1. Introduction

Tulous (‘earth buildings’, from the direct meaning in Chinese) are large-scale, civilian residential buildings dating to the 12th century and constructed mainly of rammed earth in a wooden framework. Today they can be found scattered across the southeast of China in provinces such as Fujian, Jiangxi and Guangdong. Many are still occupied and are associated with local, aboriginal communities. As an enclosed communal house with two or more stories and a double load-bearing design, i.e., rammed earth walls supported by column and tie construction, the Fujian Tulous (sometimes referred to as Hakka Tulous) are built to meet the needs of whole clans that lived together, while simultaneously providing a sound defensive function (UNESCO, 2008). In Fujian province alone, a total of 3000 Fujian Tulou buildings have been officially recognised. These are distributed mainly in Nanjing County and Pinghe County, Zhangzhou city; Yongding County, Longyan city; and Huaan County, Quanzhou city. This group represents the best-preserved set of Tulous, with the broadest coverage, largest quantity and richest variety (UNESCO, 2008).

There are 476 Tulous in Pinghe County, Zhangzhou city, Fujian province. Of the numerous Tulou not classified as World Heritage Sites, the Pinghe Tulous are the most representative. While 46 Hakka Tulou in Nanjing County, Yongding County and Huaan County were recognised as World Cultural Heritage Sites by the United Nations Educational, Scientific and Cultural Organization (UNESCO) in 2008 (and are thus referred to here as ‘World Heritage Tulous’ (Fig. 1)), there are a large number that have not received official recognition from UNESCO. Pinghe County has the highest concentration of these non-World Heritage Tulous (NWHTs) in Fujian province.

Unlike World Heritage Tulous, the NWHTs in Pinghe County are numerous and widely distributed, reflecting a range of geographical relationships between the Tulous and their local communities – some of which still occupy the Tulous today. Due to variation in their value for tourism, strategies for reconstruction are relatively flexible. However, a number of factors have led to conservation and reconstruction efforts becoming stagnant. These include the sheer number of Pinghe Tulous, their lack of World Heritage status and a weak local economy. Many Tulous have been neglected or in some cases, abandoned (see Fig. 2). The intangible, informal and less recognised cultural heritage that these sites represent could be mobilised to develop value for the communities that surround them (Barrère, 2016). Against this backdrop, the aim of this article is to construct a reasonable system for assessing the potential value of Pinghe Tulous and thereby to supplement and reifine the research on the protection and repurposing of NWHTs.

The International Council on Monuments and Sites (ICOMOS) has developed widely-adopted principles and standards for cultural heritage conservation practices. These principles were adopted nationwide, for example, in Australia through documents such as the Australia

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- Conservation and reuse
- Cultural heritage
- Evaluation system
- Pinghe Tulou
ICOMOS Charter for the Conservation of Places of Cultural Significance (known as the Burra Charter). Since 1979, the Burra Charter has advocated a cautious approach to site protection, use and development, most importantly by minimising change to components that could be of cultural significance (Australia ICOMOS, 2013). The focus of this study is informed by these recommendations and seeks to develop a method for applying them to the protection and reuse of Pinghe Tulous.

This study aims to develop an approach to quantitatively evaluate the potential value of NWHTs in China through an empirical case study of Pinghe County. The research objectives are three-fold. First, the paper proposes an evaluation tool for determining the multi-dimensional value of NWHTs in China, based on the Analytic Hierarchy Process (AHP) method. Second, it presents results from an evaluation of NWHTs in Pinghe and identifies the factors best suited to determine their potential value. Finally, the paper abstracts from the empirical findings to provide a set of policy recommendations and discusses other managerial implications for NWHT management and development. The study contributes theoretical knowledge for cultural heritage conservation broadly and offers practical recommendations for these under-appreciated heritage sites in China, thereby shedding light on future reuse and development.

2. Literature review

2.1. Tourism and Tulous in China

As one of the most prominent sites of historical heritage in China, a number of Tulous have become tourist destinations, attracting also the attention of tourism researchers (Li, 2012; Lin, 2010, 2012; Zhang & Luo, 2017). The Tulous in Fujian Province have been particularly well-recognised in their tourism value. A number of principles and models for Fujian or Hakka Tulous preservation and development have been put forward in recent decades (Lin, 2010). Most recently, Zhang and Luo (2017) used ROST Content Mining software to classify images of Yongding Tulous into seven major categories. These include tourism attractions, environmental tourism, history and culture, tourism facilities and services, tourism experiences, tourism promotion and the protection and evaluation of tourism resources.

From the perspective of public resource management, many of these studies have argued for sustainable practices in managing Tulous sites, which would incorporate the interests of the aboriginal communities, some of whom still occupy the Tulous buildings. Li (2012) argues for communities’ rights to participate in the planning, policy-making and benefit sharing of Tulous tourism. Conflict resolution and stakeholder coordination should combine the interests of stakeholders with community-based tourism, based on a theory of participatory community planning (Lin, 2012). Such participatory practices require rhetorical mechanisms to frame the Tulous resources such that community stakeholders have buy-in with the project. To date, such practices generally remain as ambitions rather than fully implemented.

2.2. Value and spatial characteristics of Tulous in China

Previous studies of Tulous in Fujian Province have mainly addressed habitation patterns, construction features and spatial and architectural characteristics in the history and evolution of Tulous construction. Tulous construction strategies and types of spatial layouts are summarised in this literature, providing historical insights into climate-adaptive architecture and the design of amalgamated dwellings (He, 2013; Hu, 2012; Li, 2013). Researchers have also discussed the history of the development of Tulous and assessed buildings’ conservation values in terms of history, cultural heritage and construction technologies (Liu & Yang, 2014). Wang, Wang and Pan (2016, p. 95), for example, offer five categories into which the historic patterns of Tulous construction might fit: a fallout pattern, a tufted growth pattern, a ribbon growth pattern, an extended ink pattern and a centripetal growth pattern, each of which is based on their morphological traits.

There is a strong correlation between patterns of Tulous morphology and the districts in which they are situated. When inspecting the process of environmental adaptation across the traditional Fujian Tulous groups, Yang and Liu (2015) discovered a type of fuzzy binary between contradictory behaviours: the presence of a gestalt earthen enclosed ideal, and at the same time, the deconstruction of the enclosed gestalt ideal caused by micro-changes in environmental factors on Tulous sites. When selecting the site for a settlement, environmental conditions are deeply respected and considered at length, for example, as many Tulous are oriented to water in the front with a hill in the rear. However, because the landscape is different at each site, the layout of each Tulous is unique. This diversity has led to the traditional cultural heritage as being characterised by ‘a variety of rich and diverse evolutions’ in Tulous site morphology (Yang & Liu, 2015, p. 92).

Due to this record of complex adaptations to the landscape, Tulous constructions have had a high educational value for understanding ecological protections in relation to cultural tourism (Yang & Liu, 2015). The construction of any pre-modern building is shaped by the technology available at the time of construction, conditions in the local economy and so forth. Local groups in Fujian chose adaptable architectures, building houses that were comfortable to live in while simultaneously adapting to ecological conditions. The rammed earth walls characteristic of Tulous are today considered extremely efficient, economically and ecologically, as they save labour and require minimal effort to acquire the necessary raw materials. The technology of Tulous architecture thus provides a significant example of pre-modern energy conservation techniques, from which we might learn today.

2.3. Conservation and reconstruction strategies for Fujian Tulous

Previous studies of Fujian Tulous illustrate the challenges associated
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