

DISCOVERY OF TWO NEW SOLAR MARKERS AT PAINT ROCK, A MAJOR SUN-WATCHING STATION

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Paint Rock is a pictograph site in the state of Texas, USA. The assemblage contains over 1500 pictographs. Between 1996 and 2002 there were six active solar markers discovered. These six solar markers make Paint Rock the most active archaeoastronomical site in the region. It was hypothesized that more solar markers existed. We report on the discovery of two new solar markers. One records the winter solstice and the second records the spring and summer cross-quarter days.

Introduction

The interaction of sunlight and shadow on rock art is referred to as a solar marker, which has become the third main area of the study of archaeoastronomy. This interaction records some of the astronomical knowledge of a culture. The astronomical knowledge recorded by solar markers is one of the most objective interpretations of rock art. Paint Rock is the largest assemblage of pictographs in Texas, USA containing over 1500 pictographs. They are located on the Campbell Ranch near San Angelo, Texas. Kay Sims Campbell's grandfather purchased the ranch in 1877, and she discovered the first solar interaction in 1994¹. Subsequently, there were more solar markers discovered between 1995 and 2002, making a total of six solar interactions. These solar markers make the Paint Rock pictographs the most active archaeoastronomical rock art site in Texas.

Cliffs, rocky terrain, rock shelters, and caves have been used by cultures around the world, making rock art ubiquitous. The cliff containing the Paint Rock pictographs consists of broken layers of limestone created by a geologic uplift which runs northwest to southeast for

over a kilometer. As a result of the uplift, much of the lower half of the cliff is a debris fall, with the upper portion exposed. The tallest layers are approximately one meter in height. The layers create panels and habitation areas that are protected from weather. There is only one section of the exposed cliff with these protected panels. This section is 300-meters long and is the highest section of the cliff. All the pictographs are in this section. Figure 1 is a site map of the location.

The archeological site number is 41CC1 for Paint Rock, based on the Smithsonian Trinomial Site Designation system in the United States. Forrest Kirkland and his wife recorded the site in 1934, painting the pictographs. The book, *The Rock Art of Texas Indians*², exhibits these paintings at Paint Rock as well as at all other sites in Texas that were recorded by the Kirkland's. In the book, it states, "there are no other sites in Texas that exhibit the same design characteristics as the pictographs of Paint Rock." The main archaeological study of Paint Rock found evidence of habitation dating back to the Middle Archaic period, an archaeological period in Texas dating from 6000 BCE to 4000 BCE^{3,4}.

The cliff is about 150 meters north of the Concho River. The river has a hard rock crossing at this location. The river is a primary water source, and there are springs at each end of the main cliff. There is evidence of large habitation sites located near each of these springs. The

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