

Cultural Identity and the Revival of Values After the Demolishment of Bamiyan's Buddhist Wall Paintings



Yoko Taniguchi

Abstract Although Bamiyan wall paintings were mostly physically destroyed during the internal conflict, as well as two Giant Buddhas, the remained pieces still hold extensive academic information and values on constituent materials, technologies of creation, original colours, and chronological data with ^{14}C . In the process of conservation project led by UNESCO and NRICPT, Japan, scientific analyses on wall paintings have revealed that Bamiyan's wall paintings incorporate various organic materials such as multiple painting layers such as a proteinous sizing above earthen renders, white ground, optically designed colouring order, and then a glaze. Interestingly, we found drying oils, lead soap, and natural resins from particular group of wall paintings, which appeared in the mid-seventh century. Bamiyan is not dead; it continues to live as a city with innumerable markings of how it once flourished. At present, there are no practicing Buddhists and no spaces for the practice of Buddhism remaining in the Bamiyan site. However, the Bamiyan site is full of new findings as above. We believe that new knowledge from the original works has acted as an important key for enhancing the interest of local residents in their heritage and for forging a unity of their own.

Keywords Wall paintings · Drying oil · Conservation · ^{14}C · Sizing

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1 Demolishment of the Bamiyan Site

In March 2001 the wall paintings that had rested over the two Giant Buddhas turned to sand. Several blasts targeting the Buddhas effectively destroyed the wall paintings. Apart from blasts delivered by the Taliban, other acts, including looting and wilful destruction, were commonplace at that time. Over 80% of all wall paintings that had remained prior to these events were demolished (Cave N(a) (Fig. 1). Looting has also been clearly visible in many caves. For example, cutting marks around the Thousand Buddhas are apparent to the eye in Cave K₃. One of several displaced cultural properties that had been found on a black market and protected by UNESCO Goodwill Ambassador Prof. Ikuo Hirayama in Tokyo for safekeeping perfectly fit the looted area (Fig. 2). Professional looters from Pakistan had repeatedly visited Bamiyan over the course of the conflicts and cut numerous objects from cave walls for illicit sale in overseas art markets, including in the UK and Japan. It is surprising that looters successfully gained access to Cave K₃, located 20 m high and hardly reachable without proper scaffoldings.

To counter this state of affairs, Prof. Ikuo Hirayama designated these displaced cultural properties as ‘cultural property refugees’ and advocated that they should be temporarily protected in Japan as ‘refugees’ until Afghanistan attains enough political stability to allow for their return. ‘Japan Committee for the Protection of Displaced Cultural Properties’ was established in order to oversee this project. The activities of the Japan Committee for the Protection of Displaced Cultural Properties are sponsored by UNESCO under a contract with the UNESCO headquarters. The official documentation of ‘Policies Regarding the Protection and Maintenance of

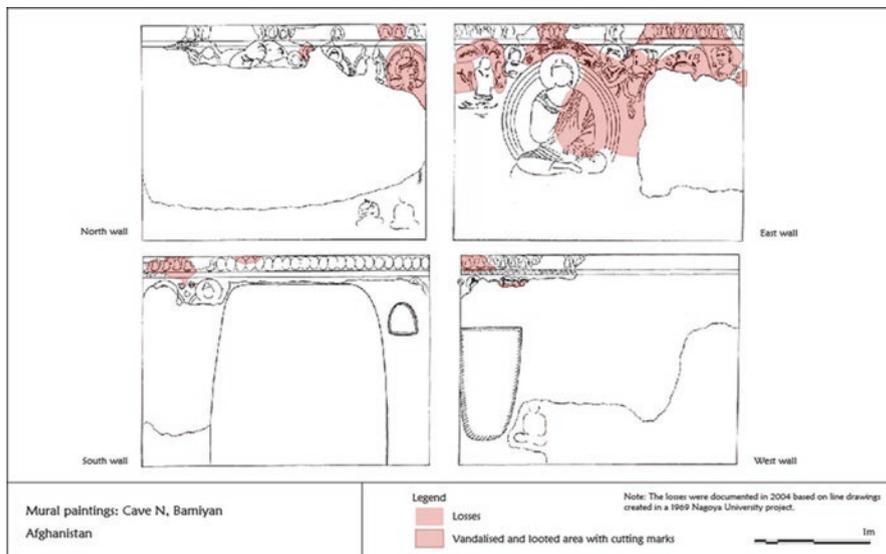


Fig. 1 Mapping of the condition of Cave N(a). Over 80% of wall paintings present before the conflict were lost. (© Y. Taniguchi, courtesy of the National Research Institute for Cultural Properties, Tokyo (NRICPT))

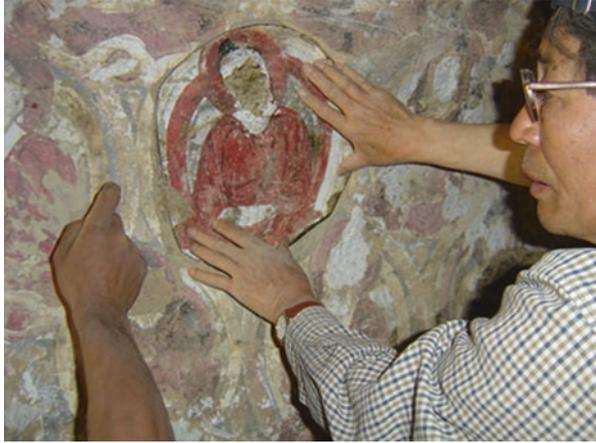


Fig. 2 Professor Kosaku Maeda places a photocopy of a displaced wall painting fragment in the looted area at Cave K₃. (© Y. Taniguchi, courtesy of NRICPT)

the Displaced Cultural Properties' has been in place since October 1, 2001, and an 'International Cultural Properties Protection Committee' has been established to facilitate their enforcement.

The reception of displaced cultural properties (i.e. cultural property refugees) to ensure their protection began on October 1, 2001. However, following the ratification of the 'Convention on the Means of Prohibiting and Preventing the Illicit Import, Export, and Transfer of Ownership of Cultural Property (UNESCO Act in 1970)' by Japan in October 2003 and the establishment of Afghanistan's tentative government by President Karzai in December 2004, the project was deemed to have adequately served its purpose. Therefore, in the time since, no further properties have been received.

Over 200 displaced cultural properties including wall paintings from Caves E, K₃, and Foladi have been returned to Afghanistan by the Committee: 99 in June 2005 and 102 in 2016.

2 Wall Paintings Before Destruction

First, let us review the Bamiyan Buddhist wall paintings. The Bamiyan site is located in the highlands of Hindu Kush at 2500 m. Its main cliffs include the west cliff, which holds the Foladi Caves, and the east cliff, which holds the Kakrak Caves. In total, there are about 750 caves. The main cliff is made of conglomerate and once held two Giant Buddhas (namely, the West Giant Buddha, 55 m in height, and the East Giant Buddha, 38 m in height). Approximately 50 of the caves were decorated with wall paintings and sculptures influenced by Gupta art and the Sassanid tradition. Decorated caves tended to be small and round, rectangular, or octagonal in shape. These spaces were likely used as ancestral halls.

Bamiyan's wall paintings included motifs such as Buddhas, bodhisattvas, donors, monks, Mitra, the sun god, the moon god, Fengshens, griffins, pigs, dogs, hamsa, and various plants including the lotus. The styles of painting vary from cave to cave and feature Greco-Roman, Sassanid, Indian, and East Turkestan characteristics. The complexity of such painting styles has been studied broadly across the field of Buddhist art and history (Rowland 1938; 樋口 編 1983–1984; 前田 1999; 2007; 宮治 2002; Klimburg-Salter 2003).

The caves were not in perfect condition, even before the wall paintings were targeted for destruction. Owing to the nature of the thick and heavy mud plaster that underlay them, numerous paintings had fallen or were detached from the surface (Fig. 3). Also, due to the use of caves as dwelling spaces by non-Buddhists for many years, the eyes and the hands of Buddha figures had been vandalised (Fig. 4).



Fig. 3 A fallen wall painting at Cave I, detached due to lack of cohesion. (© Y. Taniguchi, courtesy of NRICPT)



Fig. 4 The eyes and hands of Buddha figures were vandalised at Cave N(a). (© Y. Taniguchi, courtesy of NRICPT)

Bamiyan's wall paintings have suffered considerably because of physical and chemical deterioration. However, conditions surrounding the progression of that damage over centuries have not yet been made clear. Vandalism and looting by people also seem to have contributed greatly to their appalling condition today.

Due to the physical and chemical fragility of the stone itself, the Bamiyan site has deteriorated extensively within Afghanistan's severe natural climatic conditions. The damage caused by human hands has only furthered its drastic destruction. From the twentieth century on, the Bamiyan site has been surveyed by several organisations and researchers: however, not much has been done in terms of conservation. Limited restoration and conservation efforts were conducted by a French mission, later followed by an Indo-Afghan mission, as detailed below. Major conservation work tended to focus on the Giant Buddhas as well as surrounding wall paintings and Buddhist caves, including those of Cave groups A, C, and D. However, works found in Cave groups K₃ and I, as well as other areas, that were extremely difficult to access have been neglected in view of conservation.

The first conservation efforts in Afghanistan were executed by *Délégation archéologique française en Afghanistan (DAFA)* over the course of a 30-year archaeological survey project. The French mission also took on a 'first-aid' restoration of some wall paintings by applying lime-gypsum mortar around the edges of paintings and in paint losses. An enormous 'brick-faced masonry buttress' was also constructed to the west of the East Giant Buddha to support the crumbling wall of the Buddhist niche.

From 1969 to 1976, and Indo-Afghan mission, led by the Archaeological Survey of India (ASI) and supported by UNESCO, carried out a number of restoration interventions mainly for the two Giant Buddhas, the niche area contained by the Buddhas and the surrounding wall paintings (Warikoo 2002). The mission was taken up under the supervision of R. Sengupta from ASI. Apart from some cleaning and consolidation work done on the wall paintings between the two Buddhas near the niche, they pursued a number of remedial measures, including trimming and treating the buttress wall to match the profile of the rock surface, filling in large cracks in the cliffs with cement concrete, constructing a drainage system on the stone overhang of the niche between the two Buddhas to discharge snow water so as to reduce natural wear and tear, and restoring the staircases.

Major conservation interventions and materials used by the Indo-Afghan mission for the wall paintings include (1) chemical treatment composed of diluted ammoniac solution or organic solvents for black soot deposits on the wall paintings and ornate stucco figures; (2) consolidation using strong polyvinyl acetate in Cave D (1972–1973); and (3) surface cleaning using brushes and consolidation using diluted polyvinyl acetate in toluene, alcohol, and ethylene dichloride executed in two Buddha caves, a stucco painting near the Big Buddha, and the ceiling of Cave 53-V. Blackened soot deposits were also repeatedly treated for removal with 1–2% ammoniac detergent in water and then consolidated with 4–5% of Perspex (methyl methacrylate) in toluene (1977–1978). Throughout the project, white infillings added by French restorers were removed and replaced with coloured mortar to match surrounding areas.

3 Looting of Wall Paintings

During times of internal conflict, some caves were targeted for damage. A typical example is seen at the Cave A lower salle, where multiple footprints are visible on the darkened wall painting surface. Whitish footprints were stamped using dust. Shoes were intentionally thrown towards the dome ceiling (Fig. 5).

Many areas of wall paintings were cut and removed from their *in situ* site. About 80% of wall paintings known to have been present before the conflict were gone in some caves. The Thousand Buddhas from Cave E(e) were individually cut and removed from the site and sold in overseas art market (Figs. 6 and 7). The paintings were already darkened due to extensive use of the cave for habitation, and the figures had not been clearly visible. That may have helped prevent destruction of the figures until trained looters invaded Bamiyan.

In the case of Foladi 4, a structural problem caused wall painting to detach and fall from the laternendeck ceiling. However, intentional looting has caused further damage to the few remaining wall paintings at Foladi (Fig. 8) visible in severe cutting marks. The Thousand Buddha of Foladi 4 is rather small, and due to the nature of its constituent materials, detached pieces are crumbling. The pieces from Foladi 4 are rather small in size.

A sleeping Buddha once depicted on the north wall of the terrace of Cave C(a) was recently cut and lost (Fig. 9). The paintings were unfinished originally, with only the first layer of red ochre and charcoal black paint. Although the paintings

Fig. 5 Dusted ceiling of Cave A-lowersalle by throwing sanded shoes. (© Y. Taniguchi, courtesy of NRICPT)

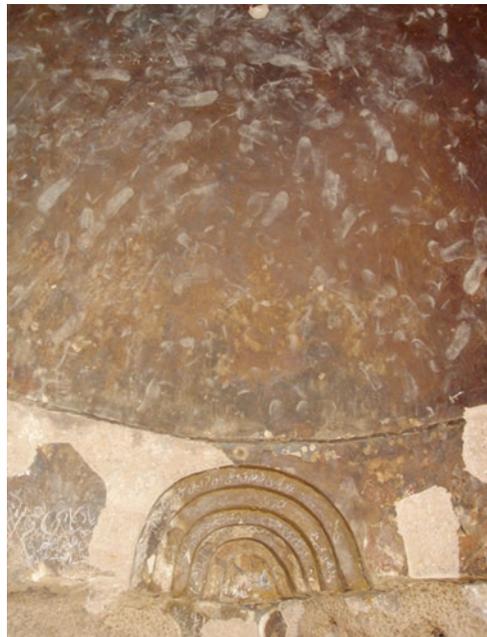


Fig. 6 The Thousand Buddhas from Cave E(e) were individually cut and removed from the site. (© Y. Taniguchi, courtesy of NRICPT)



Fig. 7 Protected fragments from Cave E(e) found at a market in Tokyo. (© T. Kijima courtesy of the Tokyo University of the Arts)



Fig. 8 Intentional looting has resulted in further damage to the few remaining wall paintings at Foladi Cave 4, as seen in severe cutting marks here. (© Y. Taniguchi, courtesy of NRICPT)



Fig. 9 The sleeping Buddha once depicted on the north wall of terrace of Cave C(a) has been removed and lost. (© Y. Taniguchi, courtesy of NRICPT)

were unfinished, one part was removed to capture the unique figure of the sleeping Buddha in Bamiyan. It is believed that this theft was committed by a professional looter aware of the value of Buddhist art. Graffiti is also present at Cave C(a). A lack of interest in protection had accelerated such problems at the site.

At N(a), most of the eyes and hands of the Thousand Buddhas were already damaged. However, these areas were later filled with plaster, leading us to conclude that this damage was done in an earlier period. Recent vandalism is made quite clear through reference to documents by Nagoya University from the 1970s. Flesh chisel marks are very distinguishable in many areas.

Even today, looting continues in Bamiyan, such as in Kakrak Valley where freshly cut areas are readily visible. Site guards must be employed to effectively control the area, and, to achieve this, initiatives by the central and local governments are indispensable.

4 Scientific Analyses for Conservation of Wall Paintings

In order to execute conservation intervention at Cave N(a) and other sites, detailed dating of each cave and the constituent materials of each wall painting was essential. Previously fragments of Bamiyan wall paintings were scientifically analysed by Rowland (Rowland 1938) and Gettens (Gettens 1938). The exact dating of wall paintings and the two Giant Buddhas was executed by the Division for Chronological Research from Nagoya University using chaff tempers in renders, wooden pieces, and ropes (Nakamura 2006).

^{14}C data obtained through readings of wall paintings and the two Giant Buddhas with an OxCal v.4.1.1. (Bronk Ramsey 2009) are as follows (Figs. 10, 11, 12 and 13). The Two Giant Buddhas showed about 100 years of differentiation. The wall painting in the East Giant Buddha niche can be dated to between the fifth and early sixth centuries AD. ^{14}C dating revealed that use of the Bamiyan cliff gradually increased between the early fifth century AD and the end of the ninth century AD (Nakamura 2006).

Before any interventions, figures in the laternendeck ceiling of Cave N(a), a mid-seventh-century cave, were difficult to see due to soot-like deposits on the surface. However, after several cleaning trials, animal figures against a red background merged with an arabesque pattern became visible (Fig. 14). Some golden varnish has also been identified on the animal bodies.

Careful observation reveals that a thick metallic leaf appeared on the beam with an arabesque pattern in black and a background red in colour. Animal and arabesque motifs were left unfilled but with golden varnish. The corner of the beam shows the unevenness of the metallic leaf.

5 Multilayered Structures in Animal Motifs at Cave N(a)

Samples (collected from fallen fragment, BMM184, and from wild pig, BMM186) were observed under a stereomicroscope. The metallic leaf included fine scaling as well as golden and reflective colour. Then, normal light and UV excited fluorescence in the cross-sections of the same samples. (For sample preparation and methods of analyses, see [谷口他 2006].) These results showed a golden varnish over 20 μm thick on the metallic leaf (Fig. 15). The metallic leaf was applied to the white ground with mordant, which shows a strong whitish fluorescence under UV. Under normal light, this mordant appears as a yellowish translucent colour. An organic layer which shows whitish fluorescence and bluish intense fluorescence was visible

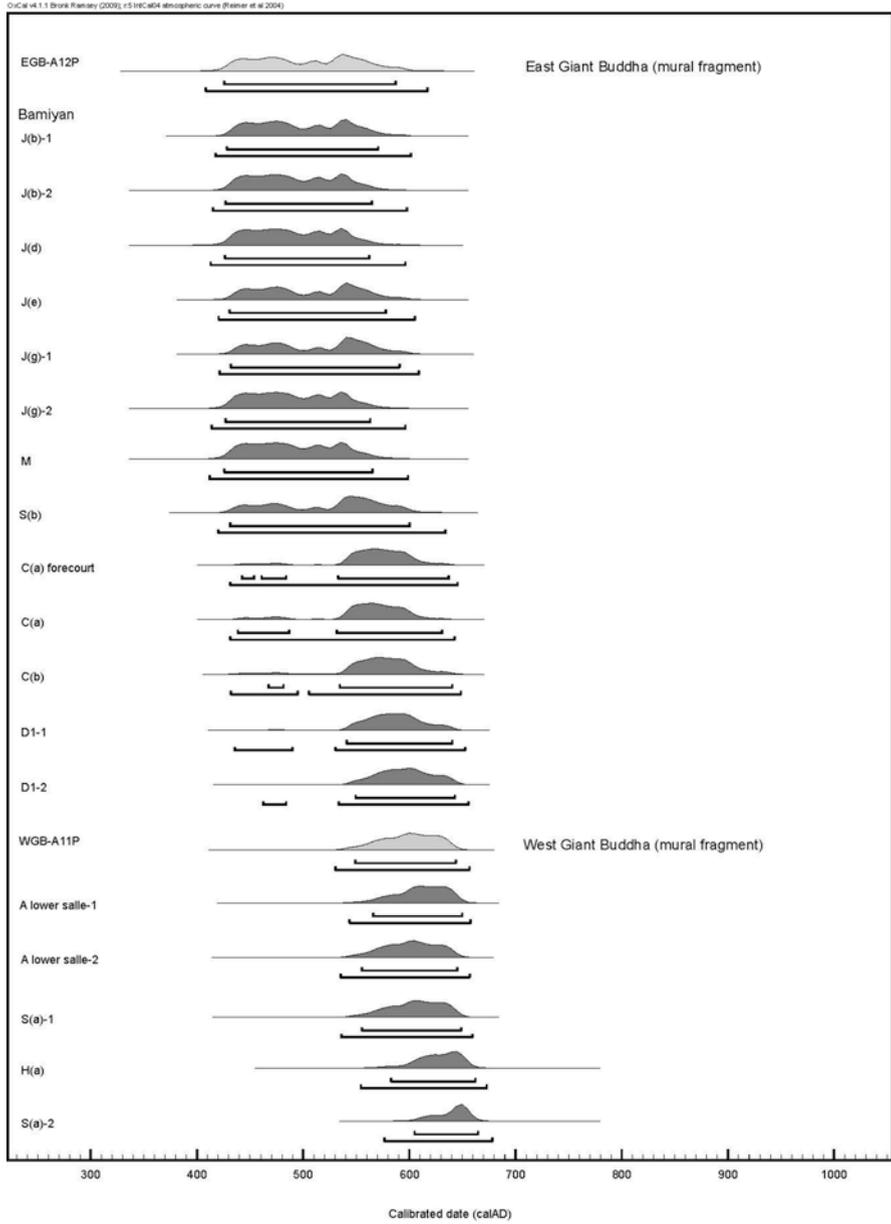


Fig. 10 Calibrated age ranges estimated from ¹⁴C ages obtained using samples of wall paintings in caves at the Great Cliff. (© Y. Taniguchi)

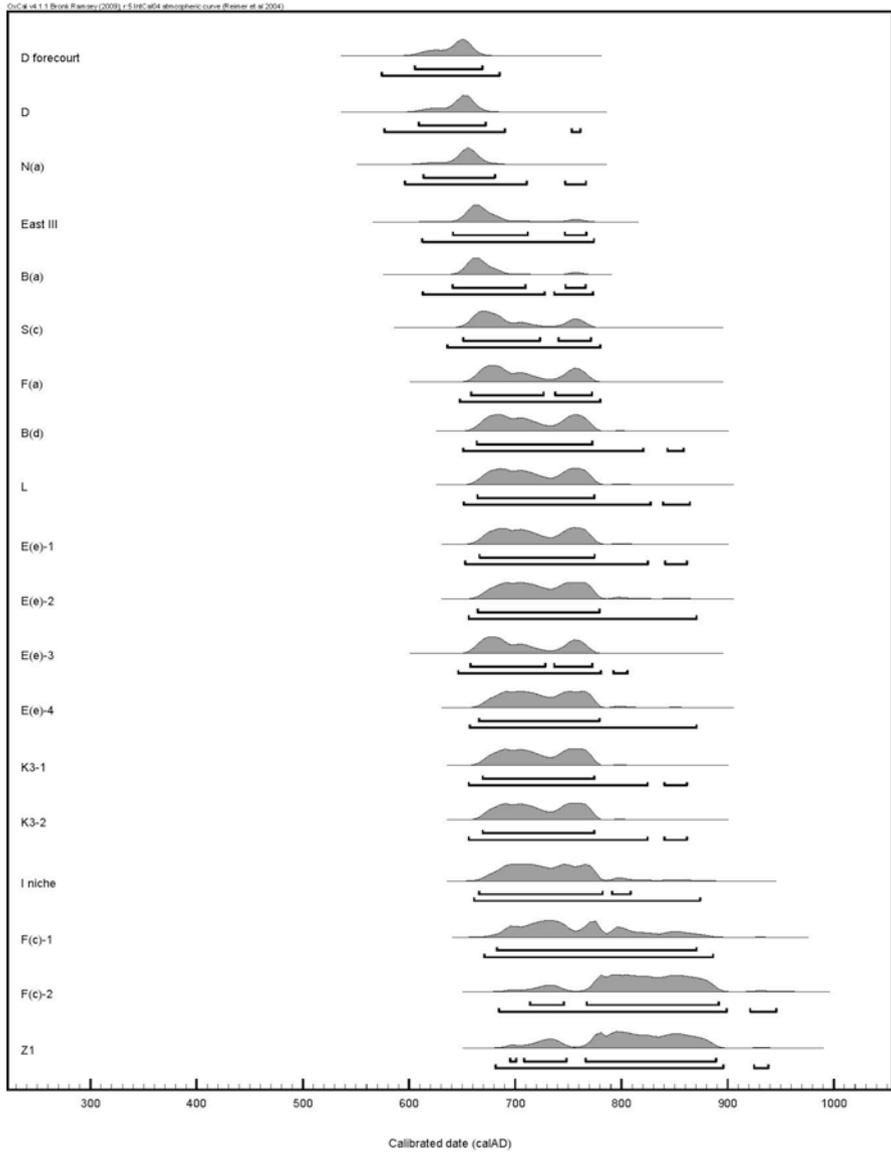


Fig. 11 Calibrated age ranges estimated from ¹⁴C ages obtained using samples of wall paintings in caves at the Great Cliff. (© Y. Taniguchi)

between the white ground and the renders. The white ground also shows a whitish fluorescence under UV radiation (Figs. 16 and 17).

Cross-sections were analysed with Scanning Electron Microscopy with Energy Dispersive Spectroscopy (SEM-EDS). All samples were carbon coated and analysed using the FP method. The white ground showed high Pb, while the metallic

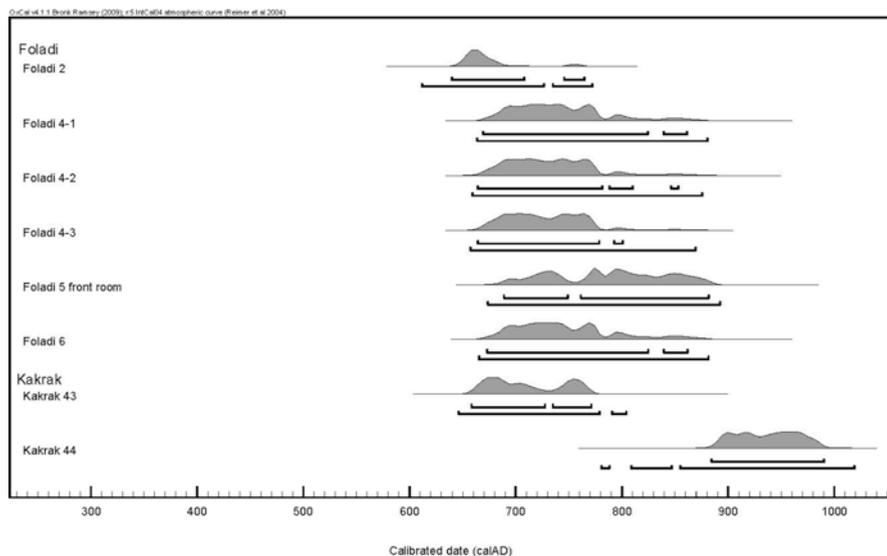


Fig. 12 Calibrated age ranges estimated from ^{14}C ages obtained using samples of wall paintings in caves at Foladi and Kakrak. (© Y. Taniguchi)

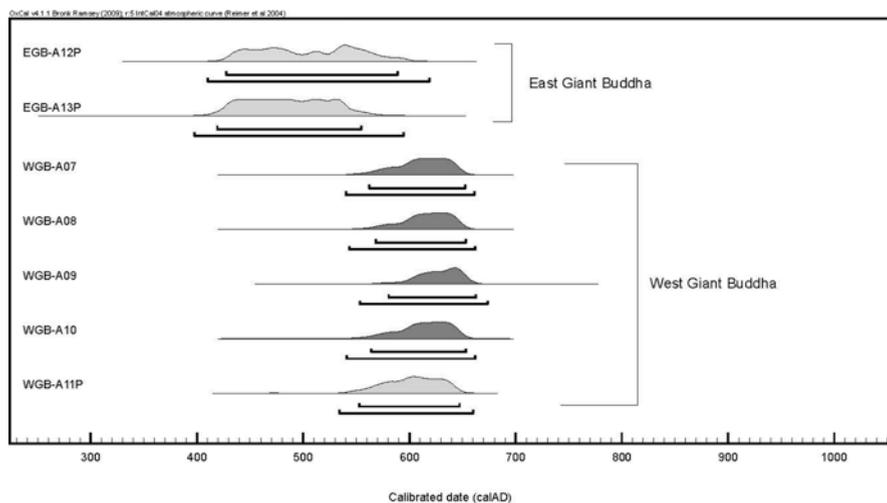


Fig. 13 Calibrated age ranges estimated from ^{14}C ages obtained using samples of the Giant Buddhas. (© Y. Taniguchi)

leaf showed high tin and lead readings. Thus, the leaf was composed from tin with minor amounts of lead. Most exterior of yellowish translucent materials show a thin Ca layer (Fig. 18).

A sample from the wild pig pattern (BMM178) was converted into thin sections with microtome thickness of 5–50 μm . It was then interposed between diamond



Fig. 14 Animal figures against a red background that merge with an arabesque pattern. (© Y. Taniguchi, courtesy of NRICPT)

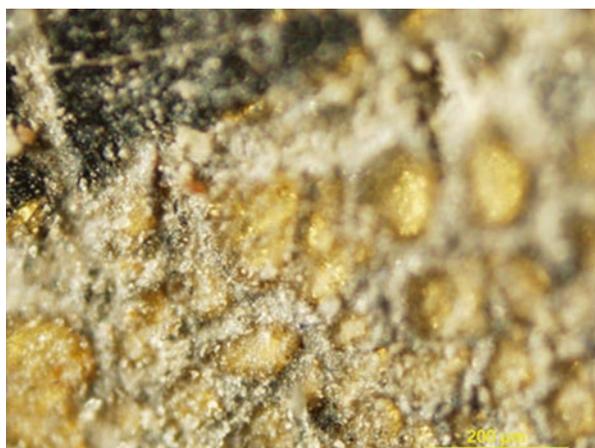


Fig. 15 Minutely fragmented golden varnish over a 20- μ m-thick metallic leaf. (© Y. Taniguchi, courtesy of NRICPT)

cells with layer structure visible. Both samples were used to transmit point analyses and elemental mappings.

Analyses were done at ID21 of the ESRF Synchrotron Facility. μ FTIR was done with Thermo Nicolet Continuum Nexus IR spectroscopy. This beam line can provide very high luminescence and S/N in a small area under 15 μ m. Mapping was executed 32 times using a ϕ 10 μ m beam in a 10 μ m step size of 16 spectra within the 4000–800 cm^{-1} range. The mirror speed was 1.8988 cm^{-1}/S , resolution was 8 cm^{-1} , and Happ-Genzel apodisation was applied. OMNIC software of Nicolet was used for analyses. Other details are described elsewhere (Cotte et.al 2008, 2009, 2010; Taniguchi 2012a, 2012b, 2017).

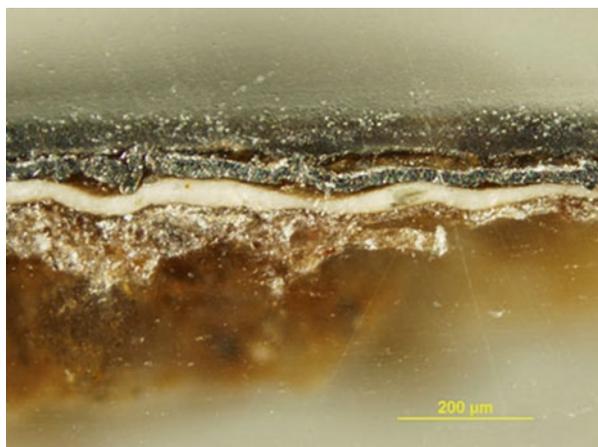


Fig. 16 Thick metallic leaf and white ground; a yellowish glaze is visible over the metal leaf. Photomicrograph: Y. Taniguchi

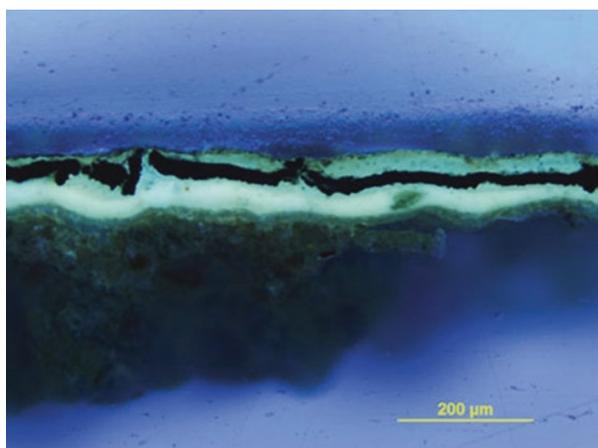


Fig. 17 White ground shows whitish fluorescence under UV radiation. Photomicrograph: Y. Taniguchi

Areas mapped included mordant, white ground, and lower organic layers. Mordant (A) shows intense $\nu(\text{C-H})$ [a] and $\nu(\text{C=O})$ [b], $\delta(\text{C-H})$, $\nu(\text{C-O})$ [c], thereby indicating the presence of an oil-based material. Because the mordant constitutes a thick layer, it was originally a drying oil that hardened due to oxidation. The yellowish translucent layer under the white ground shows a similar spectrum to (A). Therefore, it could be also drying oil.

The white ground (B) shows intense absorption of $\nu(\text{O-H})$ at 3535 cm^{-1} [d]. It is common to the hydroxide salt of lead. There is also an absorption of carbonate at 1400 cm^{-1} [e]. An intense absorption at 1520 cm^{-1} is also visible [f], which is a typical $\nu\text{AS}(\text{C=O})$ to

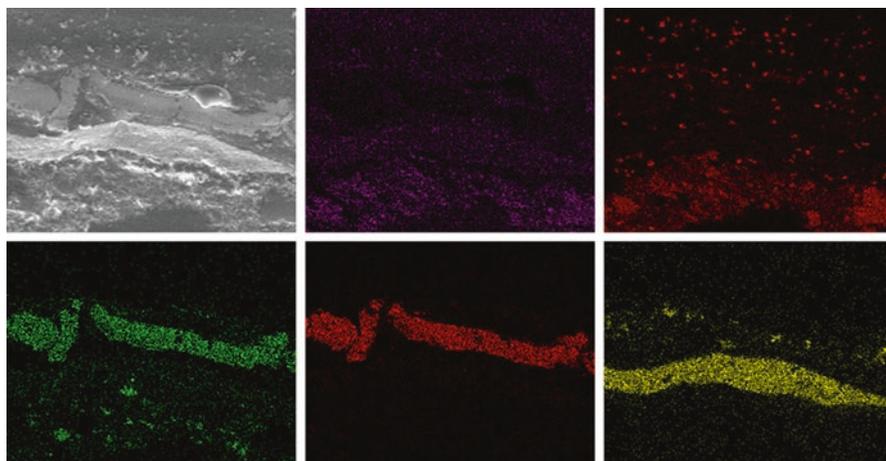


Fig. 18 Elemental mapping by SEM-EDS (BMM186). (© Y. Taniguchi)

lead soap and carboxyl. This white ground also absorbs lead white [$\nu(\text{O-H})$], thereby indicating hydrocerussite (PbCO_3) \cdot $\text{Pb}(\text{OH})_2$ as a hydroxide with a lead soap.

Lead soaps can be created by heating lead white and oil, and then mixing them with water, which suspends the paste in white (Cotte et al. 2006). However, it is not clear whether the white ground was created intentionally using lead white, drying oil, and water, or whether it was the result of natural saponification. Review of further examples in Central Asia is essential in order to determine this.

With regard to the yellowish translucent organic material applied to the surface of the tin leaf, it is still unknown if any yellow organic dyestuff was added to the natural resin or not(C). The surface shows absorption at 1320 cm^{-1} which indicates calcium oxalate, matching elemental analyses of this area (Fig. 19).

6 Conclusions

This analysis has revealed that Bamiyan's wall paintings incorporate various organic materials such as drying oils, lead soap, and natural resin. A sizing layer was applied to the surface of earthen render, then a layer of drying oil, and white ground mixed with lead soap. It is not clear if the lead soap was created by chance or by purposely mixing and heating lead white, drying oil, and water. Drying oil was used as mordant which adhered the thick tin leaf onto the earthen render. Black lines were used to depict animal and scroll patterns, and the background was filled with deep red vermilion. The tin leaf was given gold effect through the use of a yellowish resinous varnish. It is not clear if these sophisticated paint techniques were widely used across Central Asia.

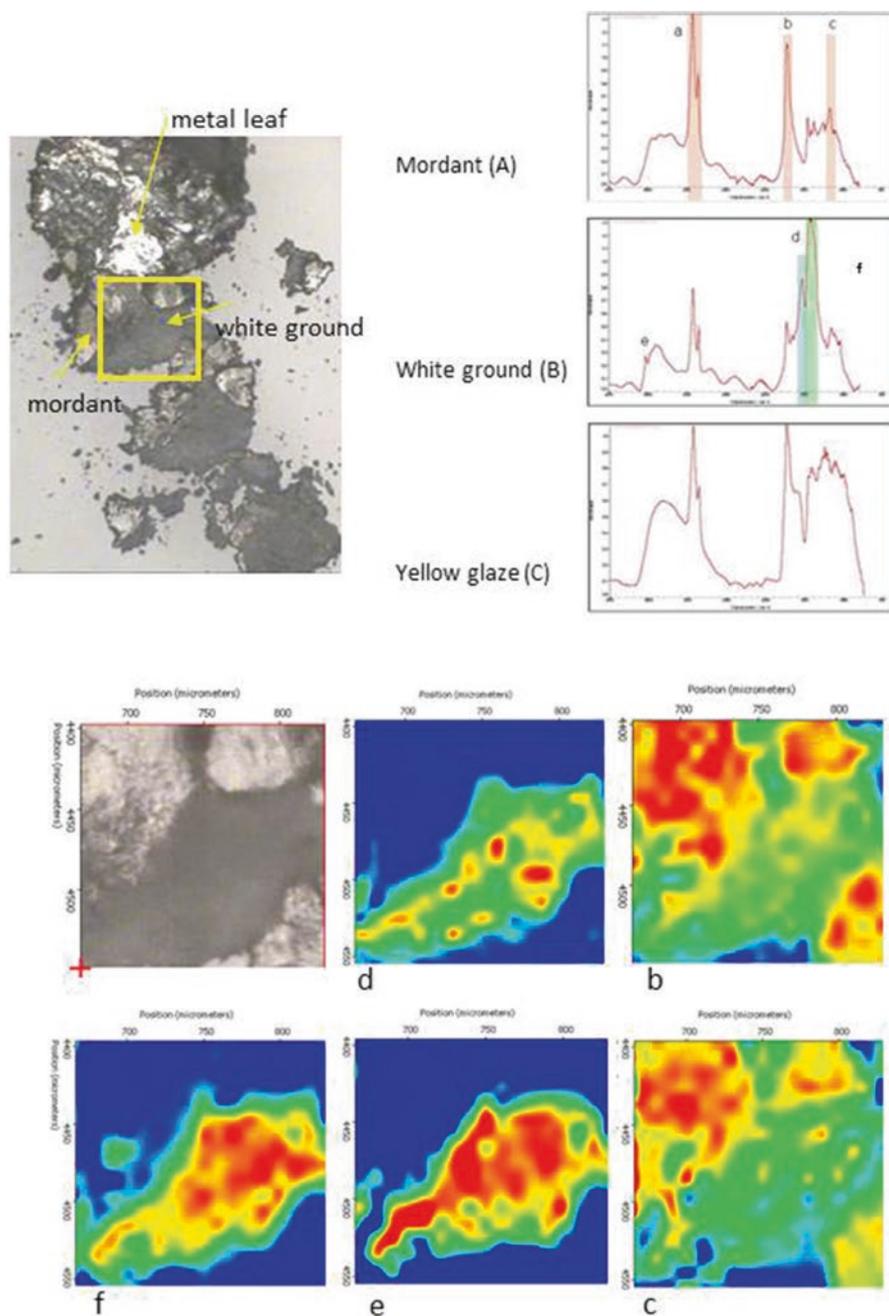


Fig. 19 SR- μ FTIR of a golden varnish area of the wild pig figure (BMM178). (© Y. Taniguchi)

In Europe's Middle Ages, tin leaves were often coloured with *auripetrum* (yellow or reddish varnish coloured with saffron or lac) to imitate gold leaf (Laurie 1910). The link between this medieval European practice and the technology found in ancient Bamiyan is of keen interest. It is still unclear how this technique was introduced to Bamiyan.

Owing to extensive damage at the Bamiyan site, many of the Buddha statues and wall paintings have been lost; however, even after destruction, extensive information on constituent materials, technologies of creation, original colours, and chronological data with ^{14}C has been unveiled. The present just may be the most well-studied period of the site since Bamiyan was created.

102 pieces of displaced cultural property from Bamiyan were returned to Afghanistan in 2016. Numerous wall painting fragments were included in the collection and will hopefully be returned to the original location, or at least to the local museum that will be established one day. The returned objects were mounted in a manner that allowed for their safe detachment to facilitate their return to their original location.

In Cave N(a), reconstruction of the original wall paintings was attempted by Yuki Watanuki from Tokyo University of the Arts using original materials and techniques (Figs. 20 and 21). Watanuki applied a golden varnish over the tin leaf and animal motifs and used vivid red, green, and blue colours like the ones that once decorated the wall paintings. Her work revives the mid-seventh century's Buddhist art to modern times. It helps us imagine the prosperity of the Bamiyan Valley when these works were created.



Fig. 20 Reconstruction of the original oil wall painting by Yuki Watanuki (Cave N(a)).
(© Y. Watanuki)



Fig. 21 Details of reconstruction, arabesque pattern, and animal motifs. (© Y. Watanuki)

Bamiyan is not dead; it continues to live as a city with innumerable markings of how it once flourished. At present, there are no practicing Buddhists and no spaces for the practice of Buddhism remaining in the Bamiyan site. However, the Bamiyan site is full of new findings. Information of high academic value continues to emerge from dry adobe plasters that will tell us stories from a Buddhist era. The approach taken with regard to the Bamiyan wall paintings and Buddha statues during our current conservation project has given the world a variety of results offering testimony to the remarkable manufacturing technologies of the time. Genuine archaeological remnants speak on their own. There is no need for any reconstruction of the Great Buddhas, for doing so offers only superficial appearances without any scientific significance or substance. We believe that new knowledge from the original works has acted as an important key for enhancing the interest of local residents in their heritage and for forging a unity of their own.

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