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RESEARCH ARTICLE

Geometric spatial structure of traditional Tibetan settlements of Degger County, China: A case study of four villages

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Abstract

This study investigates the characteristics of spatial elements and structure in a multi-cultural traditional settlement in Degger County, Sichuan Province, in the Tibetan area of China. This study aims to clarify the geometric spatial representation of traditional settlements. The geometric features of their settlement plans are compared using mathematical analysis after examining the spatial arrangement of four typical settlements. Results indicate that the settlement structure has strong centrality. The spatial structure characteristics and proposed spatial models of traditional settlements in this area are discussed to aim for the results to contribute to new village planning and preserve a traditional settlement heritage.

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1. Introduction

Human settlements that originate from human habitation are the result of interactions between human society and the environment (Wu, 2001). The spatial organization of a traditional settlement reflects the lifestyles and worldviews

of its people (Fuji, 2000). In China, several ethnic groups maintain their own unique sociocultural systems, with their habitation modes and spatial concepts differing from those of the Han nationality under the feudal ritual system of China (Yu and Lu, 1996; Zhou, 2007). On the Qinghai-Tibet Plateau, Tibetans who have been influenced by Tibetan Buddhism for

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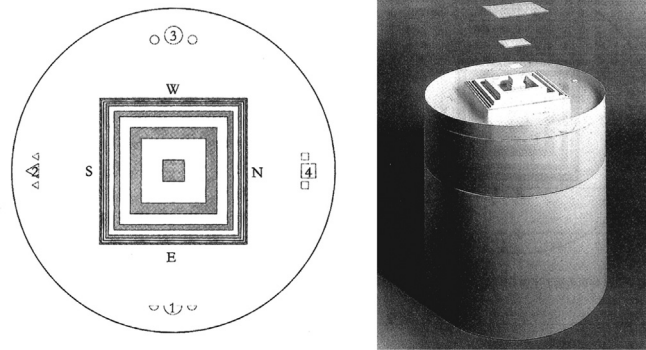


Figure 1 Mandala (Brauen, 1997).

thousands of years have constructed a typical Tibetan social structure that is reflected in every aspect of the Tibetan society (Zhou, 2008; Zhang and Deguchi, 2011). Tibetans have aimed to establish connections between the physical and spiritual worlds and seek to replicate the sacred world in constructing living spaces (Popi et al., 2012). Accordingly, a Tibetan spatial concept has been established and represented by the mandala in Tibetan Buddhism (Figure 1) (Zhang and Wei, 2017). In this context, people have attempted to create living spaces as scaled mandalas. No settlement, however, has been able to fully reproduce the ideal spatial schema (Fuji, 2000). Under the influence of natural conditions and political history, various spatial settlement patterns have been developed. Degger County is a typical Tibetan-inhabited area located in the northwest of the Sichuan-Tibetan Autonomous Prefecture of Ganzi with a population of more than 95% Tibetan. The traditional settlement patterns of this area clearly reflect Tibetan spatial consciousness (Li, 2016a, 2016b; Ye, 1992). In terms of natural conditions, the area is located on the southeast edge of the Qinghai-Tibet Plateau, with mountainous and hilly landforms and a total area of 11,025.24 km². With an altitudinal range of 2920-6084 m, the extremely varied topography is different from that of the core Tibetan area (Figure 2). In its sociocultural aspect, Degger County has a typical local culture and connects the two Tibetan groups, namely, “Kangba” and “Weizang.” Degger County, as a key position in the “Ancient Tea Route,” has experienced

economic prosperity and cultural diversification (Li, 2015). Therefore, the spatial settlement concepts of the Degger people have distinctive local features that differ from those in the core Tibetan area.

In recent decades, developments in Western China have prioritized its own economic growth and urbanization over that of the Tibetan-inhabited areas. However, these developments have also resulted in changes in Tibetan cities. Similar tendencies are emerging in rural areas while urban expansion is developing in Tibetan cities (Yang et al., 2014). In this process, the Chinese government has built many concentrated rural residential areas, tourism villages, and characteristic traditional towns. Under unified modern planning, these new settlements are fundamentally contrary to Tibetan social structure and spatial philosophy. In addition, modern lifestyles have created new requirements for settlement spaces. Thus, traditional settlements may be facing extinction given their decayed infrastructure and buildings (Tong, 2016). Therefore, understanding habitation modes that are indirectly reflected but hidden in constructing the settlement space (Fuji, 2000) provides a basis for regenerating traditional settlements and planning new ones (Yang, 2014; Tong, 2016).

The differences between the spatial structures of settlements in Degger and those in other areas of China or India must be identified. A universality, which reflects the characteristics of local people, in the spaces of traditional settlements in Degger must be determined. To solve these

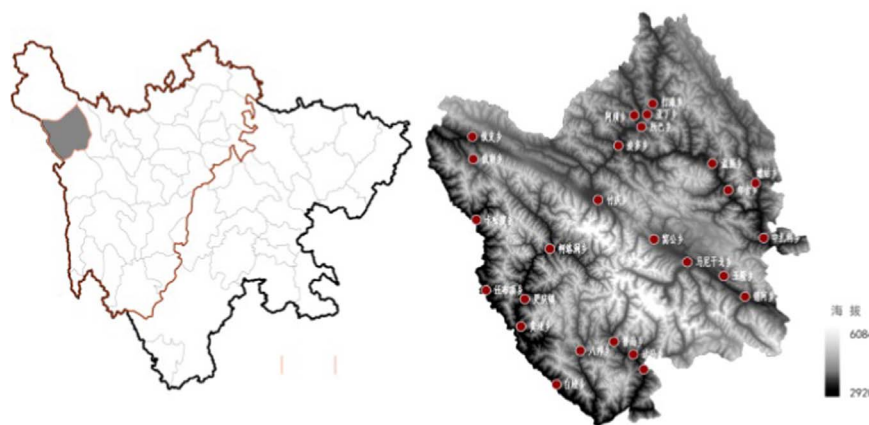


Figure 2 Location and altitude change of Degger County.

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