SYMMETRY CLUES TO THE PUEBLOAN LIFEWAY

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Just as symmetry has been found to underlie the structure of the natural world, so too, by extension, do humans use the property of symmetry in the perception of their world. They do so to identify objects and, on a larger scale, to order their lives. But beyond the physiological use of symmetry in the process of perception is the way human cultures appear to build on this focus on the symmetries of the things in their immediate world to preferentially choose certain symmtries to organize the decorative patterns which embellish their material culture.

An increasing number of studies have revealed that designs produced by cultures all over the world on many kinds of material culture are repeated patterns which can be described by the symmetric motions which repeat them. Further, it is clear that although all symmetries can be produced on any media, cultural groups preferentially use a limited number of symmetries.

It has been a challenge to understand whether and how preferential use of particular symmetries relates to other activities in the culture. This paper addresses this issue. A study of one and two-dimensional patterns on prehistoric Puebloan ceramic design form the American Southwest has yielded insights relating to ideological focus as well as cultural interaction.

Archaeologists have subdivided the cultural remains between AD 200-1500 into the Anasazi, Mogollon, Hohokam, and Patayan traditions by differences in cultural adaptation to different ecozones. However a symmetry analysis of the designs on ceramics from these traditions reveals that bifold rotational symmetry prevails on patterns from all these traditions. This may suggest a common ancestory for all the traditions and thus be another example of a case where common symmetry structures are indicative of paths of cultural interaction.

Migration legends recently gathered for the Hopi Indians of northern Arizona indicate that peoples from all these traditions came from central Mexico and, moving north, fanned throughout the Southwest contributing peoples and ideas to all three traditions. Hopi Indians today say that the two-part interlocking design (i.e., the bifold rotational design) refers to the two oceans; the interlocking refers to the continuity of water between the oceans. The ability of symmetry analysis to bring to light this pan-southwestern use of symbolic notation about water for a land lacking surface water and plagued by periodic droughts sets the stage to change the way Southwestern prehistory is interpreted.

The paper will detail the migrations legends which support this new interpretation and illustrate the bifold rotational basis of Southwestern culture with photographs of ceramic designs from all of the prehistoric traditions which have contributed to the water-focused rituals of the Puebloan cultures living today.