History unerringly repeats itself, engaging with the past to inform the present is often necessary to address some of the greatest challenges to a globalized world. Historical scholars are beginning to embrace geography as a means to connect the past with the present, and increasingly engaging in the use of GIS to do so. Jared Diamond’s book, Collapse, offers a rich palette of ideas that can be illustrated with the use of GIS. This paper builds on this rich vein of ideas, combining the approaches of both the past and the past and the present.

The objectives of this project are (1) to apply current methods of GIS-based historical geography and literary analysis to the dissection of the Chacoan’s collapse, (2) to create an epistemology that will geographically and historically represent the evolution of the food, water, and timber resource consumed by the Ancient Puebloans of Chaco Canyon that ultimately affected their own demise through unsustainable growth and consumption, and (3) to provide an educational resource that provides insight into the past and therefore the future of global change, overpopulation and unsustainable resource management.

Introduction

The collapse of the ancient kingdom of Chaco Canyon, located in what would become northeastern New Mexico, was one of the significant collapse cases in the prehistory of the Americas. During the thirteenth century, Chaco Canyon was the site of a large and complex urban center that led an urbanized society for more than 200 years (Ketl). However, by 1200 AD, Chaco Canyon had been abandoned, leaving behind an enigmatic but common history of collapse. The reasons behind the collapse of Chaco Canyon have been a subject of much debate and discussion among scholars for decades (Ketl). There is no consensus on the exact causes of the collapse, but it is generally agreed that it was due to a combination of factors, including changes in climate, overpopulation, and resource depletion.

Lessons from the Past: What did the Ancient Puebloans get wrong?

Chaco Canyon was created by erosion of the Chaco Wash River, cutting through the Northwestern region of the Colorado Plateau. The canyon is mostly sand, and the absence of evidence of Prehistoric Puebloan masonry, water doesn’t flow in Chaco Canyon. Rain visits more seldom now than it did in the first and second centuries AD, so even more emphasis was placed on water storage. The high desert climate, growth rates of the surrounding pinyon and juniper woodlands are such that Chaco Canyon is extremely arid (Diamond, 2005, Price and Ferguson 2010). The combination of low conversation, intermittent summer rainfall patterns proved to be a deadly combination for the prehistoric inhabitants of Chaco Canyon. The larage population became the largest of widespread bones, in one few years of drought (Diamond 2005).

The Technological Blind: Ignoring Timber

The Ancient Puebloans relied on floodwaters from occasional thunderstorms to provide a reliable water source for both crop and animal use. They constructed complex canal systems that would connect to ephemeral streams that crossed the Chaco Wash River between Chaco and the ancient pueblo. Though the water did come, it would not come in the desired timing. They did not take into account that in the high desert climate, the groundwater level would also lower and then lower, this lowering the water table below the now abandoned canal, eventually resulting in the wells useless for crop irrigation (Diamond, 2005).

The Ecological Deficit: Overpopulation

The Ancestral Puebloans show up in the archaeological record around 700 AD, and the last occupant of the upper reaches of Chaco Canyon, these communities introduced Aiyentlad agriculture to Chaco Canyon, cultivating crops such as maize, beans, and squash. This was a major shift from the reliance on hunting, gathering, and herding that the early settlers were largely reliant on the harvesting of pinyon nuts and the hunting of small rodents and deer.

Informing the Present… and the Future

The first settlement dating of the Ancient Puebloans in Chaco Canyon is from the archaeological record around 700 AD, but the last occupant of the upper reaches of Chaco Canyon is thought to be around 1200 AD. The people of Chaco Canyon engaged in a regional trading network over 5,000 km (2400 mi), exchanging goods such as turquoise, copper bells, precious stones and rare feathers from the west and Mediterranean style copper items from the east (Diamond, 2005).

A large population requires an increase in resources, which are obtained through food, water, and timber. The Chacoans needed to increase their agricultural production, which they did primarily through irrigation. However, they did not take into account the potential environmental consequences of their actions, leading to overpopulation and resource depletion. They also did not consider the implications of their actions on the environment, leading to the collapse of the ancient kingdom of Chaco Canyon.

Inferring the Present… and the Future

With the benefit of hindsight, it is clear that the collapse of Chaco Canyon culture in the 12th century originated from human environmental impacts. The Ancient Puebloans settled Chaco Canyon on self-sufficient settlements, building large and elaborate structures, and the construction of irrigation systems, hunting, and gathering to secure their own food supply. As populations grew, so did the demand for land, whether for water, timber, or food. The story of Chaco Canyon’s collapse is highly similar to the conditions faced by modern-day societies. In this case, the collapse of the ancient kingdom of Chaco Canyon is attributed to the unsustainable growth and consumption of resources, as well as the depletion of natural resources.

For more interactive maps of Chaco Canyon, see new traditions/MapSource/ViewChaco

References


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