Chapter 8

Going Further:
(Re)Discovering Rock Art Carvings with Photogrammetric Techniques in Galicia (North-West Iberian Peninsula)

Benito Vilas-Estevez
University of Wales Trinity Saint David, UK

Alia Vázquez-Martínez
Universidade de Santiago de Compostela, Spain

Miguel Carrero-Pazos
Universidade de Santiago de Compostela, Spain

ABSTRACT

In this chapter a revision of the traditional tracing methods over petroglyphs through the employment of three dimensional models is proposed. The different techniques suggested here are: Radiance Scaling and Algebraic Point Set Surfaces (APSS). Radiance Scaling is a shader that adjusts reflected light intensities in a way dependent on both surface curvature and material characteristics. While APSS allows the colorization of the vertices of a mesh or point set using the curvature of the underlying surface. These methods applied to 3D models allow a better visualisation, comprehension, and objectification of the open-air rock art carvings, improving the researches over a more reliable database, but also for issues related to management and conservation.

Imagination or visualisation has a critical role to play in scientific investigation. -Rene Descartes 1637.

INTRODUCTION

The first reference to an open-air rock art carving in Galicia (in the northwestern Iberian Peninsula) is from the log of the journey to Galicia that Father Sarmiento took in 1745 (Martín Sarmiento, 1745). However, it was not until the second half of the nineteenth century that the first scientific observations of petroglyphs were made. Since then, many scientific publications have been produced, which allow

DOI: 10.4018/978-1-5225-0680-5.ch008
us to currently count with references for more than 3,000 archaeological sites with open-air rock art carvings, in a catalogue that is far from being closed (Fábregas Valcarce, & Rodríguez Rellán, 2015).

However, it is important to point out that the study of Galician petroglyphs over the past several decades has not been just a local phenomenon, if not that relevant prehistorians such as Obermaier (1923), Mac White (1951), Anati (1968), and Bradley (1997) have called attention to these peculiar artistic representations of the Late Prehistory.

Regarding the typology of Galician petroglyphs, this is composed by a huge repertoire of engraved figures, with a very different thematic. The motifs that might be considered prehistoric are those that present grooves with a “U” profile that is very open (they are usually wide and less deep, due to the intensive erosion of more than 2000 years of exposure to natural agents) which might be achieved through the employment of percussion techniques (directly or indirectly) with a lithic instrument (Peña Santos, & Rey García, 2001; Fábregas Valcarce, & Rodríguez Rellán, 2012). On the other hand, the existence of a different repertoire of carvings that might be assigned to a more modern style is also well known. These present grooves with a “V” profile, deeper than the previous ones, that are tight and have relatively sharp edges obtained through the use of indirect percussion techniques with a metallic instrument (Peña Santos, & Rey García, 2001). But in any case, it is important to note, as Santos Estévez states (2007, p. 60), that independently from the technique used to engrave, it is very possible that some figures were remarked periodically through the use of abrasion techniques, as it is more comfortable and effective to revive the groove. In fact it should be taken into consideration that over time, the engraved surface tend to acquire the same patina and chromatic aspect as those of the rest of the rock, which makes visualising the motifs difficult, thus directly affects the register of the engravings at the rock surface.

From a general perspective, the set of engravings from prehistoric times is mainly divided into two thematic groups: geometrical and naturalistic (being the first ones more abundant). Geometric motifs are basically cup marks, circular combinations (concentric circles, circles with cup-marks inside them, etc), labyrinths, pseudo labyrinths and spirals. Naturalist motifs are composed of zoomorphs (deer, horses, and snakes), anthropomorphs (there are panels with human forms riding the zoomorphs as well as hunting scenes) weapons (swords, halberds, daggers and shields) and idols.

As mentioned above, the geometric motifs are more abundant, while the presence of the naturalistic motifs is less frequent. However these different kinds of motifs are not only differentiated in quantitative and qualitative terms, there also exists a differentiation between the main areas of influence and location. The coastal area and its surroundings is where the naturalistic motifs are more concentrated, while, in contrast, the geometric motifs are present throughout the Galician territory (Vázquez Martínez, 2015).

Regarding the characteristics of the supports, the representations over granite rocks and boulders predominate. This circumstance seems to have affected the distribution patterns of the petroglyphs, as they are mainly concentrated in those areas with granitic lithologies, while their presence dramatically drops where the schist and other metamorphic rocks are present. However, this vision might be biased due to the lack of prospection in those areas where the presence of granite is lower, but in any case the supports do not affect the motifs presented on the stones (Vázquez Martínez, 2015).

**ISSUES**

One of the many concerns of researchers since the first discovery of Galician petroglyphs, which has received special attention in recent years, has been the documentation of these artistic representations.