



REPLICATION OF ROCK PAINTINGS AT CHATURBHUJNATH NALA
ON BHANPURA PLATEAU IN CHAMBAL VALLEY, INDIA - PART 1

Project Introduction

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SUMMARY

Chaturbhujnath Nala is a magnificent rock art gallery in India. It has more than 2500 compositions of rock art made by additive technique by using mineral colours. The site is a drift Valley, located in the Gandhisagar Wildlife Sanctuary in Chambal Valley, Bhanpura region, district Mandsaur, in Madhya Pradesh. Replication is to understand the preproduction and production processes of the creation of rock art compositions, such as conceptualisation of an idea and the theme of the composition, form, style and technique of its execution, planning and strategy to execute it such as colour to be used, exploration of the earthen pigments, its processing and technique to obtain colour from it, making proper brush(es) to execute it, selection of the site and location of its execution and the process of the execution of the conceptualised idea. However, understanding the objective of the creation of rock art composition is a tedious task. Thus, replication of rock art is to understand the cognitive, technological and cultural development of the early man. It is to explore the epistemology of cognition and the processes of the technological and cultural development. The results so obtained can be checked by anyone at any time, hence the method is scientific. It is a major project involving a lot of exercise in the rock art studio, field work, laboratory analysis and literature review, which will take many years to complete. However, we are presenting here the preliminary results of our initial work carried out in the first half of the year 2021, in the peak time of pandemic Covid-19 in India. It is a primary work to be followed by more extensive research in the field and laboratory in the coming time. The present paper gives a brief introduction of the project. Other aspects of our practical work will be discussed in the following five papers by our team.

Keywords: Replication, Rock paintings, Chaturbhujnath Nala- India- Cognitive and Cultural development.

RIASSUNTO (PRIMA PARTE: INTRODUZIONE AL PROGETTO)

Chaturbhujnath Nala, in India, è una magnifica galleria di arte rupestre. Ha più di 2500 pitture rupestri realizzate utilizzando colori minerali. Il sito si trova nel Gandhisagar Wildlife Sanctuary nella valle di Chambal, nella regione di Bhanpura, nel distretto di Mandsaur, nel Madhya Pradesh. Cercare di replicare queste pitture significa comprendere tutti quei processi di pre-produzione e produzione che hanno portato alla loro composizione: la concettualizzazione di un'idea e il tema; la forma, lo stile e la tecnica della sua esecuzione; la pianificazione e la strategia per eseguirla; la scelta del colore, la sua fabbricazione a partire dai pigmenti naturali reperibili sul territorio e la loro lavorazione; la realizzazione di pennelli appropriati; la selezione del sito e dell'asposizione dove eseguire l'idea concettualizzata. Replicare un'opera rupestre significa comprendere lo sviluppo cognitivo, tecnologico e culturale dell'uomo primitivo. Si tratta di esplorare l'epistemologia della cognizione e i processi di sviluppo tecnologico e culturale. I risultati da noi ottenuti possono essere verificati da chiunque in qualsiasi momento, quindi il metodo è scientifico. Si tratta di un grande progetto che ha richiesto molti approfondimenti nello studio dell'arte rupestre, lavoro sul campo, analisi di laboratorio e revisione della letteratura. Abbiamo ancora molto da fare e lo studio richiederà ancora molti anni per essere completato. Tuttavia, presentiamo qui i risultati preliminari del lavoro, svoltosi nella prima metà del 2021, all'apice della pandemia di Covid-19 in India. Si tratta di un lavoro fondamentale a cui faranno seguito, in futuro, ricerche più approfondite sul campo e in laboratorio. Questo articolo fornisce una breve introduzione al progetto. Alcuni aspetti, più pratici, saranno approfonditi e descritti negli articoli seguenti redatti dal nostro team.

Parole chiave: Replica, pitture rupestri, Chaturbhujnath Nala, India, sviluppo cognitivo e culturale.

1. RATIONALE

Rock art is conscious externalisation of the perceived reality by the early humans on the bare surface of rock. It is found in the rockshelters, caves and on the rocks in the open. Rock art is a global phenomenon and is found in all the continents except Antarctica. It forms the archaic visual manifestations of humankind, the only creative source which has survived the vagaries of time, other creative forms like dance, music, language, etc could not survive. Hence, rock art is the only source for the study of the constructs of reality of early-human. If studied scientifically, it is capable

of shedding light on the tangible and intangible aspects of the cultural heritage we have inherited from our early ancestors. This awareness is very significant to know about ourselves, our identity as humans, our relationship with nature, our capabilities and accountability for sustaining the natural and cultural environment.

Replication of rock art is one of the scientific methods for such kind of study, especially to understand the cognitive, technological and cultural development of early man. Replication of rock paintings of Chaturbhujnath Nala is the first project of its kind in India. It

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is to understand the preproduction and production processes of the creation of rock art compositions by additive technique.

We have successfully carried out the replication of early cupules of Daraki-Chattan Cave (DC), on hard quartzite rock (Krishna and Kumar 2012a, 2012b, 2012c, 2016; Kumar and Krishna 2014). DC is an important Palaeolithic petroglyph site in the river Chambal basin in Bhanpura region in India. It gave us confidence to undertake the present project.

2. OBJECTIVES

The main objectives of the project are to understand

1. The knowledge and wisdom of the authors of rock art at Chaturbhujnath Nala
2. Tools, material and technical specifications used, skills employed, reasons for selection of the spot and the site for creating specific compositions.
3. Intelligence and cultural impulses working behind the compositions.
4. The concept of the composition.
5. The Cognitive, Technological and Cultural development of its authors in different periods.

3. METHODOLOGY

To achieve the desired objectives the following methodology was adopted:

3.1 Literature review

Literature review has been made to update ourselves about the replication of the rock paintings in India and in the overseas countries, methods and techniques used and difficulties faced. The process will continue for more updates.

3.2 Pre-Production preparations, processes and planning

For the initial work we selected six Mesolithic Stone Age compositions (Broad Group I) and five Chariots from the cattle domestication mode of life and thought process (Broad Group II). The criteria of the selection of the compositions were that they must be clear to study, from which one could have the basic understanding of the form, proportions, quality of strokes, brush movement and observe other details.

3.3 Rock painting production processes, tangible and if possible intangible

A thorough study of the composition to be replicated, selection of the replication site, collection of the material for making brushes, preparation of the brushes to be used, finding the source and collection of the Iron Oxide colour pigments, process to prepare the colour from the pigment nodules, experiment with colour binder, preparation of colour chart, selection of the spot to the possible similar location to its original site, experience so obtained and observations made.

3.4 Recording and discussion

Photographic documentation of the ongoing replication process and the composition so produced, discussion on the experience and observations made, notes taken, etc.

3.5 Concluding remarks

SCOPE OF THE PROJECT

From the methodology to be followed one can understand that the scope of the project is vast and multidisciplinary. It will involve the understanding of the fundamentals of art and design, practical replication of the rock art compositions, use of science and technology, SEM and Portable field microscopes, other portable equipment and machines. These will be used at the site without interfering with rock art. The field work will be followed by laboratory and studio work, tangible and intangible study of the rock art production by the rock art scientists, technocrats, designers, artists and social scientists.

The present work is an initial phase of the preliminary exploratory work.

5. THE TEAM

Our team consists of:

1. Ram Krishna, an engineer and social scientist. He was also a team member of the DC cupule replication project.
2. Hridayshri, a professional artist and communication designer.
3. Geetanjali, a PG Research Scholar of Archaeology and Heritage Management.
4. Giriraj Kumar, Professor in rock art science and Indian Culture. Director of the Replication Project.

For further advanced study we will need the help of mineralogists, geochemists and physicists for the scientific study of the minerals in the field and in the laboratory.

6. CHATURBHUJNATH NALA ROCK ART SITE

Chaturbhujnath Nala is a magnificent and richly painted rock art gallery in India. It is a wonderful rock art site in Bhanpura plateau in Chambal valley and located in the Dry Tropical Forest of Gandhisagar wildlife sanctuary (Fig. 1). The site acquires its name because of the temple of Chaturbhujnath, the lord Vishnu (Fig. 2). It stands on the left bank of natural water reservoir in the nala which holds water throughout the year.

The nala starts near Prempuria village as a shallow small channel in quartzite rock, which gradually goes on deepening and falls in a big reservoir near the Chaturbhujnath temple, nearly 6 km downstream from Prempuria. From here onwards the nala flows in a rift valley forming nearly 6 km long gorge. The gorge continues downwards having painted rock shelters on its both sides and opens near Rawatbhata road where the nala is locally known as Bhadkaji nala. It proceeds further to meet river Chambal, which has been submerged now under the water of Rawatbhata-Rana Pratap Atomic Power Project (RAPP) water reservoir.

Rockshelters of Chaturbhujnath Nala are like a long continuous arch of low shelters with pseudo or almost no partition, about one kilometre long on its right bank. Besides it, there are four more comparatively smaller chains, two on the right bank and two on the left.

The rock art of Chaturbhujnath Nala is still in its pristine condition except natural deterioration and a little human vandalism in some cases. We have studied

over 2500 compositions which present varied aspects of life and cognitive development of hunter-foragers of pre-cattle domestication Stone Age (Period-I) and early pastorals of the Neolithic-Chalcolithic and Historic Age (Period-II). The figures vividly depict their understanding of the nature, challenges faced, inventions made and varied devices they created to meet them, and above all their spirit to live a happy life in harmony with nature. However, the most important feature of the rock art of Chaturbhujnath Nala is the presentation of a distinct picture of transition from hunting-food-gathering mode of life to cattle domestication, which started with humpless cattle (bull) in the late Mesolithic Age, sometimes in the mid Holocene period or a little bit early. The miniature form of figures, sometimes less than 10 mm in length and height, is one of the unique features of early pastoral rock art of Chaturbhujnath Nala.

The rock art compositions show that the artists were keen observers of the play of the nature and role of humans in it. They deeply observed the natural phenomenon and life cycle going on in it, and their own life as a part of it. They expressed their observations and feelings in an effective and powerful way in the form of creations of rock art compositions. For that they efficiently picked up specific moments of the episode of life and nature, composed and presented them in rock art artistically in such a way that the visitor can visualise the whole incident happening in front of him and feel the thrill, excitement, fear and joy in a powerful way. It is a celebration of life in harmony with nature, full of energy, spirit and social gaiety. It is a blissful experience to feel it happening.

The legacy of the creative traditions of Chaturbhujnath Nala continues in the present pastoral communities and tribes of the region. It is reflected in the construction and decoration of their houses, celebration of festivals, religious functions and affection with their animal stocks. Thus, their art echoes their integrity with nature and deep affection with their animals. It also reflects their joy, enthusiasm and folk gaiety (Kumar 2007, 2022; Kumar and Pradhan 2008).

7. SELECTION OF THE REPLICATION SITE

For selection of the rock art replication site the first author discussed the matter with his friend, Robert Bednarik from Australia. He advised that in order to avoid any confusion with the original rock art and replicated compositions, the replication site should be far away from CBN rock art site, and should be devoid of any rock art. It was a nice advice which we followed in letter and spirit and selected a rockshelter for replication near Bada-Mahadev, about 32 km southeast of Chaturbhujnath Nala rock art site (CBN).

Bada-Mahadev is a natural waterfall site which has been converted as a Shiva temple. The waterfall becomes live and forceful in the rainy season. Thus, it is a religious-cum tourist site, very popular in the region and nearby area. It is located in a quartzite cliff of the Bhanpura plateau, about 3 km north of the town and nearly half kilometre southeast of DC.

The cliff near the waterfall bears some rockshelters on its both sides which are devoid of rock art. We selected one of such rockshelters on the eastern side of the waterfall for replication of CBN rock art compositions. It is situated on the cliff, right side of the Baba-ki-Kutia, a rockshelter converted in to a hut. The replication rockshelter is located at 24° 31' 37" N, 75° 40' 20" E. It is L shape with two faces, A on left side and B on right side. A is bigger than B. The dimension of A is L 9.0 m x D 4.0 m x H 3.5 m, and that of B is L 6.80 m x D 2.00 m x H 2.00 m. Face A is facing 304° NW and B 230° SW. We named it as CBN Rock Art Replication laboratory, Bada-Mahadev, Bhanpura.

8. PRE-PRODUCTION PREPARATIONS AND PROCESSES

8.1 Literature review

Replication of the rock paintings of Chaturbhujnath Nala is the first project of its kind in India. Erwin Neumayer (1983) and Y. Mathpal (1985) copied the figures. V. S. Wakankar (WAKANKAR, BROOKS 1976) did some experiments with making the brush and preparing the pigments, but not with the replication of figures and compositions to understand the cognitive and cultural development of their authors.

In the overseas countries a lot of work has been done on the chemistry of the pigments (pigmentology) and tried to understand the nature of the pigment used, binders, extenders and fixers employed for stability of the rock paintings. A review of some of them has been given below.

To understand the red pigment used in the Cougnac Cave in France Loblanchet did experiment on the yellow ochre found in front of the Cave. It was transformed in to red by heating on a stone pan. The colour was the same as used in the Cougnac Cave (LORBLANCHET *et al.* 1990). He concludes that if the pigment procured locally, it has been a routine exercise. If procured from distance then it might be an important event, might be ritualistic as in the case of Wilgie Ochre Mine in Australia as a source of ochre, which is still in operation.

The analytical results of the pigments in the Niaux paintings in France indicate that, more than 12000 years ago, artists working within a restricted area utilised a number of paint recipes which were most probably not used at the same time. These recipes are thus chronologically relevant and could hopefully assist in dating the paintings (CLOTES *et al.* 1990). Ethnobotanical data from Laura, north Queensland in Australia and the analyses conducted so far suggest that fibres may occur as by-products or as integral components of the painting process (COLE, WATCHMAN 1992).

Hodgskiss, Tamaryn Penny (2013) carried out a detailed study on the ochre use at Sibudu Cave, a Middle Stone Age site in northern KwaZulu-Natal in South Africa. A gist of it is given below:

Once the activities performed with ochre were established, thought-and-action sequences, or cognigrams, were constructed. This helped establish the steps involved in each activity and the temporal and physical distance between the commencement of a task to

its completion. Inferential sequences were constructed to establish the procedures and knowledge needed to complete an activity, thereby establishing the cognitive prerequisites. Cognitive interpretations are made using the concept of enhanced executive functions of the brain. The construction of the inferential thought and action sequences showed that the various ways that ochre was used have different cognitive requirements.

Powder-production alone is not an indicator of complex cognitive processes, although some planning, foresight and knowledge of materials is required. Some of the powder was used in the creation of hafting adhesives, which is a cognitively demanding process requiring attention-switching ability, response inhibition and abstract thought. Grinding ochre and then rubbing the piece on a soft material for the direct transfer of powder does require some complex mental abilities, such as multi-tasking and switching attention. Scoring a piece of ochre with a sharp tool does not necessitate enhanced executive functions, but some engravings demonstrate foresight, intentionality and an awareness of space and symmetry that may demonstrate abstract thought. This research provides a complete description of the Middle Stone Age ochre assemblage at Sibudu, and establishes the way that ochre was used at the site. Previously A. Marshack (1981) also carried study on Palaeolithic ochre and the early uses of colour and symbol.

Rebecca O'Sullivan (2020) carried out work on, 'Replication in Rock Art Past and Present: a Case Study of Bronze and Iron Age Rock Art in the Altai, Eastern Eurasia.

In India V. S. Wakankar and Robert R. Brooks did experiments to obtain colour by grinding haematite nodules, brush making from palmetto twigs (or porcupine quills for fine work) and dronas (cups) made of folded leaves of dhak (*Butea monosperma*) and copying the rock art compositions (WAKANKAR, BROOKS 1976, pp. 13-14). Y. Mathpal copied most of the compositions of Bhimbetka Hill 3 by using modern brushes (MATHPAL 1984). The pigment analysis at Bhimbetka and Modi in Madhya Pradesh was made by S. Subbarao and S. S. Kamavisdar (1980), at Mizapur in Uttar Pradesh by Tej Singh and Kamal K. Jain (1990, pp. 56-57) and by Katta

Ganeswar Rao and his team in Telangana (RAO *et al.* 2019, pp. 9-14). It indicates that pigments used in Indian rock paintings were earthen colours of Iron Oxide. The literature review is still going on, however from the present exercise it becomes clear that there are fields which were not given much attention such as use of binders and its effect on the stability and viscosity of the paint, understanding location of the rock art composition on the site, convenience and suitability to produce it and visual effectiveness from the spot of its location. Similarly, the cultural aspect of the colour processing is missing in the studies so far made, though technology of colour preparation is there. Attention to them may add new vision to understand the processes of rock art production and cognitive, technological and cultural development of its authors.

8.2 Replication Processes

We are presenting the processes of rock painting replication in different parts for the convenience of study and understanding.

Part I: The Project Introduction

Part IIa and IIb: Study of the selected rock art compositions on the site

Part III: Collection and study of the pigments used and bringing out colour from them

Part IV: Making the brushes

Part V: Replication of the processes of the rock art production and our observations

9. REMARKS

Through replication of the rock art of Chaturbhujnath Nala we are trying to understand the characteristic features and concept of the composition(s), the theme and technique used, selection of the pigment, site and spot to execute it, height of the composition from the rockshelter floor, understanding the convenience for creating the composition and visual effectiveness, etc. It will help to evaluate the ability of the authors of rock art to conceptualise an idea, skill and efficiency to execute it on the bare surface of rock, and to understand his cognitive and cultural development.

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Fig. 1 - Chaturbhujnath Nala rock art gallery in Gandhisagar Wildlife Sanctuary in Chambal Valley in India.



Fig. 2 - Chaturbhujnath temple on the left bank of the nala.

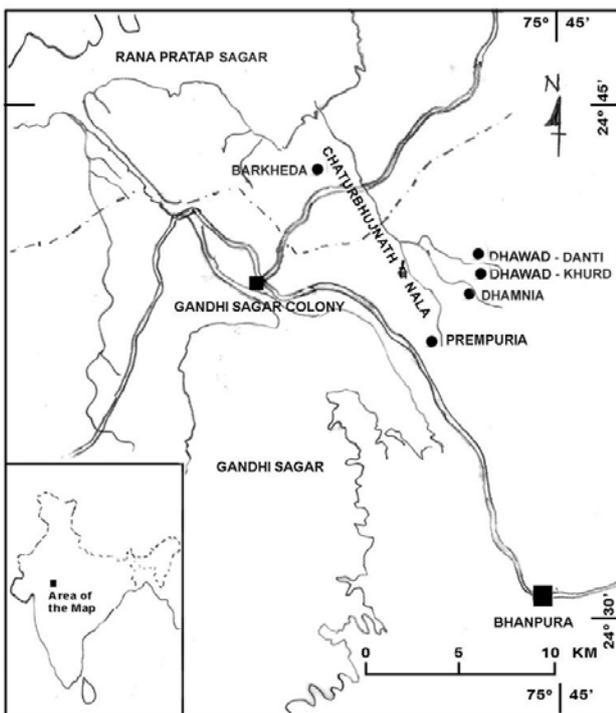


Fig. 3 - Map showing the location of Chaturbhujnath Nala in Chambal valley in Bhanpura region in Madhya Pradesh, India.

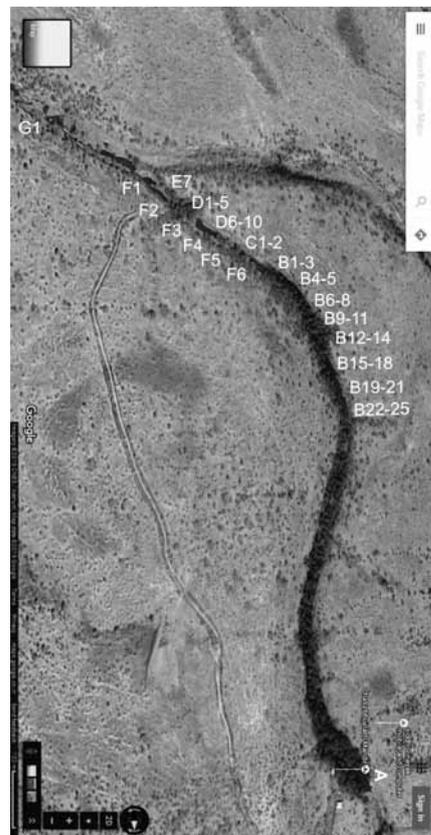


Fig. 4 - Satellite map of Chaturbhujnath Nala showing rockshelter groups.