BRIEF REPORTS

New data on Venezuelan rock art

By KAROLINA JUSZCZYK
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1. Introduction

The central-northern coast of Venezuela is a mountainous region characterised by the forested hills and valleys of the Cordillera de la Costa. In pre-Hispanic times, this area functioned as a natural boundary between the coastal beaches and the interior of the continent, traversed by pathways running along river valleys. The body of this research contributes to the cultural heritage of the historical Tacarigüa region (Páez 2021) and broader circum-Caribbean region (Steward 1948), a significant area where pre-Hispanic communities likely established and maintained local and regional mobility and exchange networks while navigating various water routes among the islands (Hofman et al. 2010: 4). The ethnoarchaeological roots of the communities that settled this area trace back to the central Amazon, from where numerous migrations of people to the north took place (Antczak et al. 2017).

No excavations in the rock art contexts have been done so far. The chronology of these sites is not precisely known due to the lack of comparative material for dating. Some stylistic analyses have been made by researchers (i.e. Padilla 2009; Sujo Volsky 2007). The present documented material was developed in 2022 and corresponds to the graphic aesthetics of the whole circum-Caribbean and Amazonian region.

2. Research query

Although Venezuelan rock art sites have been documented since the 19th century (e.g. Rojas 1953 [1878]; Marcano 1971 [1889]), the central-northern coast remains underexplored and lacks comprehensive documentation. In 2021 and 2022, we conducted research focused on the modern documentation of sites featuring rock art.

This work was preceded by a thorough query of library and archival materials to collect documentary evidence produced by earlier researchers, including Tavera Acosta (1956), Cruxent (1960), Delgado (1977), Idler (1985) and Sujo Volsky (2007), among others. Although there were many investigators working on rock art, there has been very little graphical material published so far. The most comprehensive rock art catalogue was published by Jeannie Sujo Volsky and Ruby de Valencia in 1987. Based on this catalogue, we selected 122 rock art sites for investigation. However, it quickly became apparent that since its publication, many of these sites have disappeared or been destroyed due to natural and human factors. Therefore, the fieldwork commenced with land surveys searching for rock art sites.

3. Fieldwork methodology

The documentation of each rock with petroglyphs included topographic measurements using a manual Garmin eTrex20 GPS, photography with a scale, a north arrow, and an IFRAO Standard Scale (Bednarik 1991: 78; Fig. 1). Additionally, it recorded basic inventory information, including the numbering and details of individual sites and boulders, their landscape and the petroglyphs themselves. This included orientation with respect to the cardinal directions, state of preservation (considering both natural and anthropogenic factors) and the rock art signs.

As the rock has a metamorphic origin, its surface is black and glitters, reflecting light in the camera. This makes the petroglyphs difficult to distinguish from the rock surface. In this case, traditional photography was not sufficient for proper documentation, which required us to create 3D photogrammetry of all the decorated panels using a Canon EOS 50D camera.

The documentation of petroglyphs was made

Figure 1. *Photographic documentation of a rock art boulder.*

Figure 2. *A view of a 3D mesh model in Agisoft Metashape software.*

possible by the assistance and guidance of colleagues, friends and local people who accompanied us through different stages of the fieldwork. They provided us with common local knowledge and stories about rock art and its history in that region, which significantly enriched the data acquired from the literature.

4. Data elaboration

The fieldwork documentation was digitised and processed using various software programs. We created 3D models of almost all documented boulders in Agisoft Metashape (Fig. 2). These models provide a complete overview of all panels and allow for significant close-ups of petroglyph details. Next, we generated separate orthophoto 2D views (Fig. 3a) of the decorated panels and inserted them as raster matrix files into AutoCAD. Finally, we redrew all visible petroglyphs from the orthophotos in vector form, producing complete drawings of the rock panels with petroglyphs (Fig. 3b).

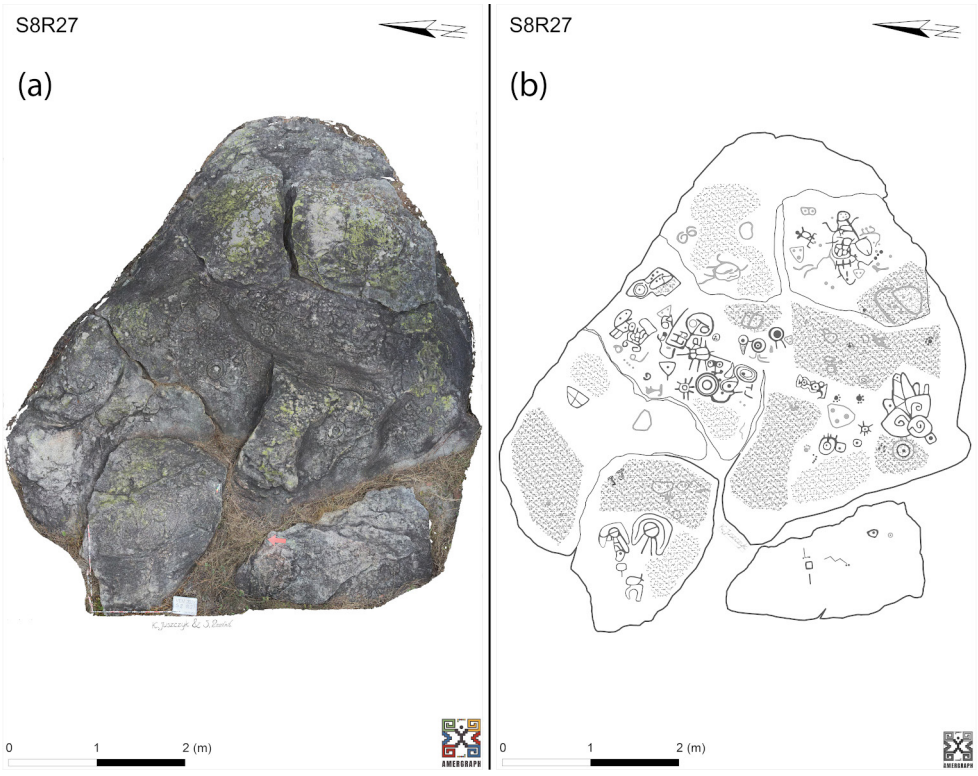

Figure 3. *Examples of a 2D orthophoto view (a) and a CAD drawing (b).*

We processed the descriptive documentation along with GPS coordinates in MS Excel to create a database containing all the documented data, which was then transferred to QuantumGIS (Geographical Information System software). This database facilitates locating specific features, such as boulders and motifs and enables geospatial analysis of documented boulders.

As a preliminary analysis of the collected data, we conducted an initial classification of the petroglyphs. We fol-

lowed the approach of Clados et al. (2022), distinguishing individual graphic units based on Panofsky's (2006 [1975]) method, which differentiates signs at the graphic level. Additionally, all collected data on sites, boulders and individual graphic units were subjected to basic statistical analyses.

5. Results

We documented 275 rocks with petroglyphs across 35 sites within a 4682 km² area, encompassing the Venezuelan states of the Capital District, La Guaira, Miranda, Aragua and Carabobo (Fig. 4). The investigation identified four complex sites, each with more than ten boulders, and 31 sites with isolated petroglyph-bearing boulders. The documented complex sites are Museo Piedra Pintada in Vigírima (111 boulders), Montalbán (34 boulders), Patio Domingo Flores in Carabobo (19 boulders), La Cumaca in Carabobo (11 boulders).

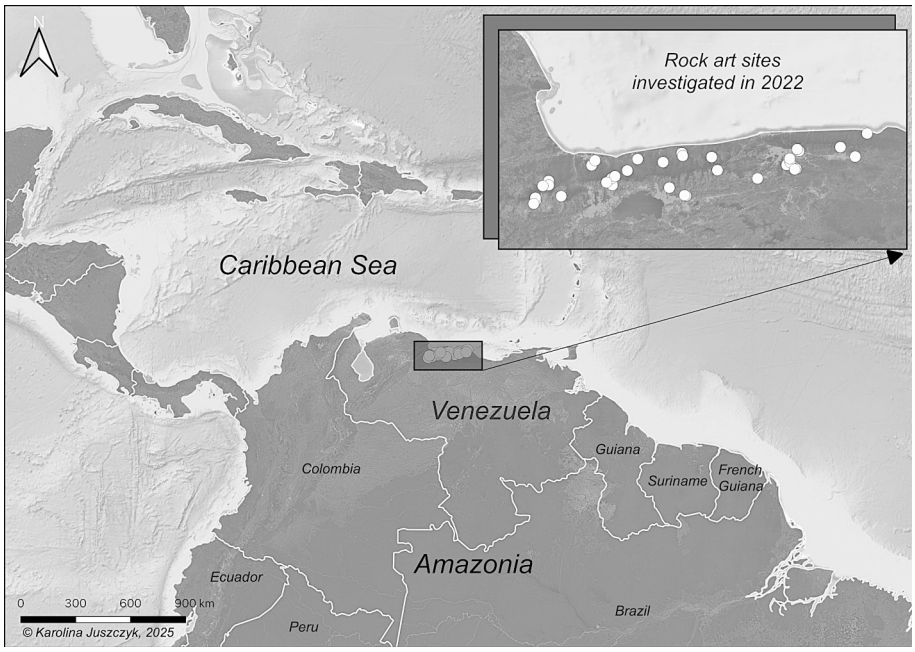

Figure 4. *Locations of the rock art sites investigated in 2022.*

As a result of descriptive and graphical data processing, we prepared a catalogue comprising geographical data, descriptions, photographs, and drawings of all documented boulders, providing a comprehensive record of these cultural artefacts (Juszczyk 2023).

Thanks to the GIS database and statistical analyses, preliminary conclusions concerning boulders with petroglyphs can be drawn. Of all the registered boulders, the petroglyphs have survived in a very good condition on only 31%, while as many as 69% are damaged, caused by thermal and eolithic weathering, as well as mud and rockslides. Specific site concentrations appear in some areas, such as central Carabobo and northern Miranda. The analysis indicates that the petroglyphs' creators preferred no particular orientation in any part of the investigated area analysed so far. Additionally, 37% of the registered sites are situated near water sources, such as river corridors.

The boulders range in size from several dozen centimetres to a few metres in length and height, with one to six engraved panels containing single or multiple motifs on each. The petroglyphs, made using various techniques and likely different tools, range from 5 to 60 mm in depth and 5 to 25 mm in width (the deepest of them are considered to be mortars). We found a few examples of petroglyphs made with metal tools, which may suggest their colonial origin. Apart from the technical diversity of the petroglyphs, we preliminarily observed at least four distinct styles that appear to reflect different aesthetic traditions (Fig. 5).

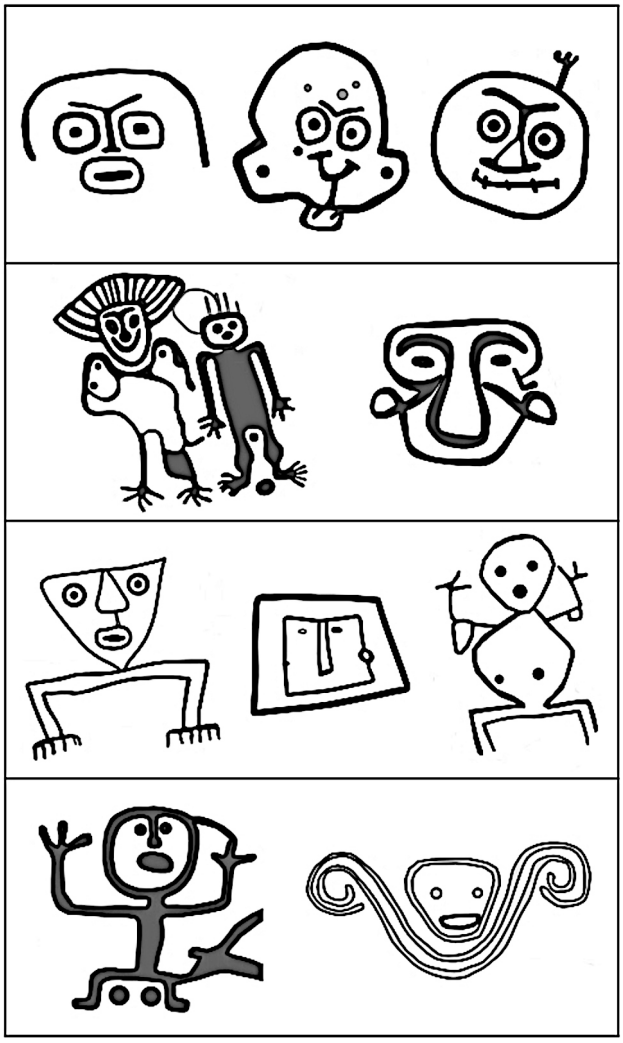

Figure 5. *Examples of four rock art styles identified in the investigated area.*

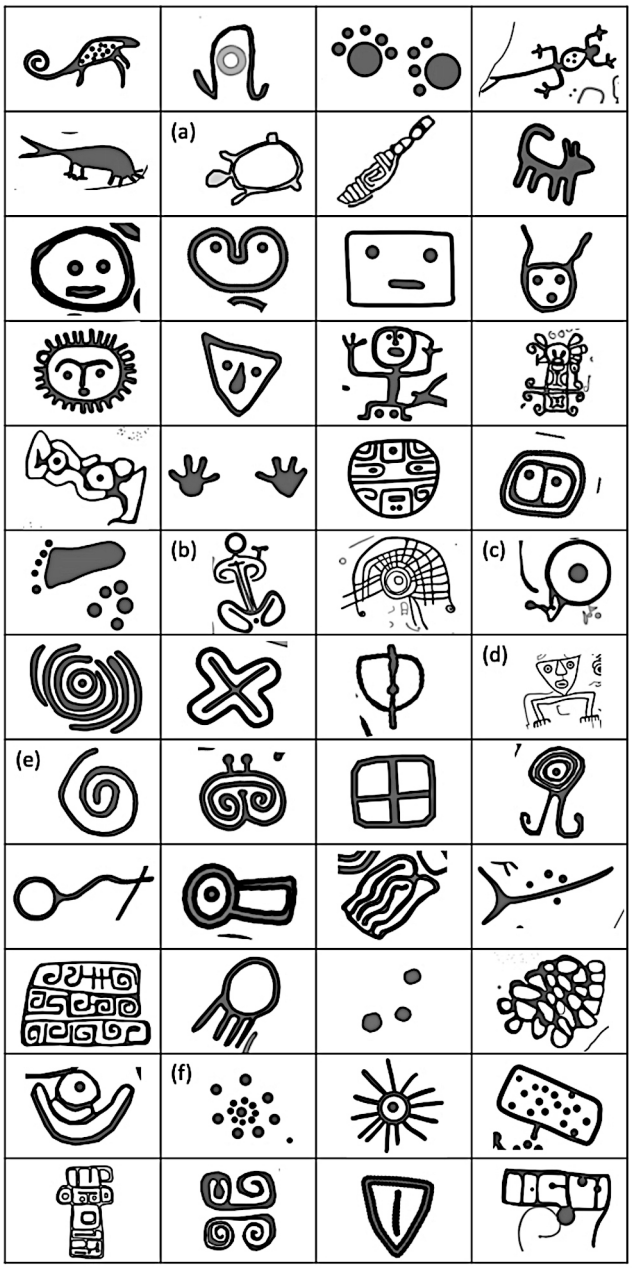

Figure 6. *The representations of the distinguished 48 graphic units, with the less common ones being (a) 'frog', (b) 'woman giving birth', (d) 'double legs', while the most common ones are (c) circle with a dot, (e) spiral, and (f) dots.*

The repertoire of documented rock art signs is diverse and complex. While analysing the digitised graphic data, we distinguished 48 graphic units (items distinguished on the graphical level that is under investigation; Clados et al. 2022) (Fig. 6). These labels serve only for identification purposes and do not reflect semantic value. The most common graphic units are the dots (cupules, found on 40% of all boulders), spirals (35.6%) and circles with dots (27.6%). In contrast, some unique or rare signs to mention include 'frogs' (0.4%), 'women giving birth' (0.7%) and 'double legs' (1.1%) (Fig.7). A total of 71 boulders display a single graphic unit, while one boulder bears as many as 27.

The graphic units and aesthetics of the documented petroglyphs resemble the graphic conventions of the Amazon and Caribbean. Our initial analysis of rock art analogies from Amazonian sites revealed graphical correspondences between the rock art of northern-central Venezuela and the Amazonian region (see Greer 2001; Pérez Gómez and Swidorowicz 2023; Riris et al. 2024). This supports previous research on the migratory movements of pre-Hispanic people from the lower Amazon and Middle Orinoco northward (Antczak et al. 2017; Oliver 1989). These preliminary results provide a solid foundation for future in-depth investigations.

Venezuela lacks a comprehensive inventory of rock art sites. From the prepared list of 122 sites (Valencia and Sujo 1987), we were able to reach six of them, which stands only for 4.9% of the total. The remaining 29 documented sites correspond to newly identified sites (Juszczyk 2023). Our catalogue is the result of

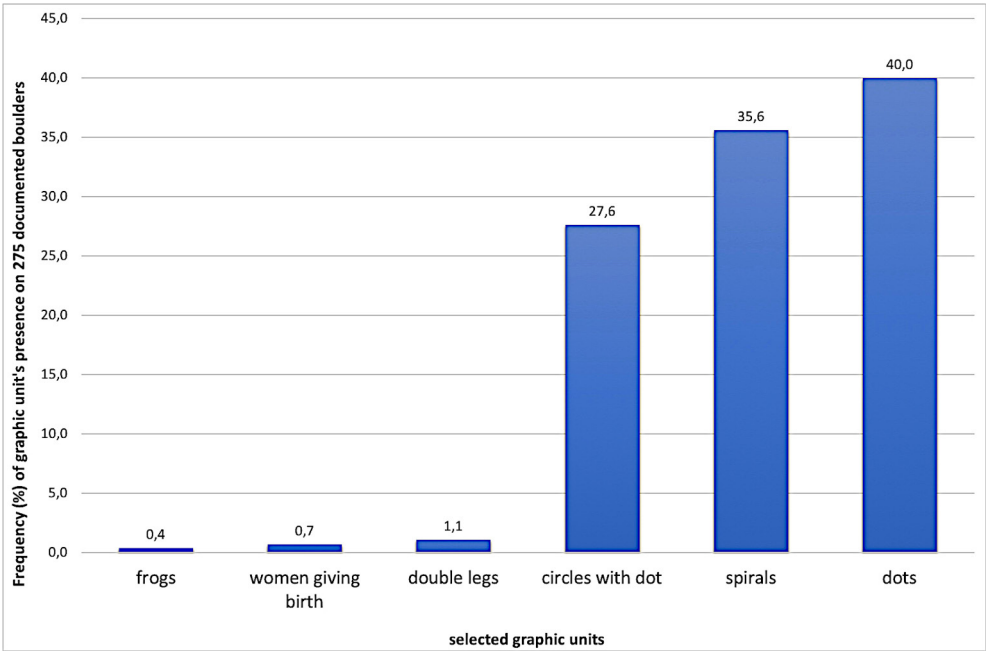

Figure 7. *Percentage distribution of the selected graphic units.*

the most systematic registration possible of rock art in northern-central Venezuela.

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Antlion pits and the origin of cupules: an ethological hypothesis for rock art

By ANIL KUMAR and DHAMMITRA

Cupules are among the most enduring and widespread forms of pre-Historic rock art. They have been recorded on virtually every inhabited continent, across environments that range from the sandstone outcrops of central India to the granite boulders of Australia and the basalt flows of Africa. In some cases, cupules have been dated to the Lower Palaeolithic, placing them among the earliest known expressions of symbolic human behaviour. The famous Daraki-Chattan cave in India, for instance, contains over 500 cupules predating the Acheulian. The diversity of cupule contexts complicates interpretation: they appear on horizontal and vertical surfaces, in caves and open-air settings, and in association with water sources, burial grounds and ritual locales (Bednarik 2008; Kumar 1996). This variability suggests that cupules were multifunctional and deeply embedded in cultural systems of meaning.

The question that drives this article is whether cupules could have been inspired by natural patterns, specifically the conical depressions created by antlion larvae. The visual and functional resemblance between these naturally formed pits and cupules suggests a possible case of observational mimicry or symbolic