

The Value of Yunnan-Vietnam Railway as an Urban Industrial Heritage: Historical Analysis of its Landscape Changes

Kun Sang, University of Padua, Italy

The IAFOR Conference on Heritage & the City – New York 2018
Official Conference Proceedings

Abstract

Yunnan-Vietnam Railway, also named Indochina-Yunnan railway, as a historical corridor between China and Southeast Asia, constructed in the 1900s according to the development plan of French Indochina, is one of the earliest built railways, the first international railway, as well as the longest narrow gauge and single-track railway in China. This study focuses on the area along this railway in the Chinese section (Kunming-Hekou), which links a series of urban centers, cultural heritage and landscape resources in Yunnan, witnessed many important historical events, telling a history of collaboration and friendship, tumult and hostility. This article, based on the historical records and maps, will figure out the value of this railway as urban industrial heritage, from the aspect of the relationship between dynamic changing of the main urban areas in Yunnan and this railway in the history. The methodology of historical cartography analysis with the support of a Geographic Information System (GIS) will be employed, to evaluate the consequences of the transformations of environment and landscape along the railroad, to analyze its changing pattern in three periods: before the construction, under the influence of French Indochina, and the Chinese modernization. The factors of population and urbanization will be taken into consideration. Through the visual analysis, it will discuss the role of Yunnan-Vietnam railway in the modern history of Yunnan, for a better understanding and protection of this heritage in the future.

Keywords: industrial heritage, urban development, Yunnan, modern history, landscape change

iafor

The International Academic Forum
www.iafor.org

Introduction

Landscape is both a physical existence and a comprehensive concept, which reflects the relationship between human beings and the environment. At the same time, it is not static, and it can be modified even created. Since the industrial revolution, with the acceleration of urbanization and modernization, human activities have been changing both the natural landscape and cultural landscape. The factors that lead to landscape change are incredibly complicated, they are summarized into two categories of the driving factors of landscape change: natural factors (climate change, hydrology, soil environment, etc.) and human factors (population, technological progress, political and economic systems, cultural concepts, etc.) (Wu et al., 2012). The case studies of landscape change and its driving forces have been scientific topics for a long time, along with the introduction of advanced technologies such as remote sensing and geographic information system. This article takes the Yunnan-Vietnam Railway as an example to study its historical value from the perspective of landscape change. Moreover, the cultural factors are discussed principally to reveal the relationship between the development of this railway and the landscape change.

Yunnan-Vietnam Railway (CFY)¹ constructed in 1910 between China and Vietnam, is the most famous and important one-meter gauge railway in China, also a crucial part of the current North-South railway system in Vietnam. The Chinese section starts from Kunming, extending to Hekou, with a length of 465 km. It built a route of international cooperation and cultural exchanges between Yunnan and other Southeast Asian countries, leading Yunnan to the modernization. From the viewpoint of art, history, culture, and technology, it is a valuable cultural heritage in both China and Vietnam. Some of its single remains have already been inscribed as protected historical and cultural sites, such as a few railway stations and the bridges, and the whole rail route was officially inscribed as an industrial heritage by the Chinese government in 2018.

The value of this railway and its profound impact on Yunnan province have been widely studied. Initially, the transportation program was the central part of French colonial policy to connect Indochina with China and to build a new colonial pattern, invading and plundering Southeast Asia, politically, economically, militarily and culturally (Zhao, 2009). In reality, along the Red River, the building of the transportation system was a turning point for Yunnan, especially for the social and economic changes. The opening-up situation stimulated the development of commodity economy, as well as the urbanization of the cities along the railroad, such as the main stations of CFY - Kunming, Kaiyuan, Bizezhai, and Hekou (Che, 2010; Yang & Li, 2011). The relation between this railway and the economic development of Yunnan has also been analyzed, which resulted in positive influence on the mining, industry, trading, and transportation of Yunnan (Zhao, 2014). As a symbol of industrialization and civilization, it changed not only the methods of construction and management of other railways in Yunnan but made the modern science and technology widely spread, profoundly influenced the culture, custom, religion, even the ideology, daily behavior and lifestyle of common people (Che, 2007).

¹ Chemins de fer de l'Indochine et du Yunnan, abbreviation CFY

This article, based on the historical records and maps, will figure out the value of this railway as urban industrial heritage, from the aspect of the relationship between dynamic changing of the main urban areas in Yunnan and this railway in the history. The methodology of historical cartography analysis with the support of a Geographic Information System (GIS) will be employed, to evaluate the consequences of the transformations of environment and landscape along the railroad, to analyze its changing pattern in three periods: under the influence of French Indochina, the WWII and the Chinese modernization. The factors of population and urbanization will be taken into consideration. Through the visual analysis tool, it will discuss the role of Yunnan-Vietnam railway in the modern history of Yunnan, for a better understanding and protection of this heritage in the future.

Before the construction of the railway (1840-1910)

In the history of Yunnan, due to the position in the southwestern mountainous area and the inconvenient situation of transportation, the development model of politics and economy in Yunnan was different from that in inner China. Yunnan was lagged far behind the rest parts of China until Qing dynasty². However, it was always an attractive and mysterious land for foreign explorers. The enthusiasm of the exploration in Southeast Asia lasted for nearly one century since the late 18th century, with a large number of explorers participated. Making business was their primary purpose, along with other fields of research such as geography, geology, biology, and anthropology. Among these, there were more than twenty times of exploration happened in Yunnan province. In particular the Britain and France, by virtue of their colonial advantages from Indochina and Burma, they tried to open the Chinese market through the corridors in Yunnan (Yang, 2011).

Doudart de Lagrée and François Garnier were the early French explorers in China. They investigated the area of Yunnan, Sichuan and the Yangtze River in the 1860s. Their expedition crossed about 10,000 km in China, and it was considered as one of the most significant scientific expeditions in the 19th century. In 1881, A.S. Colquhoun took his voyage from southern China to Burma. Later, he published a series of reports related to Yunnan. He described Yunnan as the wealthiest province in the south of China, with abundant mineral resources, which would be a vast potential market for Britain (Colquhoun, 1882). British Major Henry Rodolph Davis also conducted four times of scientific survey in Yunnan from 1894 to 1900, with the journey of totally 15,000 km. He recorded the towns in Yunnan, reported detailed information about the population, housing and size of cities along his trip and made the first relatively complete map of Yunnan in the late Qing dynasty.

After the Sino-French War³, France obtained the right to build railway in Yunnan. In 1898, The French Ministry of Foreign Affairs appointed two delegations to Yunnan to survey and design the rail line between Yunnan and Indochina. After the inspection

² From 1644 to 1912 in Chinese history, the late Qing dynasty refers to 1840 – 1912.

³ 1884 – 1885, *Treaty of Tientsin* was signed after this war.

between Mengzi-Kunming and Laocai-Mengzi, they pointed out that the area around Laocai and Mengzi was sparsely populated, with torrid climate, turbulent currents, and traffic inconvenience. On the contrary, from Mengzi to Kunming, it turned out to be rich in natural resources, populated settlements, suitable in climate, and convenient connections between cities. They also found the mineral-rich areas, such as Gejiu, Kaiyian, Jianshui, and Yiliang, since searching for mineral resources origins was one of the strong reasons for their selection of station sites.

Based on the historical map made by Henry Rodolph Davis, figure 1 shows the situation of main cities in Yunnan before the construction of CFY. In the traditional agricultural society, the level of regional development is significantly correlated with the resources of arable land and water. There were five agricultural centers in Yunnan relied on their advantage of the location near the lake or river, namely Dali, Yunnanfu, Lin'an, Chuxiong and Qujing⁴. These cities are surrounded by plain and fertile lands, with the five largest arable areas. The early cities also distributed along the original roads. Dali, Chuxiong, and Kunming were located along the road of Sichuan-Yunnan-Burma; Qujing was located along the Yangtze River Road; Tonghai, Jianshui, Wenshan were situated on the ancient road of Yunnan-Vietnam; The rise of Manhao originated from the shipping activity of Red River. With the French infiltration in Yunnan, Mengzi, Simao, Tengyue, and Hekou were set as customs in the 1880s, stimulated the business development of the southern Yunnan. The traditional cities and emerging centers are labeled in figure 1.

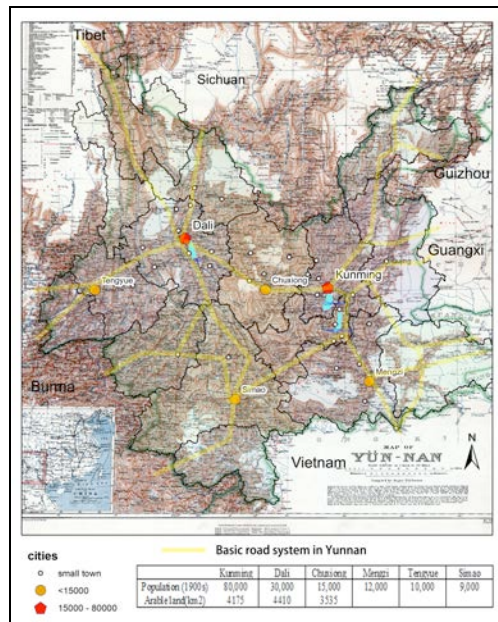


Figure 1: Early urban areas in Yunnan in the late Qing dynasty⁵

In comparison, the natural geographical conditions of other areas lead to sparse population and lower degree of external relations, which hindered the urban development.

⁴ Yunnan Fu namely the current Kunming, Lin'an namely current Jianshui

⁵ The base map is cited from the Beinecke Digital Collections: <https://brbl-dl.library.yale.edu/vufind/Record/4229818>

For example, during the exploration of H. R. Davis, he recorded that the Mengzi was a busy city for its position as a trading center, but other small towns had no trace of commercial activity, with only dilapidated roads and bridges (Davis, 1909). For the living conditions in Yunnan in the late Qing Dynasty, French consul and government delegate in Yunnan - Auguste Français took a series of photos and records. His thousands of photographs combined with writings and films are one of the earliest and most complete documentary photos in existence that provide us with a vision of Kunming in the past. Figure 2 demonstrates the huge difference between the prosperity in the city and the poor condition out of the city.



Figure 2: The city Kunming (Yunnanfu) in 1903 (right) and the roads in the mountainous area (left)⁶

After the construction of Yunnan-Vietnam Railway (1910-1949)

Since the late Qing Dynasty, Yunnan has gradually changed from a closed region to an open atmosphere with more cultural and economic exchanges, even the contacts with western worlds. During this period, the spatial structure in Yunnan also changed dramatically. Some of the traditional cities have declined, and others were getting to be prosperous. Transportation was a principal driving force of spatial expansion in the modern history of Yunnan, especially in the southern and southeastern Yunnan after 1910 (Guan & Lyu, 2016). At that time, the project of the Chinese section of Yunnan-Vietnam Railway was finished under the control of French Indochina and Yunnan Railway Company (CIY). There were 200,000 – 300,000 Chinese workers and nearly 60,000 European technicians involved. It did fulfill some masterpieces such as the Namti Bridge and Bisezhai station. And the whole railroad was considered as an engineering miracle in the early 20th century.

The operation of the CFY has greatly improved the traffic condition of Yunnan and accelerated the transformation of Yunnan's economic situation. With the development of early industrialization, the commodity economy in Yunnan had stepped into a stage of prosperity, which led to the urbanization along the railway and its surrounding areas. The landscape changes were manifested in population growth, changes in land use and urban

⁶ Source: <http://geopolis.francetvinfo.fr/un-train-pour-le-yunnan-les-tribulations-de-deux-francais-en-chine-55977>

<http://photographyofchina.com/blog/auguste-francois>

functions. The classification of the stations stimulated the differentiation of the level of urbanization, and the cities closer to the railway have more obvious changes. The agricultural functions have been destroyed, but the business activities were booming. For example, the first-class station - Hekou, a small agrarian village containing only 3-5 households, turned into a town with more than 4,000 residents and many merchants. The only one special-class station – Bisezhai⁷ was thoroughly modified into an international area with modern banks, restaurants, companies and post offices. Oppositely, the old roads for transporting goods by caravans or waterway were substituted by train freight through this new line, the spatial evolution of other areas had been stalled, and the traditional cities like Manhao and Jianshui had declined quickly.

Cities	Kunming	Chenggong	Yiliang	Kaiyuan	Jianshui	Mengzi
1910	85,000	51,584	64,865	54,602	179,659	60,912
1932	143,700	77,526	110,706	96,408	198,165	131,587
Rate	69.1%	50.3%	70.7%	76.6%	10.3%	116.0%
Cities	Gejiu	Chengjiang	Maguan	Huaning	Pingbian	Mile
1910	10,682	51,547	151,771	70,066	49,535	57,365
1932	93,586	70,389	197,374	97,206	72,812	113,918
Rate	776.1%	36.6%	30.0%	38.7%	47.0%	98.6%

Table 1: The growth rate of urban population (1910-1932) of cities along the railway⁸

As is proved by table 1 and figure 3, the completion of the CFY has promoted the growth of population along the railway. The average growth rate of the urban population of main cities along the CFY in 1910–1932 was 30%. Remarkably, from 1910 to 1932, the urban population of the Gejiu had increased by seven times, then in Mengzi and Mile it has doubled. The development of the mining industry in Gejiu, with a large number of working opportunities, have attracted lots of rural labors and merchants from surrounding cities. Owing to the export of tin, Gejiu has become an important industrial city in Yunnan with a high level of urbanization, ranking the second place in Yunnan after the capital Kunming. All the capital, labor, and technology concentrated in Kunming - the terminal station of CFY, its role as the administrative, diplomatic, economic, cultural and industrial center for the whole province had been enhanced. The urban area of Kunming was expanding. The number of shops and modern companies had also increased dramatically. From 1910 to 1932, its urban population had increased 69.1% (He et al., 2010).

⁷ Bisezhai is not a city, but a village belonging to Mengzi city

⁸ The population data is collected from the Yunnan Archive and the research of He et al., 2010

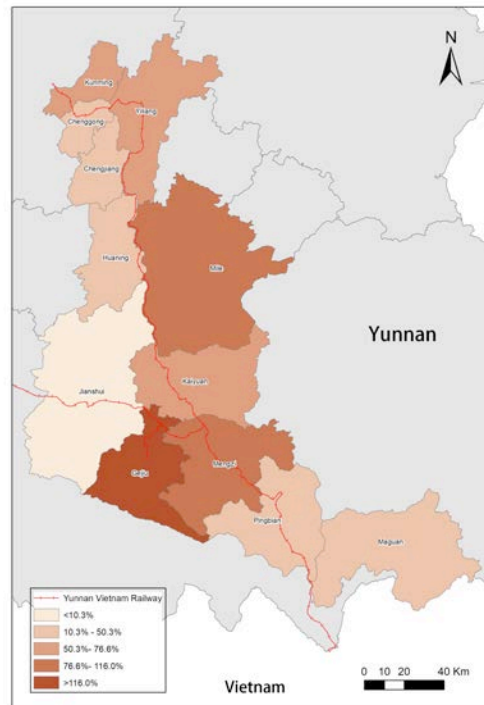


Figure 3: Urbanization level of cities along the CFY⁹

Chinese Modernization period (after 1949)

The modernization of Yunnan began in the sector the military industry in the late 19th century. The construction of the Yunnan-Vietnam Railway was the direct factor in the formation of an industrial system in Yunnan, which took the mining industry as the core, under the influence of foreign capitalism (Ma, 1981). During the Second World War, because of the important strategic position of Yunnan, the modern industrialization of Yunnan has reached an unprecedented level, especially in Kunming, 78% of the new factories were established in this area (Chen, 2001). After years of construction and development since the founding of the People's Republic of China in 1949, Yunnan has formed a complete industrial system with its local characteristics. The industries of tobacco, sugar, and phosphorus chemicals have developed based on the advantages of local resources, occupying the prominent position in Chinese market.

In the regional development research of China, William Skinner and his theory of “the Skinnerian Model” have a broad impact. As an American anthropologist, he was one of the earliest scholars studied the urbanization of China, as well as the region of Yunnan province. He made the regional analysis of social changes between the 19th and 20th centuries in China. Through the core-periphery zone, he revealed the dynamic changes and differences in the spatial and temporal dimension of Chinese regions. He stated Yungui region¹⁰ was unique and isolated from other areas, but inside of this region, the

⁹ The urbanization level here is reflected by the growth rate of population

¹⁰ Yunnan and Guizhou, two southeastern provinces in China

sub-regions closely related to each other. In figure 4, the core-periphery model by Skinner shows that in the 20th century, the Yunnan had only one regional core, namely Kunming. Its central position depends on its provision of retail goods and services to its hinterlands, the position in the distribution channel connecting other economic centers, and the position in the transport network (Skinner, 1977). Apparently, in the 20th century, the development of sub-centers in Yunnan basically follows the transport pattern in Qing dynasty, which means the traffic was always the main factor in the dynamic spatial changing in Yunnan.

In this process, Kunming has become the dominant center in Yunnan, which owns more urban infrastructures than other cities and areas. In 1937, the urban population of Kunming changed from 143,000 in 1937, to 197,000 in 1938, then 255,000 in 1945. The urban area was expanded to the surrounding area on the basis of the town in Ming Dynasty. Municipal functions and land use types in Kunming were diversified (Figure 5). There were more constructions of the industrial and commercial zones, urban recreational areas, public facilities, urban settlements, etc. However, the cities along CFY gradually lost their advantages because the network of the standard railway was gradually constructed and improved. In 1966, the Guikun (Kunming - Guiyang) line was completed, then in 1970 Kunming – Chengdu line, in 1997 Kunming – Nanning, making Yunnan linked with its adjacent provinces. Until 2014, the Mengzi - Hekou line opened for both passengers and freight, which means that the traditional transportation function of Yunnan-Vietnam Railway in China was completely replaced.

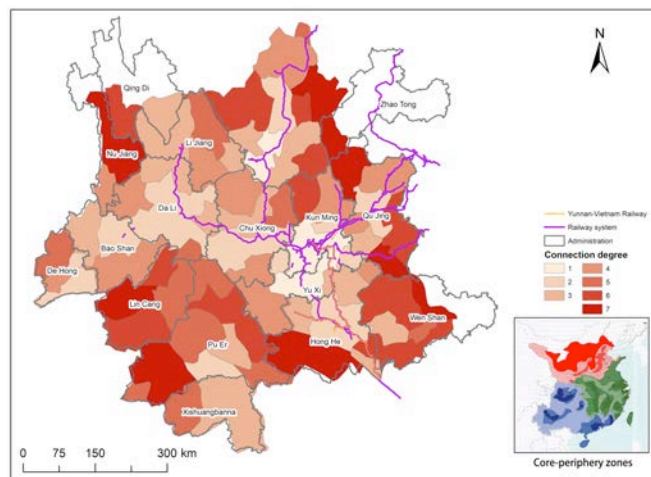


Figure 4: Provisional Core-periphery zones in Yunnan¹¹

¹¹ The data of this map is cited from the map by William Skinner from the University of Washington Libraries: <https://digitalcollections.lib.washington.edu/digital/collection/skinner/search>

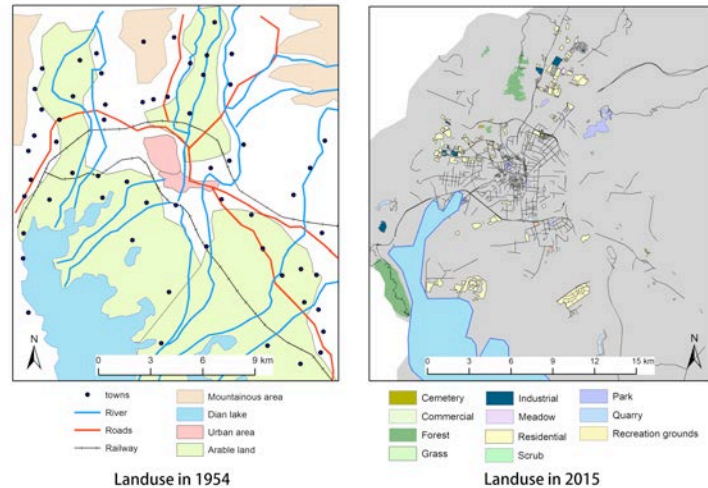


Figure 5: Land use changing around Kunming¹²

Conclusions

In the three periods in the history of Yunnan, traffic condition was always the dominant factor for the spatial development and changing of the whole province. Nowadays, the entire railway is considered as cultural heritage or urban heritage, the principal value of this railway is reflected from its function in history. As the most important historical event in the transportation history, the Yunnan Vietnam Railway did influence not only the cities along this line but also other areas, especially the landscape changing of the main station cities, from the aspects of urban population, city function and the land use. Conversely, the urban constructions are one of the obstructions for the protection for this railway heritage. Under the pressure of urban expansion and the building of new rail lines, the management of this old railway is really a big challenge. The local governments are trying to reuse and redevelop the heritages along the railway for touristic activities. Within a few years, there emerged the projects of industrial park, touristic train and railway museum along the sites, but how to deal with the relationship between the urban development and the heritage protection is still a challenge for Yunnan, which needs more concerns and studies.

¹² The land use data is cited from the map made by the U.S. Army Map Service in 1954 from University of Texas Libraries: <https://legacy.lib.utexas.edu/maps/ams/china/>

References

Wu, J., Wang, Z., Zhang, L. & Song, J. (2012). Research Progresses on Driving Forces of the Changes of Landscape Pattern. *Progress in Geography*, 31(12), 1139-1146.

Zhao, Y. (2009). The change of modern socioeconomic of Yunnan after the Sino-French War. *Journal of Kunming University*, 31(2), 57-61.

Che, L. (2010). The function of Yunnan-Vietnam Railway on the industrial transformations of cities along the railway in 1910 - 1949. *Journal of Yunnan Agricultural University*, 4(6), 103-108.

Yang, Y. & Li, Z. (2011). Yunnan-Vietnam railroad and social changes in the modern Honghe Basin. *Journal of Kunming University of Science and Technology (Social Sciences)*. 11(1), 15-20.

Zhao, S. (2014). Dian-Yue Railroad and Yunnan Economy Modernizing. *Central China Normal University Journal of Postgraduates*, (2), 22-25.

Zhang, M. (2013). Analysis of the Value of Protection and Utilization of Yunnan-Vietnam Railway. *Thinking*, (S2), 100-102.

Che, L. (2007). Yunnan-Vietnam Railway and the change of social concepts in modern Yunnan. *Journal of Yunnan Normal University (Philosophy and Social Sciences)*. 39(3), 40-44.

Yang, M. (2011). The exploratory activities of in modern times by westerners in Yunnan and their works. Ph.D. dissertation of Yunnan University, pp 22-56.

Colquhoun, A. R. (1882). Exploration through the South China Borderlands, from the Mouth of the Si-Kiang to the Banks of the Irawadi. *Proceedings of the Royal Geographical Society and Monthly Record of Geography* (pp. 713-730). Royal Geographical Society: Wiley.

Davies, H. R. (1909). *Yün-nan: the link between India and the Yangtze*. Cambridge University Press.

Yang, G., & Bin, L. (2016). Analysis of External Motivation of Urban Space of Yunnan Province in Modern Times. *Areal Research and Development*, 3, 170-180.

He, Y., Liu, X., Zhang, L. & Tian, E. (2010). A Preliminary Study about the Impact of Yunnan-Vietnam Railway on the Urban Population Variation. *Areal Research and Development*, 29(3), 67-70.

Ma, X. (1981). An Overview of Yunnan's Modern Industrial Economic Development. *Exploring economic issues*, 6, 71-79.

Chen, Z. (2001). The Development of Industry in Yunnan during WWII. Yunnan University' s Journal of Humanities and Social Sciences, 27(2), 29-30.

Skinner, G., W. (1977). The City in Late Imperial China, ed. G. W. Skinner. Stanford University Press.

Contact email: kun.sang@phd.unipd.it