the "mock war" was called. After explaining the problem to him, he promised to negotiate a brief truce in the hostilities. He assured me of a 40-minute window. On returning to R2501N, all was quiet. The alignment was found and quickly photographed, and the aircraft returned home. The next day I called Jay and emphatically told him to accept no more "jobs" located inside military restricted areas.

Another interesting request for aerial assistance came to Jay from the late Emma Lou Davis (Figure

3). For many years she had been working in Panamint Valley just west of Death Valley. Here, as in Death Valley, there are numerous, quite sophisticated, ancient rock alignments. The late Sylvia Winslow, a high desert artist, and her husband, Slim, had discovered many unique rock alignments along the eastern side of the old Pleistocene lake in Panamint Valley. The couple had flown the area for many years but had not obtained the quality of photographs Davis needed.

Davis, knowing the success Jay was experiencing in his geoglyph studies using aircraft, asked him for help. Jay, in turn, conferred with me and several other students who had assisted him in geoglyph recording about a possible Panamint Valley expedition. Everyone agreed it should prove an interesting field trip and would add to our inventory of earthen art sites. The Easter vacation week was selected for the foray (Figure 7).

Since we knew nothing about the location of the alignments, Davis arranged for me to meet Sylvia Winslow at the Trona airport. Carefully avoiding the many restricted areas, I flew to Trona and found Davis and Sylvia Winslow, who was sporting a gigantic straw hat. After customary introductions, Winslow agreed to fly in the Cub with me to show the locations of the many alignments.

Winslow had flown in light aircraft with her husband for many years. Her experience had been in an Ercoupe, a side-by-side, low-winged aircraft offering reasonable comfort but poor downward visibility. Winslow, observing the sparse interior and awkward tandem seating arrangement in the Cub, was upset that although there were seat belts, there were no shoulder harnesses. I received a stern reprimand for that oversight. Upon assurance of my thousands of hours of accident-free flying time, she became more confident and climbed into the front seat, complete with hat and all. The size of the hat was such that it was impossible

for me to see forward, much less see the instrument panel. But having started off on the wrong foot, I was reluctant to make an issue of the hat.

The flight was uneventful. Winslow remembered where all of the alignments were located. They were the most numerous and spectacular alignments I had ever seen. Most the alignments were complex, partitioned designs, which did not seem to be representational (Figure 8). Thanking her for her assistance, Winslow was delivered back to the Trona airport.

I proceeded to the lake bed, where the others had selected a good campsite near an open area suitable for the Cub. The site proved to be an excellent location, because it was less than 1 mi from the closest alignments. Early morning and late evening flights could

be made when low sun angles enhanced alignment contrast. Jay and his wife, Sherilee, arrived with their trailer. Eight to 10 others found the encampment and parked their campers or set up tents in the vicinity.

Surface and aerial recording efforts were progressing very well. Then, on the second or third evening, we had uninvited guests. An Inyo County Sheriff Department vehicle suddenly descended on our isolated encampment. They asked, "What are you doing here?" My aircraft number, information about myself, and an explanation from Jay about the reason for our being there were radioed back to headquarters. After a wait of 10 to 15 minutes, it was confirmed that I owned the aircraft and had no criminal record. We were probably not smugglers and apparently were



Figure 7. An elaborate geoglyph photographed from the air in Panamint Valley, Death Valley National Park. Photo by Harry Casey.



Figure 8. Emma Lou Davis and a volunteer documenting a geoglyph in Panamint Valley, Death Valley National Park. Photo by Harry Casey.

not breaking any laws. That settled, they left, and things returned to “normal” until the next day.

The weather had been perfect until late in the afternoon when a really violent west wind developed. Everyone scurried about camp securing gear. I have never been in such a violent, filthy dust storm. We tied down the aircraft to a vehicle on each wing and one to the tail. Next morning it took several hours to clean up the mess. Jay had lost his trailer’s awning, and many tents had collapsed. Fortunately, I had placed my camera and lenses in a dust-proof metal container. After cleaning up the best we could with limited water resources, we continued recording, and good weather prevailed throughout the remainder of our time in Panamint Valley.

Another memorable event was to occur that actually was quite humorous in retrospect. It was easier for me to photograph while alone in the aircraft. Passengers would often get airsick with all the low-altitude turning. Being solo provided me with more camera storage room and better aircraft performance. However, four eyes are better than two, and one recorder, who had driven my pickup to the campsite, loved to fly with me. He was heavier than any of the other recorders who had been going up for aerial tours of the

alignments, but we both climbed in and started to taxi. There was a slight depression ahead on my left that I had not seen. We crossed it and something broke. The aircraft’s left wing suddenly dropped 3 ft. This, in turn, allowed the right wing to rise to a height of 9 ft. On closer inspection we discovered I had broken both shock cords on the left landing gear. The damage was not too serious, but I could not fly the aircraft in that condition. We did not have any extra shock cords, but we did have a good selection of nylon ropes. The Cub weighs 760 lbs empty. Several of the stronger members of our expedition were able to lift the left wing while the nylon rope was quickly wrapped around the area where the shock cords had been. The “fix” was plenty strong, but it did not offer the usual resilience of shock cords. During the next few days, Jay flew over the alignments several times. We were able to finish the last few days of recording and return home with no further incidents.

Jay’s success in recording the Panamint Valley alignments stimulated his desire to continue working the high northern desert. News of the alignments in Death Valley prompted him to use his Christmas vacation week in an effort to record the Death Valley alignments (Figure 9). Jay had no help in chronicling the Death Valley alignments and had to walk a



Figure 9. A geoglyph photographed in Death Valley National Park. Photo by Harry Casey.



considerable distance to get to the elements. A barbed wire fence surrounded the alignment area. In crossing the fence, his wallet fell from his pocket. Jay did not notice its absence until he got back to civilization. He did not return to the site to retrieve it.

Jay requested that we fly up to Death Valley for a few days to help photograph the alignments. He could show me where the main concentration was located. We photographed the alignments and began a more systematic search of the vicinity for more earthen art. Additional alignments were found in both the Greenwater Valley (Figure 10) and east of Newberry Springs. We are confident that many more alignments remain to be discovered in the high deserts of southern California.

### Jay's Recording

Never actually possessing good handwriting, Jay's penmanship in his later years became an illegible scribble. He even had trouble deciphering his own notes. Shortly after the Panamint Valley and Death Valley campaigns, Jay began looking for a "good, old, dependable ribbon typewriter." With one, he could write his manuscripts and actually read what he had

written. Jay finally found one, but then there was the problem of getting the necessary ribbons.

Jay, unfortunately, was not computer literate. He resisted most attempts by others to get him to write using one. To Jay, computers were definitely not user-friendly. Ultimately, Russ Kaldenberg got Jay a computer and a printer and convinced him to try to use them. This was a very frustrating period for Jay. Punching the wrong key often resulted in the loss of hours of work. Audio recordings were made of Jay narrating on archaeological subject matter and his life history (Figure 11).

Fortunately, Jay was a prolific recorder and writer. His records are now being scrutinized by Kaldenberg and David Whitley, both noted archaeologists and authors. They will undertake the task of finishing what would have been Jay's Volume III of the *Spirits of the Earth* series, which relates to the geoglyphs found in the extreme southwestern United States.

After Jay's death, 84 of his field books were found. However, there are some 10 years of his recordings missing. Many who knew Jay are checking their files for articles Jay may have written but not published.



Figure 10. Earthen art in Greenwater Valley, Death Valley National Park. Photo by Harry Casey.



Figure 11. David Whitley and Jay von Werlhof in Ocotillo, California, in 2009. Dave is conducting an interview with Jay. Photo by Russell Kaldenberg.

### The Museum

Under Jay's leadership, after some 30 years of planning and funding difficulties, the Imperial Valley College Desert Museum Society was finally to construct a magnificent 10,000-ft<sup>2</sup> museum next to Interstate 8, near Ocotillo, California (Figure 12). This desert site is on the western edge of the Yuha Desert, about 20 mi west of El Centro. Several important geoglyphs are located in the Yuha Desert. Jay and Sherilee (Figure 13) moved from El Centro to Ocotillo to be nearer the new museum and the Yuha Desert area. As of the summer of 2010, the museum building was being used as a site to curate artifacts. Due to financial constraints, Imperial Valley College has recently withdrawn its support of the museum's operations and is planning to deed the property directly to the museum society. The

museum society has assumed responsibility for both the ownership and operation of the museum.

### The Man

When Russ Kaldenberg realized that Jay's health was rapidly declining, he conceived a plan to honor Jay and let him know how much he was appreciated by both the archaeological community and local residents. The plan was to honor Jay at a day-long symposium to be held at the new museum. The Imperial Valley College Desert Museum Society hosted the event on October 24, 2009 (Figure 14).

Since the banquet to honor Jay was over a month away, Kaldenberg suggested that perhaps keeping Jay active and interested in future events might prolong his life. This assignment proved to be much easier than anticipated. Jay had become very engaged in learning more about Spirit Mountain, Newberry Peak, or "Avikwaame" to the Yuman groups, who believed that Spirit Mountain was the place of their origin. Jay was given copies of all the information collected about Spirit Mountain (Figure 15). In the month before the symposium, we would fly to Spirit Mountain twice.

One of the few disagreements that Jay and I ever had occurred on the first flight to Spirit Mountain. He had



Figure 12. Imperial Valley Desert Museum, located in Ocotillo, California. Photo by Harry Casey.



Figure 13. Sherilee and Jay von Werlhof discussing their next day's strategies in Panamint Valley concerning food. Photo by Judyth Reed.

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Figure 14. A flyer promoting the 2009 symposium honoring Jay von Werlhof's contributions to archaeology. Flyer by Zee Malas.

driven up to the mountain several years earlier to get some pictures. He believed that Spirit Mountain was on the south side of Christmas Tree Pass Road. I contended that it was the higher, more rugged mountain north of the road. Its location in question, photographs were taken of both peaks from a distance and up close.

On flights with Jay while in this area, we would stop to refuel at the Lake Havasu City airport. Jay was especially fond of a particular fixed base operation at the

airport. They really pampered the fliers there, offering free popcorn, cookies, and “slush” drinks. Jay would have three or four drinks and popcorn and would always leave with a handful of cookies.

Enlargement of the photos taken on the first two trips to Spirit Mountain revealed no evidence of prehistoric activities. Jay called me about a week later. Now he suggested we fly up there again to survey the base of Spirit Mountain (Figure 16). I sometimes suspected that Jay was more interested in the “refueling stop”



Figure 15. Spirit Mountain or Avikwaame near the Colorado River in southern Nevada. Many of the tribes of the lower Colorado River believe that Avikwaame is their place of origin. Photo by Harry Casey.



Figure 16. The last photograph of Jay von Werlhof taken as he was looking for rock alignments on Spirit Mountain. Photo by Harry Casey.



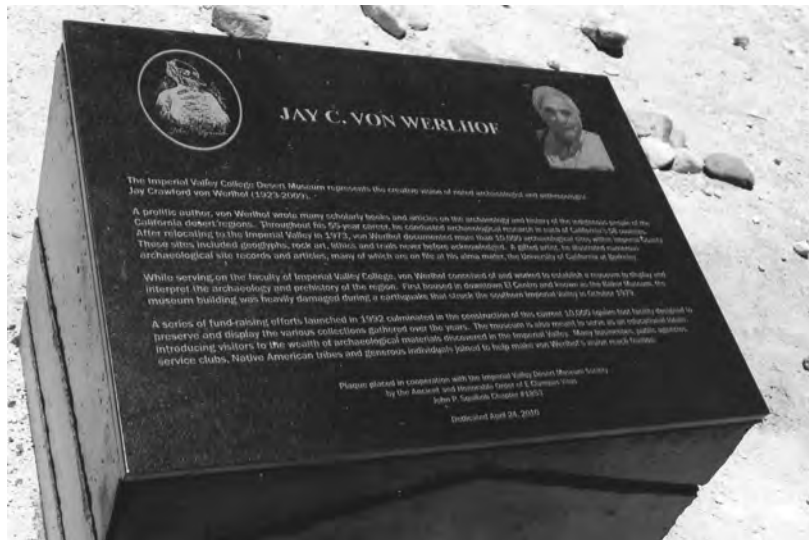


Figure 17. The monument dedicated to Jay von Werlhof by E. Clampus Vitus. Jay is the only California archaeologist to have a memorial monument dedicated in his honor. Photo by Meg Casey.

than in seeing Spirit Mountain. Before we could go, Jay was to attend the symposium in his honor.

No further trips were attempted to Spirit Mountain. While Jay was a strong man in many ways, health issues plagued him in his later years. First, there was quadruple bypass surgery in 1982. Stomach cancer, prostate cancer, and finally kidney failure resulting in lengthy dialysis sessions led to a coma, from which he would never recover. His death on December 10, 2009, was not unexpected.

A monument (Figure 17) honoring Jay was installed in front of the Imperial Valley College Desert Museum by E. Clampus Vitus. (Jay lightheartedly referred to it as a historical drinking society or a drinking historical society, and claimed he was the only person ever to be removed from the organization.) A public dedication of the monument was held on April 24, 2010. Several hundred former students, fellow academicians, co-workers, friends, and others involved in archaeology were in attendance.

At his funeral a military color guard recognized his World War II military contributions. Preston Arrow-Weed, a Quechan/Kamia elder, provided

appropriate Native American chants for the funeral rites. Many eulogized Jay's lifetime contributions in his field of endeavor and as a teacher, an inspiration, and a friend. Others expressed their sentiments about Jay's influence on their personal lives. Jay would have been pleased.

Jay's death at any time would have been untimely, for he had much to offer and much more he wanted to do. To him, there was so much left to discover. He had accumulated enough material and information for several more major publications. His primary publications were his 1978 first volume on *Spirits of the Earth: The High Northern Desert* and his 2004 second volume, *Spirits of the Earth: That They May Know and Remember*. He did not finish what was to have been his most important work, Volume III, *Spirits of the Earth: Trail of Dreams*.

Jay is missed by all who knew him. We will miss his inspiration by example, his easy way of teaching the subject he loved so much, his dedication to his science, his intelligent sense of humor, his willingness to support a new student even when his "find" was not really an artifact, and his kindness. Jay seemed to personify what the crusty old archaeologist should be,

but he was so much more than that. His work was far from finished. Had he lived another 20 years, he could not have finished compiling all the research he had accomplished. He will be remembered along with the likes of Malcolm Rogers for his untiring devotion to basic desert field archaeology.

I will miss Jay, for he was my friend and tutor for over 30 years. He allowed me to work with him in trying to find and preserve a vanishing art form, a fading artistic expression of past cultures.