Fang Wang

Geo-Architecture and Landscape in China's Geographic and Historic Context

Volume 1 Geo-Architecture Wandering in the Landscape

Springer

Geo-Architecture and Landscape in China's Geographic and Historic Context

Fang Wang

Geo-Architecture and Landscape in China's Geographic and Historic Context

Volume 1 Geo-Architecture Wandering in the Landscape

Springer

Fang Wang
Peking University
Beijing
China

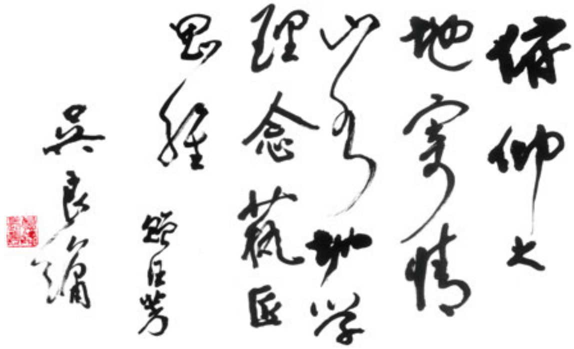
ISBN 978-981-10-0481-0 ISBN 978-981-10-0483-4 (eBook)
DOI 10.1007/978-981-10-0483-4

Library of Congress Control Number: 2016932338

Printed on acid-free paper

This Springer imprint is published by SpringerNature
The registered company is Springer Science+Business Media Singapore Pte Ltd.

Inscription by Liangyong Wu



Admire the great earth,
Impart your emotions to the mountains and the waters.
The rationale of geography,
The thinking of the architect.

Gifting to Fang Wang

From Liangyong Wu
Professor, School of Architecture, Tsinghua University
Member, Chinese Academy of Sciences
Member, Chinese Academy of Engineering
The Laureate of Supreme Prize of Science
and Technology of China in 2011

Foreword

Conservation in the broadest sense is an instrument for any society to modulate the rate of change in the (built) environment. Today, conservation discourse and practice extends from the preservation of historic artifacts to the natural environment in the most inclusive sense. Habitats, historic cities and buildings, cultural landscapes, and even intangible heritage are all part of that repertoire we call our inheritance. Naturally, in the process of rapid urbanization and transformation, the memory of these crucial aspects of our heritage is often compromised. Furthermore, the questions of conservation are often clearly not central to the agenda of development, nor for that matter even with the broader cultural or education discourse. Naturally this varies across countries and through different cultures and political regimes. In this context, China is an interesting case where rapid urbanization over the last 30 years put development at the forefront of its agenda often at the risk of the sudden erasure of its wonderful historic fabric. A condition where the memories of its rich heritage and the relationship of its people to their traditional built and natural environment was severely interrupted.

In fact, traditional practices of building in Chinese culture were about codifying man's relationship with nature—of how human beings should ideally situate themselves in this context. While in other cultures, like India, these rules were often codified through religion and thus often distorted in their practice, in China, traditional practices, premised largely on geomancy, stayed intact through the centuries. With the onslaught of rapid development and transformation in the built environment in China, questions of protecting the natural and historic built environment receded into the background. New codes to determine and facilitate "quick" growth took precedent. China and its landscape transformed like nothing witnessed in history before.

It is now, many decades later, that a new generation of architects and designers as well as historians and environmentalist are motivated to reclaim these traditions and weave a narrative of continuity between China's historically rich past and its incredible achievements of the present. It is in this context that this four-volume collection titled *Geo-Architecture and Landscape in China's Geographic and Historic Context* is of critical importance. This work by Prof. Wang is a skillfully compiled collection of deep research on the historic and geographic relationship of the built environment and nature in China. This question is however interrogated in the most interesting and rigorous way by introducing the category of geography, which she extends into geo-architecture—a suggestion that architecture and its relationship to a particular geography is also a way to understand the social and cultural contracts that have evolved in that geography. And resulting from this relationship, the architecture that is manifested is usually a very particular response to its social, economic, and cultural context. This understanding clarifies not only the relationship of architecture to the land per se, but also the people, rituals, and cultural contracts that are associated with or a result of an architectural intervention. It goes further to interrogate the spiritual—the uncodifiable or the invisible that has often informed ways those societies are organized and their built environment conceived. In the context of China, this is a refreshing and brave departure, which promises to set down the foundation to engage these questions in the mainstream of architectural debate.

Professor Wang's understanding of culture as an ever-evolving phenomenon is also useful. I have known Prof. Wang since 1999 and remember her preoccupation with this issue since those transformative years in China. She sees culture as being dynamic, and really, the unwritten rules in society that evolve with conflicts, development, and the general evolution of a society. This has a direct bearing on the architecture of a place and attitudes of a society toward building as well as material culture. The historic environment is merely a yardstick to register this change. In the four volumes, the case studies are a wonderful supplement to the text, where examples illustrate these somewhat subjective readings of this implicit culture as well as history of building in China. The range of cases from rural and urban houses to institutional buildings as well as from deep traditions and colonial influences supplements the arguments very appropriately as well as vividly. The methodology of the work is unique in that it brings history, geography, and culture as well as the precision of architectural documentation together in the same collection. Clearly structured, a complex argument is made precise and in ways that can speak to planners and designer. In that sense, it could serve as an instrument that would be extremely useful not only for advocacy but also for pedagogy, more generally, in sensitizing a new generation of Chinese architects to the land on which they build.

The collection also sets an important precedent for the examination of traditions in landscape and architectural design for many parts of Asia. While India and China pose the polar ends of this spectrum of Asia, the resonance the book, say for Myanmar as it takes on the path of development or for Vietnam, would be equally powerful—a reminder to these cultures that the delicate balance between man-made and natural environments have deep historic traditions and are sensitive ecologies that can be leveraged for development and not seen as deterrents. As debates of ecology and sustainability take the fore in our discussions about architecture and planning and we understand more clearly the interconnected nature of our existence on the planet, this book adds a powerful voice from China to the global debate. *Geo-Architecture and Landscape in China's Geographic and Historic Context* is a welcome addition to this growing body of literature, which will mold the thinking about design in rigorous as well as refreshingly new ways.

April 2015

Rahul Mehrotra
Professor and Chair
Department of Urban Planning and Design
Harvard Graduate School of Design

Preface

There is a close relationship between architecture and its geographic environment. In the context of reevaluating cultural globalization and increased focus on the geographic nature of architecture, architectural research from a geographic perspective has become increasingly significant. Of the forces that shape architecture, world-renowned Indian architect Charles Correa once said:

> At the deep structural level, climate conditions culture and its expression, its rites and rituals. In itself, climate is the source of myth: thus the metaphysical quantities attributed to open-to-sky space in the cultures of India and Mexico are concomitants of the warm climate in which they exist: just as the films of Ingmar Bergman would be inconceivable without the dark brooding Swedish winter.[1]

Climate is only one of several geographic factors, but from Correa's comments, we gain a glimpse of the impact that geography can have upon architecture. Further, we can extrapolate from our understanding of the relationship between geography and architecture a new perspective on the connotations for humanity itself.

1 Geo-Architecture Is not a Label for a Certain Form of Architecture

In related research both in China and elsewhere, a number of concepts draw close to geo-architecture, including regional architecture, vernacular architecture, and local architecture, to name only a few. It is not necessary here to compare all such notions in detail; for an illustrative example, compare geo-architecture with regional architecture: these two areas of study represent different viewpoints—those of geography and architecture, respectively—from which one might approach the built environment. The historical background, basic theories and analytical methods that

[1]Correa, C. Regionalism in Architecture. *Journal of the University of New Mexico*, 1992, Vol. IX, Spring: 4–5.

underlie and characterize them are, for the most part, fundamentally different. Just as architecture scholars are often unfamiliar with geo-architecture studies, geography scholars are often equally unfamiliar with regional architecture concepts. However, while geography is a highly developed field with roots in antiquity, "regional study" has not yet to receive formal recognition as a scholarly discipline. To the extent that there arises a need to relate or differentiate the two approaches, "scale" provides us with a useful perspective. From a geographical perspective, different influences on architecture can be categorized according to the scale on which said influences act. In general, influences are considered to act on zone (macro), region (middle), and site (micro) scales. Regional architectural studies focus largely on the influence of a regional culture and a region's natural features upon architecture. Geo-architecture studies, by contrast, are primarily concerned with the differences that arise between entire geological zones—for example, the appearance of differing architecture across different latitudes. Site characteristics, in turn, are the most basic of geographical factors (e.g., micro-landforms), which cause the architectural differences.

It is particularly important to assert that geo-architecture is neither a particular architecture type nor a label for a certain group of architecture forms. At some level, all buildings express geographic characteristics. Thus, the notion of geo-architecture includes all architecture to some degree.

2 Geo-Architecture Is a Research Thinking

Geo-architecture borrows perspectives, concepts, and methodology from the study of geography to investigate architectural phenomena and the processes that produce such phenomena. Geo-architecture is concerned not only with understanding the past, present, and, to whatever extent possible, the future of the physical architectural landscape but also with the human or social features of architecture. As such, geo-architecture draws particularly on theory and methodology from natural geography, human geography, and historical geography. Natural geography involves the study of geology, landforms, climate, hydrology, and vegetation, as well as the Gobi desert, Tibetan Plateau, loess landform, and other such typical physiognomy types. Human geography examines the intersection between geography and religion, nationality, custom, belief, economics, and politics. Historical geography deals primarily with population migration, regime change, foreign influence, etc.

Geo-architecture, within itself, is inherently a cross-disciplinary pursuit. The study aims to appraise the myriad influences of natural, human, and historical factors upon architecture. These influences are considered in three categories, namely the interaction between architecture and nature, the interaction between architecture and its human users, and the change in architecture over time; each category serves as a lens. Augmenting these lenses is the research factor of the Time–Person–Place concept, which is applied on three geographic scales in order of decreasing magnitude: zone, region, and site. The analysis ultimately focuses on two aspects: geographic influence on architecture and architectural response to geography. Architecture research to date has dealt primarily with the regional scale and factors related to technology and the arts. From an architectural studies perspective, the research presented here is creative and unique in its consideration of multiple scales, multiple timelines, and multiple cognitive agents. Similarly, geography research to date has been predominately concerned with macro-scale phenomena. This research reflects new interest in micro-scale phenomena.

3 The Research Object Selection for Geo-Architecture

The term "architecture," as used in geo-architecture, refers to more than individual buildings or groups of buildings and includes a wide range of subject matter not often touched upon in traditional studies of architecture. Sites such as the Mani field, the ancient postal road, and the tree-embracing pagoda—rarely, if at all, dealt within the predominant body of architecture research—are considered in great depth here. Some works that are especially representative of individual geographic locations, for example, the Lingqu Canal, which connects the Xiang and Li Rivers, and the Gaocheng Astronomical Observatory, which marks the earth's core, are included as well. Each case is no less than an exquisite expression of human wisdom.

It is the authors' hope that this work also spreads to some of China's academic knowledge in the fields of the humanities and geography. Violent geological activity has made China, located at the intersection between several tectonic plates, home to a stunning variety of natural landforms: there are towering snow-capped mountains, extensive prairies, and rivers that surge through deep, winding gorges. Against this backdrop, Chinese civilization has, over a period of several thousand years, produced colorful cultures. Thus, selected cases are chosen to reflect as many landforms, geology, and culture types as possible.

This series *Geo-Architecture and Landscape* covers 103 cases distributed throughout 30 provinces, including autonomous regions, municipalities, and special administrative regions, all over China. To obtain first-hand materials, the research team for this work made great efforts to travel to the architectural sites in question for the investigation. Thus, over 95 % of the cases featured in this series were visited, experienced, and scrutinized by the research team members in person.

Each case study in these books investigates the interaction between architecture and geography from the aspects of climate, geology, vegetation, culture, and history. The beautiful pictures presented within the books strive to illustrate how architectural works exercise compliance, echo, and change to exist amongst mountains, water, stones, vegetation, and human society. This work seeks to analyze the Chinese natural and cultural identity; thus, all of the architectural works chosen for analysis are located in China. However, the theory presented here in the series is universally viable and thus can be valuably applied to architecture in other countries as well. Architecture is the treasured heritage of human civilization in that it reflects the profound ways in which people of different skin colors and localities understood the geographical world around them.

Upon finishing this series, I could not help asking myself: what new thinking regarding the relationship between architecture and geography will the next sight of some mysterious or familiar geo-architecture lead to? This process of discovery has, if anything, made me all the more aware of my ignorance and enamored by the breadth and depth of the field; it is from these that I draw the strength and encouragement to press on without hesitation.

July 2015 Fang Wang

Acknowledgments

I began working on the research for *Geo-Architecture and Landscape* in November 2007. Time has really flown. I would like to take this opportunity to extend my sincere thanks and appreciation to a number of individuals and organizations who have helped, contributed, and supported in various ways the realization of this series over the past 8 years.

Many thanks must go to Liangyong Wu, Daozeng Li of Tsinghua University, Stephen M. Ervin of Harvard University, and Annette M. Kim of the University of Southern California for their encouragement and good advice over the years. A special nod goes out to Rahul Mehrotra of Harvard University for his thoughtful foreword. A dedication goes to Charles Correa of Massachusetts Institute of Technology and Yuming Wang of East China Normal University.

I extend special gratitude to my colleagues Changchun Feng, Liping Zhou, Chunhua Yan, Jijun Meng, Bihu Wu, and Yanwei Chai and to my friends Yuanqin Shen, Shuhua Dong, Chaozhi Zhang, Jianzhong Li, Jingyan Yang, Dongsong Li, Jiayu Qin, Xinmin Huang, Yaogen Peng for their support and encouragement of this series. I also want to thank the students in my research team at the College of Architecture and Landscape Architecture, College of Urban and Environmental Sciences, School of Urban Planning and Design, Peking University, whose careful research assistance was invaluable.

Help from the many people who provided illustrations, an important component of this series, is very much appreciated. Although too numerous to list, I greatly appreciate the kindness and generosity of those individuals, firms, and photographers who made accessible their beautiful photographs and drawings—on which the series has depended so greatly. Every effort has been made to credit sources appropriately in the captions, but apologies are due for any omissions or inaccuracies.

Finally, I deeply appreciate the help of my editors, Leana Li, Toby Chai, Hannah Qiu, and their colleagues at Springer.

In closing, this series *Geo-Architecture and Landscape* is dedicated to my husband, Shuai; our son, Han; and our parents, who have given me the adequate work time, precious love, and valuable encouragement that I needed to persevere over the years.

In short, many thanks to all with whom I have worked and by whom I was helped over the last 8 years between 2007 and 2015 on *Geo-Architecture and Landscape*.

Contents

Research Team

Phase One	Fan Yin, Xiufeng Yu, Yicai Zhu, Di Liu, Xiaofei Hao, Wei Chen, Yijie Huang, Jun Ge
Phase Two	Yang Liu, Yang Chen, Qianqian Zhang, Samuel Lyon, Gege Wang, Leilei Song, Hui Yuan, Yu Pei, Xing Wang, Lei Zheng, Min Zhu, Hao Sun, Fan Yang, Xiao Xiong, Guoqiang Ma, Chenghao Zhang
Phase Three	Xulai Chen, Min Zhang, Xiaoli Pan, Ying Wu, Yanyan Gao, Yuan Hu, Ye Shen, Wenhao Li, Xingchen Liu, Xiaoquan Zhou, Mu Zhang, Tairan An, Hongru Cai, Luxi Lin, Qiujie Shi, Jingjing Cui, Xinkai Xiong, Taylor Poor, Catherine Yang, Joan Chen, Lulu Li, Cathy Lin, Kadri Koop
Phase Four	Xi Wu, Jian Liu, Wei Li, Xiaojie Wang, Ruimin Sun, Caixia Wang, Xiaoning Xue, Ying Dong, Xiaoyu Liu, Fengyao Yu, Jennie Rajni Chow, Anna Chan
Phase Five	Yingqiao Zong, Lisi Wang, Lu Xu, Jie Chen, Linzi Zhang, Huiting Ruan, Yaoyao Peng, Fanxi Gao, Tianzhu Zhang, Yuchun Xia, Shanshan Shang, Chunyan Jiang
Phase Six	Shiting Lin, Lu Xu, Jianing Li, Wen Mao, Linzi Zhang, Lisi Wang, Shanshan Shang, Chunyan Jiang
Illustration Editing	Fan Yin, Jian Liu, Yijun Wang, Jiali Zhou, Ming Jiang, Hongjie Zhao, Kun Gao, Sen Sun, Jing He

Notes in Volume 1

Along the River During the Qingming Festival (Mandarin: *qing ming shang he tu*), one of top 10 most famous ancient Chinese paintings, was painted by Zhang Zeduan (1085–1145) in the Northern Song Dynasty (960–1127).
Ancient Tangbo Road crosses the vast land of Western China and links the southwestern neighboring countries, and is also called the Southern Silk Road.
Annals of Yueyang Fu: Dongting Lake (Mandarin: *yue yang fu zhi: dong ting tu*), an official record, was finished in the Qing Emperor Qianlong's reign (1736–1795).
Azure Dragon in the east is one of the Four Symbols and is the mythological guardian of east and also represents spring and property of wood.
Bagua, also named Eight Trigrams, is a basic philosophical concept of ancient China. It is a *yin* and *yang* system that can be composed of eight different forms and used to symbolize various natural and human phenomena.
Bai Hu Tong, a Chinese classical Confucian book, was compiled in the Eastern Han Dynasty (25–220).
Bashu refers to some districts of the Southwestern China during the pre-Qin period (approximately the twenty-first century to 221 BC) and now includes the area in the upper reaches of the Yangtze River.
Basic Annals of Qin Shi Huang (Mandarin: *Qin Shi Huang ben ji*) was the 6th Volume of *Records of the Grand Historian*.
Beyond the Border (Mandarin: *liang zhou ci*), a poem, was written by Wang Zhihuan (688–742) in the Tang Dynasty (618–907). Its English translation was adapted from Witter Bynner, an American poet, writer, and scholar.
Black Turtle-Snake in the north is one of the Four Symbols and is a creature that is a combination of turtle and snake, the mythological guardian of north that represents winter and the property of water.
Chi, *cun,* and *zhang* are traditional ancient Chinese units of length. 1 meter ≈ 3 *chi*, 1 meter ≈ 0.3 *zhang*, 3.33 centimeters ≈ 1 *cun*.
Chu Bei Shui Li Di Fang Ji Yao, a monograph on water construction, literally *Irrigation and Embankment Record in Hubei Province*, was written by Yu Changlie in the Qing Dynasty (1644–1911).

Chu Yu Guan, a poem, literally *Leaving Away from Yuguan Pass*, was written by Lai Ji (610–662) during the Tang Dynasty (618–907).
Chushi (lit. the value orientation of staying away from society) is an important philosophy in Taoism. The Taoists cut themselves off from daily life, pursuing the harmony with the natural universe rather than wealth and fame. *Chushi* in Taoism and *rushi* in Confucianism are the two pillars of Chinese philosophy.
Column-and-tie construction is a typical style of traditional Chinese timber structures in which columns and beams are connected by mortise and tenon joints.
Comment on the Collapse of the Leifeng Pagoda (Mandarin: *lun lei feng ta de dao diao*), an essay, was written in 1924 by Lu Xun (1881–1936), a great novelist, literary critic, and essayist in modern China.
Cong Jun Xing, a poem, literally *Army Life*, was written by Li Bai (701–762) during the Tang Dynasty (618–907).
Cong Jun Xing, a poem, literally *Army Life*, was written by Wang Changling (690–756) during the Tang Dynasty (618–907).
Cun, *chi*, and *zhang* are traditional ancient Chinese units of length. 1 meter ≈ 3 *chi*, 1 meter ≈ 0.3 *zhang*, 3.33 centimeters ≈ 1 *cun*.
***Dawenkou* culture** is a Neolithic culture dated from 4100 to 2600 BC in China, primarily centered in Shandong Province, but it was also found in Anhui, Henan, and Jiangsu Provinces. A large number of valuable turquoise, pottery, jade, and ivory artifacts were found at the relics.
Divine by the *bagua* is an ancient way to ask for the future of some events. It is thought to originally come from the *I Ching*.
Dongting Late Autumn Drawing was a painting given to Fan Zhongyan (989–1052) by Teng Zijing (991–1047) as a gift and a request for writing an essay on the Yueyang Tower.
Dr. Sun Yat-sen's Last Testament (Mandarin: *zong li yi xun*) was completed and refined by Chiang Kai-shek (1887–1975) according to Sun Yat-sen's final pithy political testament.
Dr. Sun Yat-sen's Last Will (Mandarin: *zong li yi zhu*) was completed and refined by Hu Hanmin (1879–1936) according to Sun Yat-sen's will.
Duke of Zhou, personal name Ji Dan, was a politician, militarist, thinker, educator in the Zhou Dynasty (1046–256 BC).
Emperor Yao (Mandarin: *yao di*) was a legendary Chinese ruler approximately 4,000 years ago.
Fengshui (lit. wind and water) is also known as geomantic omen, and is a Chinese philosophy that seeks ways to harmonize humans with the surrounding environment.
Fengshui Bridge is a type of bridge that integrates the concept of *fengshui* as "avoiding wind and accessing water."
Five Great Mountains, nicknamed as *wu yue*, which include Eastern *Yue* Mount Tai (Shandong), Western *Yue* Mount Hua (Shaanxi), Southern *Yue* Mount Heng (Hunan), Northern *Yue* Mount Heng (Shanxi) and Central *Yue* Mount Song (Henan). The name of *wu yue* has existed for a long time. The mountains are mentioned in China's foremost creation myth, in which the body of a great giant Pangu

decomposed into the elements of the universe. The book of *Shu Yi Ji* writes of the Qin (221–207 BC) and Han (202 BC–220 AD) era version of the myth, "Pangu's head became the Eastern *Yue*, his belly the Middle *Yue*, his left arm the Southern *Yue*, his right arm the Northern *Yue*, his foot the Western *Yue*." The name of *wu yue* was first formally defined during the reign of the Han Emperor Wu although the term had previously existed as mentioned above. Over time the Five Great Mountains have developed into sites rich in historical and cultural connotation. Emperors routinely traveled to *wu yue* to worship heaven. Famous figures and intellectuals alike have also made a pilgrimage to these mountains. They have left in their wake poems and verses on the topic of *wu yue*, many of which later gained wide renown. The Five Great Mountains have also had a considerable influence on the establishment and evolution of Chinese culture over time. Thus, *wu yue* is known as famous cultural mountains. (Reference: Li, Z.H. & Li, N.J. *Discovering wu yue*. Jinan: Shandong Pictorial Publishing House, 2007, in Chinese.)

Foolish Old Man Removes the Mountains is a famous fable from Chinese mythology about a man nicknamed the Foolish Old Man who wanted to remove the mountains; he impressed the celestial beings in heaven with his perseverance and willpower, and at last, the celestial beings helped in separating the mountains.

Four Symbols, four mythological creatures in the Chinese constellations, include the Azure Dragon in the east, the Vermilion Bird in the south, the White Tiger in the west, and the Black Turtle-Snake in the north. Each of them represents a direction and also a season in ancient Chinese culture.

Fu (lit. prefecture) was an administrative division during the Tang (618–907), Ming (1368–1644) and Qing (1644–1911) Dynasties of China. It was also called "*Jun*" prior to the Tang Dynasty.

Fundamentals of National Reconstruction (Mandarin: *jian guo da gang*) was a political statement that was published in 1923 by Sun Yat-sen (1866–1925), the founding father of the Republic of China.

Gable-and-hip roof is a typical roof style in traditional Chinese architecture, usually comprising four sloping roofs with two large roof sections in the front and back, whereas on each of the other two sides is a smaller roof section with a gable.

Gu Jin Tu Shu Ji Cheng, also known as *The Imperial Encyclopedia* or literally as the *Complete Collection of Illustrations and Writings from Early to Present Times*, was first created in 1700 and was completed in 1725.

Guan Shan Yue, a poem, literally *Moon Hanging on the Sky of the Guanshan Area,* was written by Lu zhaolin (632–695) during the Tang Dynasty (618–907).

Guo Gu Guan, a poem, literally *Passing by Guguan Pass*, was written by the Qing Emperor Kangxi (reign 1662–1722) during one of his western tours *to* admire Guguan Pass in all its majesty.

Hexi Corridor is a historical route in northwest China that lies to the west of the Yellow River. It was the main access point from ancient *Zhongyuan* (lit. the Central Plain region in China) to Central Asia and West Asia for trade and military.

History of the Han Dynasty (Mandarin: *han shu*), a classical Chinese history book covering the history of the Western Han from 206 BC to 25 AD, was written and assembled by Ban Gu in the Eastern Han Dynasty (25–220).

History of the Yuan Dynasty (Mandarin: *yuan shi*), a historical work that consists of 210 chapters chronicling the history from 1162 to 1227, was edited chiefly by Song Lian and Wang Wei and composed in 1370, during the early Ming Dynasty.
Huai Nan Zi: Ren Jian Xun, a Chinese philosophical classic including theories from Taoist, Confucianist, and Legalist concepts, literally *The Philosophers of Huainan: In the Man's World*, was written in the second century BC.
Jiangnan refers to the region to the south of the Yangtze River.
Jinshen, a unit to measure the depth of the building, refers to the distance between two columns in the gable of the traditional Chinese wooden architecture.
Jun (lit. commandery or prefecture), was a traditional administrative division in China from the Warring States period (475–221 BC) until the early Tang Dynasty (618–907). Before the Qing Dynasty (1644–1911), it was smaller than a county, and it was larger than a county later. Since the Tang Dynasty, it has been called "*Fu.*"
Kaijian, also known as *miankuo*, is a unit to measure the width of the building, which refers to the distance between two columns in the frontage of the traditional Chinese wooden architecture.
Kao Gong Ji, literally *The Records of Examination of Craftsman*, was compiled in the Spring and Autumn periods (770–476 BC). There were originally six parts in *Rites of Zhou*; however, the sixth part was lost, and later *Kao Gong Ji* was added as a replacement.
Kong (lit. empty or vacant), a Buddhist term.
Kylin is a Chinese mythical creature that signifies luck and happiness.
Lao Lao Ting is a poem that translates as *Departing from Laolao Pavilion* and was written by Li Bai (701–762) in the Tang Dynasty (618–907).
Legend of the White Snake (Mandarin: *bai she zhuan*), also known as *Madame White Snake*, was one of the four famous ancient folk tales on the topic of love in China.
Li is a unit of length; 1 *li* = 1/2 kilometer.
Liang Zhou Yue Ge, a poem, literally *A Happy Army Song at Liangzhou,* was written by Wen Zisheng (495–547) during the Northern Wei Dynasty (386–534).
***Lingnan* culture** is an important culture in southern China covering what are now the Guangdong, Guangxi, and Hainan Provinces.
***Lingnan* region** originally referred to the region south of the Five Ranges and now generally covers the modern Chinese provinces of Guangdong, Guangxi, and Hainan.
***Lingxing* Gate**, a type of gate commonly used in residences and temples. Usually the gate was built with a plaque in the upper part between two wooden columns and had three doors installed. After the Ming and Qing Dynasties, stone columns were more widely used for mausoleums and temples.
Log-cabin style is a structure that stacks wood layer by layer as walls without using columns and beams.
***Longshan* culture** refers to the cultural relics in the region of the middle and lower reaches of the Yellow River in China in the late Neolithic dated from approximately 3000 to 2000 BC and is characterized by black pottery.

Lü Shi Chun Qiu, an encyclopedic Chinese classic book, literally *Mr. Lü's Spring and Autumn Annals*, was compiled under the organization of Lü Buwei, a Qin Chancellor at the end of the Warring States (approximately the third century BC).
Mantle-like eave is an annex part built under the eaves of a main building.
Mu is a traditional Chinese unit of area. 1 *mu* ≈ 667 square meters.
Nan Xun Sheng Dian, an official record during one of Emperor Qianlong's southern tours in the Qing Dynasty (1644–1911), was literally named *Pomp and Ceremony in the Southern Tour.*
Paifang (lit. memorial gate), one type of monument in the form of gates and arches, is used to commemorate the merit or worship the ancestor.
Pangu, the person who separated heaven from earth according to Chinese legend.
Peach Blossom Land (Mandarin: *shi wai tao yuan*), a fictitious land of peace off the beaten path, first appeared in a well-known ancient Chinese essay, *Peach-Blossom Spring*, written by Tao Yuanming (approximately 365–427) during the Eastern Jin Dynasty (317–420). The name is often used to describe an unspoiled wilderness of great beauty away from the turmoil of the world.
Qin Yuan Chun: Changsha, a *ci* (a type of lyric poetry), literally *Qinyuan Garden Spring: Changsha*, was written in 1925 by Mao Tse-tung (1893–1976), a great Chinese Communist revolutionary leader of the People's Republic of China.
Qingli Reforms were an attempt to introduce proposals covering various aspects of governmental affairs for better management efficiency. They were attempted under the leadership of Fan Zhongyan (989–1052) and Ouyang Xiu (1007–1072) from 1043 to 1045 in the Song Dynasty (960–1279) and finally ended in failure.
Raised-beam frame is one type of timber frames in traditional Chinese architecture. It is characterized by using beams that are borne up by columns placed in the direction of depth, with layers of shorter columns and beams overlapped on the beam up to the ridge of the roof.
Rebuilding Chongshou Monastery on Baoshi Hill (Mandarin: *chong jian bao shi shan chong shou yuan ji*), an essay, was written by Xu Yikui during the early Ming Dynasty (approximately the fourteenth century).
Records of the Grand Historian (Mandarin: *shi ji*), literally *Historical Records*, was written by Sima Qian, a Chinese historian in approximately the second century BC during the Western Han Dynasty (202 BC–8 AD).
Rites of Zhou (Mandarin: *zhou li*), an ancient ritual text, was supposedly written by the Duke of Zhou in the Western Zhou Dynasty (the eleventh century–771 BC).
Rushi (lit. the value orientation of integrating with society) is an important philosophy in Confucianism that is more engaged with the society and concerns ethical problems and political issues through moral teaching. *Rushi* in Confucianism and *chushi* in Taoism are the two pillars of Chinese philosophy.
Sanheyuan, a type of three-sided courtyard, is a traditional type of residence that is commonly found in Chinese villages.
Serindia, or the Western region (Mandarin: *xi yu*), refers to the regions to the west of the Yangguan and Yumenguan Passes in Dunhuang, including what is now Sinkiang and parts of Central Asia, although it is sometimes used more generally to refer to other regions to the west of China as well, such as the Indian subcontinent.

Shan xing is a poem that translates as *Walking on the Mountain* and was written by Du Mu (803–852), who was a leading poet, government official and essayist in the Tang Dynasty (618–907).
Shi ming is a monograph on words explanation that translates as the *Study on the Source of Words* and was written by Liu xi in the Eastern Han Dynasty (25–200).
Shichen is an ancient Chinese unit of time. One *shichen* is equal to two hours.
Shoushi Calendar, a calendar system, was implemented in the year 1281 during the Yuan Dynasty (1271–1368).
Shuo Ling is a novel called *Telling Trivial Things in Life* that was written by Wu Zhen in the Qing Dynasty (1644–1911).
Siheyuan, also as Chinese quadrangles, a historical type of residence, is commonly found throughout China, most famously in Beijing. It composes of a courtyard surrounded by buildings on all four sides.
Song Liu Si Zhi Fu An Xi, a poem, literally *Saying Farewell Sizhi Liu to Anxi*, was written by Wang Wei (692–761) during the Tang Dynasty (618–907).
Statutes of the Ming Dynasty (Mandarin: *da ming hui dian*) was compiled in the Ming Dynasty (1368–1644).
Tai Hua Shan Jì is a travel essay called *Travel through Mount Hua* that was written by Li Panlong in the Ming Dynasty (1514–1570).
Taiping Heavenly Kingdom Movement, a massive peasant uprising in southern China from 1851 to 1864 against the ruling Qing Dynasty government that was led by Hong Xiuquan (1814–1864).
Tea-horse Interchange Trade is a type of classic trade between ancient *Zhongyuan* (lit. the Central Plain region in China) and the minority nationalities living in northwest and southwest China. It began in the Tang Dynasty (618–907) and flourished in the Ming Dynasty (1368–1644).
Thang-ga is a unique painting form in Tibetan culture, which is a religious scroll painting that is suspended and has a consecrated mounting with colored satin.
Upturned eave is a type of eave in traditional Chinese architecture that builds the eaves upturned with special treatment.
Vermilion Bird in the south is one of the Four Symbols and is the mythological guardian of south and also represents summer and the property of fire.
Wangchuan Garden (Mandarin: *wang chuan yuan tu*), is a painting drawn by Wang Wei (699–759), a prominent poet, musician, painter, and statesman during the Tang Dynasty (618–907).
Wei Cheng Qu, a poem, literally *A Song at Weicheng*, was written by Wang Wei (699–759) during the Tang Dynasty (618–907).
White Tiger in the west is one of the Four Symbols and is the mythological guardian of west and also represents autumn and the property of gold.
Wooden beam structure is a structure that uses wooden beams (often also with columns) for load bearing.
Wuxing means the Five Elements (namely, Fire, Earth, Metal, Water, and Wood) that are included in traditional Chinese thought and used in the fields of philosophy, medicine, astrology, *fengshui*, etc.
Xuan (lit. mysterious or abstruse), a Taoist term.

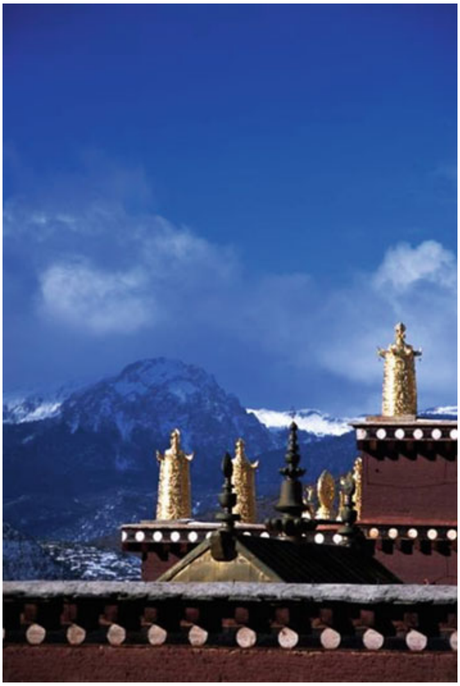
***Xuanshan* roof** is a two slopes roof that is one of the most common ancient forms of roof in the history of Chinese architecture.
Yellow Crane Tower is a poem written by Cui Hao (appropriately 704–754) during the Tang Dynasty (618–907). It is the most important poem among others like it on the topic of Yellow Crane Tower.
Yellow Emperor (Mandarin: *huang di*) is one of the ancient Chinese emperors and heroes about 4,000 years ago who is regarded as one of the initiators of Chinese civilization.
Yellow stone is a type of sedimentary rock that serves as the main stone material in the uplands area beside Lake Taihu. It features a broad stone face, large size, and well-defined shape.
Yin* and *yang are a pair of traditional Chinese philosophical concepts that represent the two opposite or contrary principles in nature and how they give rise to each other as they interrelate to one another. They are used in various fields of traditional Chinese culture, including religion, philosophy, calendar, *fengshui*, etc.
Yongle Encyclopedia (Mandarin: *yong le da dian*) is a Chinese compilation of information that was commissioned by Emperor Yongle (reign 1403–1424) of the Ming Dynasty and completed by 1408.
Yu the Great (Mandarin: *da yu*), a legendary ruler in ancient China famed for his introduction of flood control, inaugurated dynastic rule in China by founding the Xia Dynasty in the twenty-first century BC.
Yuan Ye is a monograph on garden design that has been translated as *The Garden Treatise* or *The Craft of Gardens* and was written by Ji Cheng (1582–?) in the late Ming Dynasty (1582–1642).
Yue Yang Lou Ji, an essay, literally *On Yueyang Tower*, was written by Fan Zhongyan (989–1052) in the Northern Song Dynasty (960–1127).
Zhang, *chi*, and *cun* are traditional ancient Chinese units of length. 1 meter ≈ 3 *chi*, 1 meter ≈ 0.3 *zhang*, 3.33 centimeters ≈ 1 *cun*.
Zhongyuan culture (lit. culture of the Central Plain region in China) is the origin and core part of the Chinese culture centered in Henan Province and distributed in the middle and lower reaches of the Yellow River, which can be traced back to the Neolithic from 6000 to 3000 BC.
Zhongyuan is referred to the central plain region in China, where dynasties were usually led by the Han people in the ancient China.
Zhou Bi Suan Jing is one of the ancient Chinese mathematical texts, literally *The Arithmetical Classic of the Gnomon and the Circular Paths of Heaven*, was nearly complete by the first century BC.
Zhuang zi, a famous ancient Taoist book, is named after Zhuangzi (369–286 BC), an influential philosopher during the Warring States period (475–221 BC), and consists of three parts but actually only some contents finished by Zhuangzi and his students.
Zongqi, an army unit in the Ming Dynasty (1368–1644); 50 people in the military establish a *zongqi*.

About the Author

Fang Wang Ph.D. is Associate Professor at College of Architecture and Landscape Architecture, Peking University and a registered urban planner. After receiving a Ph.D. in Architectural Design and Theory from Tsinghua University, Dr. Wang completed her postdoctoral research in geography, with a concentration in urban planning, at Peking University. From 2011 to 2012, Dr. Wang was a visiting scholar at the Harvard University Graduate School of Design. She is a member of Chinese Academy of City Planning, Chinese Geographical Society, and Chinese Architectural Society.

Dr. Wang's research concentrates on introducing geographical philosophy, methods, and techniques into the traditional engineering-dominated fields of urban planning and architectural design. Her focus is also known as "geographical planning and design," i.e., research on the influence of geography upon urban planning and design and reflexively, urban planning and design responses to geography. She is interested in the following research: the preservation and renewal of cultural landscapes and historical districts and planning and design of sightseeing districts and geo-architecture. She has published over 70 academic papers and three books (one in Springer) and has translated nine books from English to Chinese for publication. She has piloted one China Natural Science Foundation project, three Sino-German Center projects, and six other projects of provincial and ministry-level funding. As the team leader, she won the Second Prize of Land Resources Science and Technology Award in 2015, sponsored by Ministry of Land and Resources of the People's Republic of China.

Part I
Conversation and Sentiment



Ganden Sumtseling Monastery.
Source Photograph by Fan Yin

Chapter 1
Introduction

In traditional Chinese culture, architecture frequently acts as a sentimental medium. As a product of human activity, architecture reflects cultural values from different time periods[1]. In the section "Conversation and Sentiment", architecture responds to geographic culture in a perfect illustration of traditional Chinese culture in all of its profoundness.

"Conversation" embodies communication between architecture and geography, between architecture and humanity, between architecture and architecture itself. As a form of cultural expression, architecture conveys the ponderings of the Ancient Chinese people as they came to understand natural geography, human geography and their own religious philosophy over time.

"Sentiment" reflects the Ancient Chinese notion of emotional relief through nature, the expression of emotion through the landscape. For the Ancient Chinese, one's emotions are connected inseparably from one's natural surroundings. As man-made structure, architecture is perhaps the best expression of this fusion of emotion and landscape. On the one hand, architecture is a fundamental component of the landscape; on the other, architecture comes to bear a great deal of human emotion.

Conversation and sentiment both focus on the interaction of architecture and its environment. How such interaction is generated and how a geographical setting proves architecturally useful, and in what architectural form and pattern it does so, are all important issues addressed herein.

[1]The original version of this part was published in *Tourism Planning & Design*, 2011 (2): 62-68, in Chinese. Now, its content in this book is improved.

F. Wang, *Geo-Architecture and Landscape in China's Geographic and Historic Context*, DOI 10.1007/978-981-10-0483-4_1

1.1 Cause of Conversation and Sentiment

1.1.1 Cause of Conversation

(1) Respect and Fear for Deities

Ancient people developed deities rooted in the supernatural to explain natural phenomenon that they could not understand and attempted to solve problems they could not handle by talking to deities. Architecture acted as a physical platform for this communication.

People of ancient times endowed their deities with extraordinary power; deities held dominion over the world and possessed invincible might (Chen 2000). Humankind thus developed an environmental philosophy based upon respect and fear towards nature. Conversation between human and deity in this context often consisted of wishes and prayers expressed through exaltation and worship.

Sacrificial rites were the specific formal expression of this conversation. Because every material object has an attached deity in traditional Chinese environmental philosophy, there were rites for worshipping heaven, worshipping earth, worshipping mountains, worshipping rivers and many other rites as well. As the places supplied for human activities, various buildings were constructed to serve these worship purposes, such as the Temple of Heaven for the heaven worshipping ceremony, the Temple of Earth for the earth worshipping ceremony, the Dai Temple for the Mount Tai worshipping ceremony, and the Dragon King Temple for the Water Deity worshipping ceremony.

(2) Respect for Ancestors

The Ancient Chinese Patriarchal System incorporated established notions regarding ties of blood and familial notion. These notions in turn exerted significant influence upon cognitions of life and love held by Ancient Chinese people. For those Ancient Chinese who believed that all objects possessed an attached deity, death did not signify life's end but rather a transiting to an existence in another world in another form. The product of this belief was the worship of ancestors, realized through the ancestor worship ceremony, which in turns influenced the lives of the living (Lin 1996).

The ancestral temple was the physical place for worshipping ancestors. According to the social geography of multi-family residential life, the ancestral temple was always given the most prominent geographic location in a traditional village layout, forming a critical space for conversation between ancestors and descendants. Reverence and worship of ancestors on the part of Ancient Chinese people was also an expression of gratitude, repayment to their forebears for generation and reproduction (Yu 2001).

(3) Worship and Exploration of Nature

In the spiritual life of Ancient Chinese people, nature played a dual role: On the one hand, nature was the source of life's basic necessities; on the other, nature presented severe challenges to human survival. This dichotomy forced the Ancient Chinese to consider the relationship between themselves and nature (Shan 2003). Ancient Chinese people held a dual attitude towards nature: They would simultaneously worship nature and seek to explore nature's unknown.

Nature worship developed from the mixture of respect and fear that the Ancient Chinese felt towards nature. Temple architecture can be viewed as a demonstration of these two emotions. The Ancient Chinese often capitalized upon local geography (borrowing nature's power, so to speak) to enable architecture, through conversation with nature (in its perceived holiness), to take on a certain sacred quality itself. Thus, many Tibetan Buddhism monasteries, the Potala and Yongbulakang Palaces for example, were built on mountain tops. Builders of these monasteries took advantage of the unique properties exhibited by mountain peaks. In doing so, they architected a successful integration of Tibetan Buddhism and worship of mountain deities.

As society developed over time, the understanding of the objective laws of nature progressed. The Ancient Chinese were indefatigable in their pursuit of scientific exploration, which included surveying mountains and rivers, observing the cosmos and many other investigative activities. Architecture played different roles in the exploration process. In many cases, architecture served as the platform upon which these activities occurred. During the Yuan Dynasty (1271–1368), for example, one emperor commissioned the construction of a transnational system of 27 observatories for surveying heaven.

(4) Blending and Collision Among Different Cultures

Culture does not emerge spontaneously, but from social activity (Su 2003). Thus, different physical environments produce distinctive cultures. As life changes in its physical surroundings, culture changes with it. Differences between cultures stimulate cultural communication, conflict and collision.

As a physical cultural medium, architecture crisply reveals blending among, and collision between, different cultures. For example, the religious philosophy of the Ancient Chinese was inclusive. Different cultures from the Buddhist, Taoism and Confucian traditions mixed with each other. Many religious buildings thus featured a fusion of Buddhist, Taoist and Confucian stylistic elements.

When two cultures meet, there may also be fierce collision, which can lead to rejection and isolation. When the Hakka people migrated to the *Lingnan* region,[2] they faced conflict between their own culture and local culture. They chose to avoid confrontation, living isolated within earthen buildings, structures that were introverted and enclosed. In this manner, the Hakka people were able to preserve the independence of their culture.

[2]***Lingnan* region** originally referred to the region south of the Five Ranges and now generally covers the modern Chinese provinces of Guangdong, Guangxi and Hainan.

Culture changes frequently over time, and when it does, architecture often changes along with it. The Leifeng Pagoda by West Lake, for example, was originally a stupa. With the passage of time, however, especially after the publication of *Legend of the White Snake*[3] and *Comment on the Collapse of the Leifeng Pagoda*,[4] the Leifeng Pagoda came to represent an attack upon feudal ethical codes.

1.1.2 Cause of Sentiment

Nature was a place of emotional resort for the Ancient Chinese. According to the Ancient Chinese standard of aesthetics, landscape must possess emotion. This can occur in one of two ways: Either the landscape inspires the viewer, or the viewer unloads emotion onto the landscape. The greatest form of landscape in this spectrum is achieved when sentiment and setting blend together in seamless harmony.

(1) Inspired by Landscape

In the eyes of Ancient Chinese literati, landscape was viewed both as something to be judged aesthetically and as a medium, or vessel, for aesthetic sentiment itself. Aesthetic sentiment serves social culture; in a certain socio-cultural environment, a certain landscape often comes to represent a certain emotional state. For example, in the eyes of the Ancient Chinese, the Yangguan and Yumenguan Passes both indicated barren lands in the northwest. When either of these passes is mentioned, images of a border pass come to mind, evoking the sorrow of farewell and the valor of battle.

(2) Resorting to Landscape

For the Ancient Chinese, nature is something that can be remade, something that can be utilized. Additionally, one can create new forms of landscape. By transforming their physical environment, people install their emotions within the surrounding landscape. This notion is illustrated in the massive scale of the Jichang Garden. The garden's owner, frustrated with his government, decided to abandon himself to nature. Thereafter, he invested all efforts into the construction of his garden.

(3) Emotions Blending into Landscape

The famous Chinese writer Mr. Qian Zhongshu (1910–1998) believed that, as aesthetic objects, landscapes have unique personalities. When one composes scenic poems, a description of the landscape needs to express a poet's own mood, realizing the use of "landscape to illustrate my emotion"; on the other hand, a poet must seek

---

[3]***Legend of the White Snake*** (Mandarin: *bai she zhuan*), also known as *Madame White Snake*, was one of the four famous ancient folk tales on the topic of love in China.

[4]***Comment on the Collapse of the Leifeng Pagoda*** (Mandarin: *lun lei feng ta de dao diao*), an essay, was written in 1924 by Lu Xun (1881–1936), a great novelist, literary critic and essayist in modern China.

to glimpse personality within the landscape because "landscape has its own heart and is waiting for reflection in my heart." That is, one must reach the conceptual level where emotion blends into landscape (Yu 2007). So it is with architecture and geography. On the one hand, people engage in architecture as a means to express their own thoughts. On the other, architecture must be constructed so as to adapt to the surrounding geographic environment.

1.2 Study of Cultural Geographic Environment of Conversation and Sentiment

As the product of human activity, architecture has developed in certain natural and cultural geographies and is connected to many types of cultural geographic environments. The content of architectural pursuit as a human endeavor has subsumed environmental philosophy, patriarchal philosophy, views of thought and many other specific philosophies, as well as what might be summarized generally as views of world, views of life and views of value of different human groups throughout history.

1.2.1 Views of World

The term "views of world" generally refers to a set of basic beliefs held by a group of people regarding the world as a whole. The architecture utilized in conversation with the divine often embodies the Ancient Chinese views of world.

(1) Round Heaven and Square Earth

The book *Zhou Bi Suan Jing*[5] dictates, "the square belongs to earth; the circular belongs to heaven; heaven is round and earth is square." The notion of a round heaven and square earth, rooted in the Ancient Chinese people's perception of the sky as dynamic and the earth as static, is the foundation of the Ancient Chinese views of world. We can see this view reflected in the use of squares and circles as fundamental structural forms in the design of the Temple of Heaven. The square and circle were used to simulate the characteristics of space and time, in the hopes that through this design, communication between heaven and earth might be achieved (Wu and Dai 2005).

[5]***Zhou Bi Suan Jing*** is one of the Ancient Chinese mathematical texts, literally *The Arithmetical Classic of the Gnomon and the Circular Paths of Heaven*, was nearly complete by the first century BC.

(2) Heaven, Earth and the Four Directions

Because of this notion of a "square earth", the phrase "the Four Directions" derives many different types of significance in the Chinese language: as place, square, all sides, everywhere, the four sides, the four cardinal directions or the four seasons (Zhang 1996). The Ancient Chinese further named the Four Directions the Four Symbols.[6] The Four Symbols represented the astrology of the eastern, western, southern and northern skies in ancient times, namely the Azure Dragon in the east,[7] the White Tiger in the west,[8] the Vermilion Bird in the south,[9] and the Black Turtle-Snake in the north.[10] Many architectural designs and village layouts reflect the notion of the Four Symbols. This concept was also the origin of the so-called "Government in front, market in rear; temple for ancestors on the left and temple for harvest on the right" Chinese planning principle. The Ancient Chinese believed that the locations of government and market buildings, the Temple for Ancestors and the Temple for Harvest also correspond to the Four Symbols and reflect their relative importance (Wu 1995).

The Four Directions derived from one location, the earth's core, which was another important component of the Ancient Chinese people's theory of the universe. Various theories positing the location of the earth's core existed, placing the core in one of two ancient cities, Luoyi (now Louyang City) or Yangcheng (now Gaocheng County) in the theory of a Sphere-heaven (Guan 2000). Because the latter was more predominantly considered to be the earth's core, the Gaocheng Astronomical Observatory was built there. Celestial observation data obtained at Yangcheng became an important foundation of the ancient calendar system (Guan 2005).

(3) Nine as the Highest

Of the single digits, nine held the most esteemed rank in Ancient Chinese culture. The book *Lü Shi Chun Qiu*[11] states, "Heaven has nine parts, the earth nine lands, upon the earth nine mountains, upon the mountains nine passes, upon the nine marshes nine glades." In Ancient Chinese architecture, only royal buildings or buildings important

[6]**Four Symbols**, four mythological creatures in the Chinese constellations, include the Azure Dragon in the east, the Vermilion Bird in the south, the White Tiger in the west and the Black Turtle-Snake in the north. Each of them represents a direction and also a season in Ancient Chinese culture.

[7]**Azure Dragon in the east** is one of the Four Symbols and is the mythological guardian of east and also represents spring and property of wood.

[8]**White Tiger in the west** is one of the Four Symbols and is the mythological guardian of west and also represents autumn and the property of gold.

[9]**Vermilion Bird in the south** is one of the Four Symbols and is the mythological guardian of south and also represents summer and the property of fire.

[10]**Black Turtle-Snake in the north** is one of the Four Symbols and is a creature that is a combination of turtle and snake, the mythological guardian of north that represents winter and the property of water.

[11]***Lü Shi Chun Qiu***, an encyclopedic Chinese classic book, literally *Mr. Lü's Spring and Autumn Annals*, was compiled under the organization of Lü Buwei, a Qin Chancellor at the end of the Warring States (approximately the third century BC).

to conversation with the deities featured a modulus of nine in their construction. In the Temple of Heaven, the fan-shaped stones used to pave the platform of the Circular Mound Altar, for example, are laid in a pattern based upon the number nine: The most inner ring uses nine stones, the second ring 18 stones and the outer ring 81 stones.

1.2.2 Views of Life

The term "views of life", by contrast, refers to basic notions regarding the value of human life and greatly influences contemporary architectural form. The most influential views of life in Ancient China were the philosophy of *rushi*[12] in Confucianism and the philosophy of *chushi* in Taoism.[13]

(1) Reaching Success While Maintaining Concern for the World
According to the Ancient Chinese, life's greatest ambition was to obtain a post as a government official. The orthodox Confucian view of an ideal life, "self-cultivation; family-regulating; state-ordering; then making the whole kingdom peaceful and happy" argues that one must also have an ambition to care for the world as a whole. Thus, faced with the ancestral land's majestic landscape and magnificent architecture, intellects consigned their emotions to the landscape, their hearts full of desire to serve their country. Even having never set eyes on the Yueyang Tower, upon imagining the magnificent building standing by the Eight-hundred-*li*[14] Dongting Lake, Fan Zhongyan (989–1052), a prominent politician and literate in the Northern Song Dynasty (960–1127), was overcome with emotion, whereupon he established his ideal, "feel no happiness for possessions or grief for one's self; concern about all over the world first and to enjoy oneself last."

(2) Self-discipline Despite Adversity
Even though entering politics was the highest aspiration of every intellect, there were also many disappointed individuals in the political world. They chose to live in seclusion among mountains and forests, striving for inner tranquility, discharging their hopes and ambitions onto the natural landscape. The Jichang Garden mentioned above was the creation of one individual who, frustrated with government and public, took joy in benevolence, wisdom and happiness; placing his happiness among the mountains and the waters.

---

[12]***Rushi*** (lit. the value orientation of integrating with society) is an important philosophy in Confucianism that is more engaged with the society and concerns ethical problems and political issues through moral teaching. *Rushi*in Confucianism and *chushi* in Taoism are the two pillars of Chinese philosophy.

[13]***Chushi*** (lit. the value orientation of staying away from society) is an important philosophy in Taoism. The Taoists cut themselves off from daily life, pursuing the harmony with the natural universe rather than wealth and fame. *Chushi* in Taoism and *rushi* in Confucianism are the two pillars of Chinese philosophy.

[14]***Li*** is a unit of length; 1 *li* = 1/2 km.

1.2.3 Views of Value

The term "views of value" here refers to the fundamental ways in which one attributes values to different things. Different people subscribe to different value systems. Architecture produced under contrasting views of value can exhibit forms that are completely dissimilar.

(1) Religious Values
Different attitudes toward religion produce different faces of architecture in different areas. Consider, for example, temple architecture associated with Han and Tibetan Buddhism. People in the Han Buddhism area consider religion only a small part of life: These people consider praying to Buddha only upon encountering difficulty. Han Buddhism monasteries are generally built in accordance with the philosophy of *chushi* in Taoism. Monks and priests cut themselves off from the world to practice Buddhism. Thus, temples are located in mountain forests far away from the hubbub of town life.

However, for people in predominantly Tibetan Buddhism areas, life is essentially devoted to religion. It is not uncommon for pious Tibetans to spend their life savings to travel to an especially important shrine. Tibetan Buddhism monasteries are usually located in prominent locations, such as mountain tops, to demonstrate the nuclear role of these facilities in Tibetan Buddhism society.

(2) Overturn of Views of Value
As time passes, views of value change, and the significance attributed to certain buildings changes as well. The Leifeng Pagoda mentioned above is one good example of this process. Another example is that of the Yangguan and Yumenguan Passes. Originally, as strategic frontier fortresses, the two passes were viewed as representations of the vast desert beyond; thus, the two were endowed with connotations of sorrowful farewells and pitched battles with enemy forces. Today, however, the two passes are far from the nation's borders and play no significant part in national defense. People no longer associate these passes with their immediate function but rather endow them with significance from a changing historical, cultural and environmental perspective.

1.3 Presentation of Conversation and Sentiment on Architecture

The Ancient Chinese demonstrated conversation and sentiment through site selection, layout and form of architecture.

1.3.1 Site Selection

Ancient Chinese were meticulous with regard to site selection. Buildings that held special significance were situated in locations that held special significance. For example, the Ganden Sumtseling Monastery was located on a mountain peak to demonstrate the building's lofty religious significance. Similarly, the Gaocheng Astronomical Observatory was built in the place considered to be "the earth's core" in an effort to ensure the scientific reliability of celestial observations. Site selection is the first step in architectural response to geography.

1.3.2 Layout

Layout determines whether the overall form of a building is open or closed. In this capacity, layout indirectly determines the posture of a building with respect to the surrounding environment. Architecture intended for use in conversation with a deity is always built with an open, intimate stance toward its target of conversation. Consider the design of the Temple of Heaven. Although most buildings within the architectural complex are surrounded by walls, the complex successfully expresses the sense of drawing close to the sky. This is primarily achieved through the elevation of the platform of the Circular Mound Altar, prominent in contrast to the otherwise extremely flat topography. The end result is that while along the plan view the architectural complex appears closed, it is actually open from a section perspective.

Aspiring to express their emotions through architecture, the Ancient Chinese often either borrowed from the surrounding landscape or strived to blend architecture as a whole within the landscape. This type of architecture would possess greater flexibility and freedom. The ultimate goal was to blend environment and architecture into one.

1.3.3 Form

Architectural form serves to express a particular cultural geographic meaning. To draw closer to heaven, the Circular Mound Altar in the Temple of Heaven takes the form of a circular platform open to the sky. To express respect for heaven, a precise rule of ritual provisions is ingrained in the Altar's design. By contrast, the Yellow Crane and Yueyang Towers, built by the water's edge and the objects of much sentimental expression at the hands of passerby literati, do not feature consistent rule-dictated forms. Rather, the towers have been reconstructed time and again over several hundred years, each reconstruction representing an entirely different form.

1.4 Summary

Conversation and sentiment between architecture and geography originate from the human need to impart the geographic environment with metaphorical significance. Cultural and natural environment together exert a certain guiding influence on architecture's formation. Through site selection, layout and form, architecture reflects geographic significance.

References

Chen, L. (2000). *The culture of sacrifice to heaven in China*. Beijing: China Religious and Culture Publisher. (in Chinese).

Guan, Z. J. (2000). The concept of the earth's core in Chinese astronomical history. *Studies in the History of Natural Sciences, 19*(3), 251–263. (in Chinese).

Guan, Z. J. (2005). The historical and cultural value of dengfengtai observatory. *Journal of Dialectics of Nature, 27*(6), 80–85. (in Chinese).

Lin, S. X. (1996). Harmony between nature and man: The culture within etiquette of sacrifice of China. *Journal of Social Sciences,* (2), 54–58. (in Chinese).

Shan, C. (2003). The meaning of nature adoration in the system of Chinese belief. *Zhejiang Social Sciences,* (3), 121–128. (in Chinese).

Su, G. X. (2003). Cultural clashes and symbiosis in the context of globalization. *Social Science Abroad,* (3), 2–12. (in Chinese).

Wu, Q. Z. (1995). Ancient Chinese philosophy and ancient city planning. *Architectural Journal,* (8), 45–47. in Chinese.

Wu, T. H., & Dai, W. S. (2005). A pilot study on the spirit of "jiang ren ying guo" and its background. *City Planning Review, 29*(2), 52–58. (in Chinese).

Yu, H. X. (2001). Sacrificial rites in the ancestors' temples and their cultural features. *Journal of South-central University for Nationalities (Philosophy and Social Science), 21*(5), 61–65. (in Chinese).

Yu, Y. (2007). On the three types of emotion and circumstance blending. *Journal of South-Central University for Nationalities (Humanities and Social Sciences), 9*(3), 89–95. (in Chinese).

Zhang, J. S. (1996). On the sources of square culture and *bagua* of ancient China. *Southeast Culture,* (3), 11–18. (in Chinese).

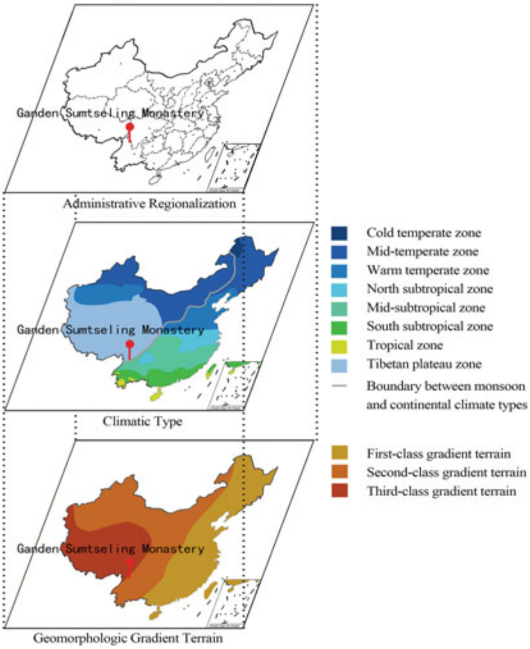
Chapter 2
"Conversation" Cases

2.1 Ganden Sumtseling Monastery: Conversing with the First and the Last Sunlight of Day

Location: Shangri-la, Yunnan Province
Key Geographical Concept: Architecture, terrain and sunlight

The Ganden Sumtseling Monastery conforms to the mountain slope and harmonies with site. The main shrine is located on a mountain peak, first to greet the light of day and last to bid farewell to the sun as it sets.

F. Wang, *Geo-Architecture and Landscape in China's Geographic and Historic Context*, DOI 10.1007/978-981-10-0483-4_2



Note The base maps in the location map are from the websites of the National Administration of Surveying,Mapping and Geoinformation. (See http://unn.people.com.cn/mediafile/200607/14/F200607141610331489926345.jpg, http://unn.people.com.cn/mediafile/200607/14/F200607141540432633643981.jpg). The same base maps are also used in the following location maps for other cases.

Geomorphologic Features

The Ganden Sumtseling Monastery is located on the top of a hill in northeast Shangri-la in Yunnan Province. Shangri-la County is seated at the foot of the mountains. At the moment when the sun rises, the monastery is the first place to be touched by sunlight because of its location and orientation (Fig. 2.1).

Fig. 2.1 Encircled by mountains, the Ganden Sumtseling Monastery basks in the first light of day. The monastery has its back to lofty mountains, with gentle slopes to the south. The entire monastery sits on a hill top; the building presides majestically over an otherwise flat expanse. *Source* Photograph by Fan Yin

Climatic Features

Shangri-la falls within the plateau humid climate zone. Temperatures vary greatly over the four seasons. As in all other plateau regions, night and day temperatures can be drastically different. Built under these conditions, the architecture of the Ganden Sumtseling Monastery takes on a very typical Tibetan style (Fig. 2.2).

Fig. 2.2 Trapezoidal windows at the Sumtseling in classic Tibetan style. Mullions are engraved with an elegant pattern of flowers. Frames are painted with beautiful colored drawings. *Source* Photograph by Bihu Wu

Vegetation Features

The mountains and plains around the monastery are covered with short alpine meadows. The green grass forms a charming contrast with the monastery's red and white walls (Fig. 2.3).

Fig. 2.3 The monastery is surrounded by alpine meadows. The white lamasery dorms set off a pleasant contrast to the verdant grass. *Source* Photograph by Bihu Wu

Cultural Features

The Ganden Sumtseling Monastery belongs to the Gelugpa Sect (the Yellow Hat Sect), currently the largest sect of Tibetan Buddhism. The name Ganden Sumtseling was given by the Fifth Dalai Lama. "Ganden" means that the place is connected to the Gelugpa's earliest monastery, Ganden Monastery. "Sumtseling" is a reference to the playground of three Tibetan Deities. Emperor Kangxi (reign 1662–1722) would later officially rename it Guihua Monastery. The local Tibetan people, however, used the name "Salkun", which means "monastery of sacred land" (Gyalthang Sherab Gyatso 1994). Of the so-called "Thirteen -lings (lit. happy paradise) Monasteries" that the Fifth Dalai Lama asked Emperor Kangxi to build, Sumtseling is the first Gelugpa lamasery in Yunnan Province. After its construction, property and ritual implements from the surrounding monasteries were transferred to the Sumtseling Monastery, making Sumtseling the largest monastery in Yunnan Province, a political and religious epicenter of the province (Xu 2002) (Fig. 2.4).

Fig. 2.4 As the regional religious center, the Sumtseling and its surroundings are decked with colorful flags and other Buddhist decorations. *Source* Photograph by Mingming Li, provided by Lin Yan

Because the Ganden Sumtseling Monastery was to be an important regional political and religious center, a site of great significance was chosen for its construction. The monastery is seated on the top of Pingshan Hill, which overlooks Shangri-la Town. It enjoys the first rays of Shangri-la's morning sun and the last glimmers of its sunset. Spring water at the foot of the Pingshan Hill, which block the northern winds. The Sumtseling sits high above Shangri-la Town; Pilgrims must climb a steep flight of stairs to reach the monastery (Fig. 2.5). The ascent enhances the overall feeling of entering sacred ground (Fig. 2.6).

The nearly 500 mu[1] (approximately 0.3 km^2) that belong to the Ganden Sumtseling Monastery include a Dratsang (Scripture Hall) and its two directly affiliated institutions, Xisu and Juexia, as well as Badakang Village, over 100 lamasery dormitories and walled enclosures. There are five gates in the monastery's oval-shaped wall. Dratsang, the core of the monastery, is located on the highest point of the hill (Fig. 2.7). The entire monastery is built directly in front of a

Fig. 2.5 Ascending the monastery steps, pilgrims approach the final destination of their religious journey. *Source* Photograph by Bihu Wu

[1]***Mu*** is a traditional Chinese unit of area. 1 mu ≈ 667 m^2.

Fig. 2.6 Looking out from the Sumtseling over the surrounding area, one can see Shangri-la Town, which sits on smooth terrain five kilometers to the south. In this photograph, Shangri-la is the town *on the left*. *Source* Photograph by Bihu Wu

Fig. 2.7 Front view of the Ganden Sumtseling Monastery. The major structure of architectural complex, Dratsang (Scripture Hall), features *red*, *white* and *gold colors*. With its backdrop of mountains, the building appears imposing and magnificent. *Source* Photograph by Ling Xue

Fig. 2.8 Side view of the Ganden Sumtseling Monastery. The huge Sumtseling Monastery is built on a slope. Each level of buildings is stacked upon the previous level. *Source* Drawing by Kun Gao

mountain range. The mountain backdrop gives the monastery a sense of grandeur and forms a style similar to that of the Potala Palace (Fig. 2.8). For this reason, the Ganden Sumtseling Monastery is also known as the "little Potala Palace".

The Ganden Sumtseling Monastery architecture is constructed in typical Tibetan style. Buildings feature high walls and rectangular windows, red and white walls and black window frames. The monastery's status is manifested in its gold roof (Figs. 2.9, 2.10, 2.11 and 2.12). The south-facing Dratsang (Scripture Hall) has five stories, among which Main Hall can hold up to 2,000 monks chanting sutras simultaneously (Fig. 2.13).

Fig. 2.9 A gilded roof manifests the primacy of this building among surrounding lamasery buildings. *Source* Photograph by Bihu Wu

Fig. 2.10 The Dharmacakra and the pair of deer both serve to represent the lamasery's status. *Source* Photograph by Bihu Wu

Fig. 2.11 Adorning the corner of the roof, a bell hangs from the mouth of a dragon-crane. *Source* Photograph by Bihu Wu

Fig. 2.12 The political and religious supremacy of the Ganden Sumtseling Monastery is reflected in the Kundikas made from gilded copper, which are found on the ridges of the roofs. *Source* Photograph by Fan Yin

Fig. 2.13 Side view of Dratsang (Scripture Hall). Dratsang was built, in accordance with the monastery as a whole, conforming to the mountain ridge behind and sitting in an elevated northern position facing to the lower south. *Source* Photograph by Fan Yin

As the first Gelugpa lamasery, the Ganden Sumtseling Monastery holds a great number of precious religious texts, thang-ga,[2] as well as a large number of ritual implements, Buddha statues, relics including the Buddharupa of the Fifth and Seventh Dalai Lamas and the Kasaya of the successive Dalai Lamas and the Panchen Lamas, all of great cultural and religious value.

[2]**Thang-ga** is a unique painting form in Tibetan culture, which is a religious scroll painting that is suspended and has a consecrated mounting with colored satin.

Extended Reading: Gelugpa of Tibetan Buddhism

The Gelugpa, or Gelug, is the largest sect of Tibetan Buddhism. The Gelug sect was founded in 1409 AD with the establishment of the Gandan Monastery in Lhasa by the Tibetan Master Je Tsongkhapa (1357–1419). The Gelug monks customarily wear yellow hats. Thus, the Gelug sect is also known as the Yellow Hat Sect. The Gelug is a relatively new form of Buddhism. The Gelug monks are required to be extremely self-disciplined and well organized. The Gelug Buddhism encourages strict observance of religious discipline, in opposition to the type of depravity that had been practiced by many previous monks who sought pleasure, fought for power and generally acted without concern for the common people. This positive standard brought the Gelug sect great popularity among the common people. Between 1409 and 1419, the Gelug sect established three monasteries in Lhasa: the Ganden, Drepung and Sera Monasteries (Khedrup Chosphel 2009). An additional three monasteries were built after this period, namely the Tashilhunpo Monastery in Shigatse, an area of Tibet; the Kumbum in Xining, Qinghai Province; and the Labrang in Xiahe, Gansu Province. Together, these are known as the "Six Monasteries" of Gelug Buddhism. There is also the Ganden Sumtseling Monastery in Diqing, Yunnan Province, which is the largest Tibetan Buddhism monastery in this province (Fig. 2.14). Although founded more recently than any other sects of Tibetan Buddhism, the Gelug quickly replaced the position of many others and became the predominant sect. The Dalai Lama and Panchen Lama reincarnations were both selected with the approval of the Qing Dynasty (1644–1911).

Fig. 2.14 The Gelugpa Ganden Sumtseling Monastery. The Gelugpa lamaseries generally feature grand Scripture Halls. In the Ganden Sumtseling Monastery, the largest building, at its center, is Scripture Hall. Only especially important buildings in a Gelugpa lamasery may be painted with red, yellow and dark brown colors and feature a golden roof with gilded copper decorations. Common dorms are painted *white*. *Source* Photograph by Mingming Li, provided by Lin Yan

Geographical Interpretation

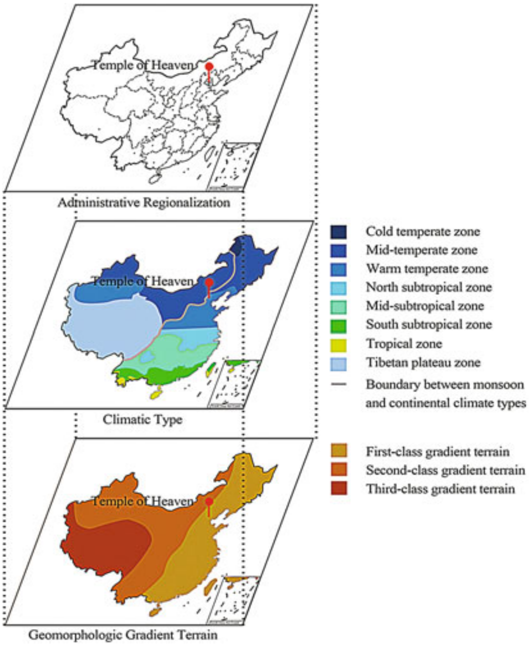
The Ganden Sumtseling Monastery stands built by the mountains, surrounded by meadows. Layers of architecture pile upon one another; the gilded copper roof shines under the sun. Ingenious site selection amid a complex microtopography has ensured that the monastery enjoys the first rays of sunrise and the last glimmers of sunset. The imposing and grand architectural layout and palpable religious atmosphere at the Ganden Sumtseling Monastery have enabled the monastery to become a religious epicenter for Tibetan Buddhism (Fig. 2.15).

Fig. 2.15 Surrounded by mist and light, the Ganden Sumtseling Monastery embodies holiness. *Source* Photograph by Fan Yin

2.2 Temple of Heaven: Worshiping to Heaven and Praying for Good Harvest

Location: Beijing
Key Geographical Concept: Round heaven and square earth

The Temple of Heaven, which served as the main location for the imperial heaven worshipping ceremony in the capital city during both the Ming (1368–1644) and Qing (1644–1911) Dynasties, exhibits the cosmology of "round heaven and square earth" in various aspects, including architectural layout, form and details.



Geomorphologic Features
The Temple of Heaven, located near the southeastern corner of the external city wall of Beijing, sits on the alluvial plain surrounded by low, flat land. A main goal of any architecture used in conjunction with the heaven worshipping ceremony is to emphasize the vast majesty of heaven; thus the main buildings of the Temple of Heaven, namely the Circular Mound Altar and the Hall of Prayer for Good Harvest, are both elevated above their surroundings (Fig. 2.16). The Danbi Bridge, which lies along the central axis of Temple of Heaven, is also raised to a height of four meters aboveground. Standing on the Circular Mound Altar or at the Hall of Prayer

Fig. 2.16 Hall of prayer for good harvest. From a distance, the hall, which is built on the Altar of Prayer for Bountiful Harvests, appears even more sublime, rising from flat, low surroundings. *Source* Photograph by Wang Xinyuan, provided by Fan Yin

for Good Harvest, one occupies the highest point amid low-lying surroundings. This endows the worshipper with a feeling of close proximity to heaven.

Climatic Features
Beijing, where the Temple of Heaven is located, is within the warm temperate continental monsoon climate zone. There are four distinct seasons in the area: The weather is dry in spring, warm and humid in summer, cool and clear in autumn, cold and dry in winter. In the context of such seasonal changes, Chinese emperors would enter the Hall of Prayer for Good Harvest and pray for a bumper grain harvest each year on Shangxin Day (usually between the first and 10th days of the first Chinese lunar month), a practice that dates back to the Ming Dynasty Emperor Yongle's reign (1403–1424). Emperors entered the Circular Mound Altar on the summer solstice to pray for rain and, at the same Altar, on the winter solstice to hold the heaven worshipping ceremony showing that year's harvest.

Vegetation Features
The Temple of Heaven is surrounded by cypress trees. The upright stance and muted colors of the cypress trees embody a solemnity that has made the tree species a common choice for such places as mausoleums and shrine sacrificial architecture. Whether one walks on the emperor's road inside the western gate or on the Danbi Bridge, one sees the verdant cypress trees everywhere. The trees create a solemn atmosphere.

Cultural Features
Ancient Chinese emperors called themselves "the sons of Heaven". Therefore, the heaven worshipping ceremony had political implications suggesting that "imperial power was granted by heaven", as well as adoration for heaven. Every emperor in history considered this worship ceremony to be an extremely important political activity. Thus, sites where the ceremony took place possess a distinctly royal

atmosphere. The Temple of Heaven was used throughout the Ming and Qing Dynasties as the location for the worship of heaven and the prayer for good harvest. It is the most representative work among Chinese temples used for worship ceremonial offerings.

This site was chosen for the Temple of Heaven according to the ideal form for capital cities as laid out in the book *Rites of Zhou*[3]*: Kao Gong Ji.*[4] This classical work included a stipulation dating from the Han Dynasty (202 BC–220 AD) that the heaven worshipping ceremony should be performed on the southern outskirts of a city. Thus, when the Temple of Heaven was built in the Ming Dynasty, a location was chosen in the south of the capital city as it existed then. When the city was expanded in the 16th century, the Temple of Heaven was included within the new city walls. The Temple of Heaven and the Temple of Agriculture flank Beijing's north-south central axis on its eastern and western sides. Together with the Temple of the Sun to the east, the Temple of the Moon to the west and the Temple of Earth to the north, these buildings constituted a holistic network of temples for imperial worship activities in the capital (Figs. 2.17 and 2.18).

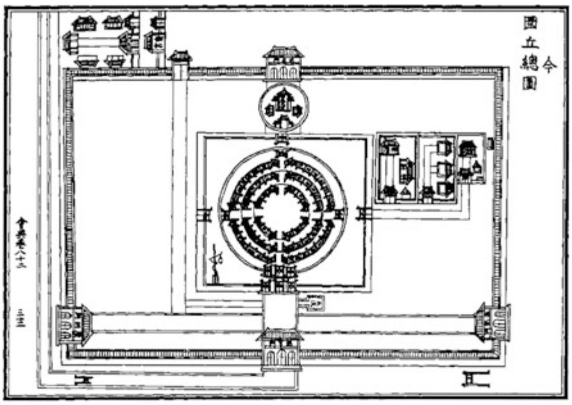


Fig. 2.17 The Temple of Heaven realized its current form in the ninth year (1530) of the Ming Dynasty Emperor Jiajing's reign. The above plan for the Circular Mound Altar from the book *Statutes of the Ming Dynasty*. Depicts an altar similar in size to the Altar that exists today. *Source* Pan (2001c: 122) *Note* ***Statutes of the Ming Dynasty*** (Mandarin: *da ming hui dian*) was compiled in the Ming Dynasty (1368–1644)

[3]***Rites of Zhou*** (Mandarin: *zhou li*), an ancient ritual text, was supposedly written by the Duke of Zhou in the Western Zhou Dynasty (the 11th century–771 BC).

[4]***Kao Gong Ji***, literally *The Records of Examination of Craftsman*, was compiled in the Spring and Autumn periods (770–476 BC). There were originally six parts in *Rites of Zhou*; however, the sixth part was lost, and later *Kao Gong Ji* was added as a replacement.

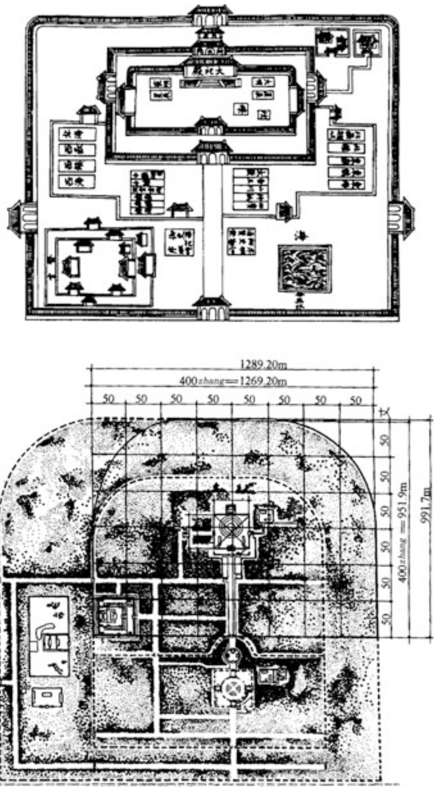


Fig. 2.18 The Temple of Heaven in the early Ming Dynasty. In the *upper image*, *Statutes of the Ming Dynasty* indicates ideal locations for altars on the outskirts of Beijing. The *lower image* shows the location of the Temple of Heaven. The temple first built in the early Ming Dynasty had a slightly different layout and location from the one that stands today. *Source* Hou and Li (2002: 137)

Fig. 2.19 The path for the heaven worshipping ceremony is also on the north–south central axis of the temple complex. As the photograph shows, the Hall of Prayer for Good Harvest and its affiliated gate are located beyond the Danbi Bridge. The bridge connects the two major structures used for worship, including the Hall of Prayer for Good Harvest and the Circular Mound Altar. *Source* Photograph by Yongjie Xu, provided by Ming Jiang

The Temple of Heaven is primarily made up of four buildings: the Circular Mound Altar, the Hall of Prayer for Good Harvest, the Hall of Abstinence, and the Bureau of Divine Music. The two main buildings on the site are the Circular Mound Altar, which was used for the worship of heaven, and the Hall of Prayer for Good Harvest, which was used to pray for a bountiful harvest. These two buildings sit on the temple complex's central axis, connected by the Danbi Bridge (Figs. 2.19 and 2.20). The Hall of Abstinence, where emperors fasted before ceremonies, and the Bureau of Divine Music, where ancient music was played during ceremonies, are both located to the west of the Temple.

The Temple of Heaven was constructed in strict accordance with the Ancient Chinese cosmology "round heaven and square earth". As the largest temple complex in the world dedicated to the worship of heaven, the temple grounds cover some 272 hectares. Double walls enclose the complex roughly in the shape of a square; the two northern corners of the wall are curvilinear, whereas the southern corners are square. Paired with the notion that north is up and south is down, the curvilinear and sharp corners closely parallel the concept of "round heaven and square earth". The most important architectures, including the Hall of Prayer for Good Harvest (Fig. 2.21), the Circular Mound Altar (Fig. 2.22) and the Imperial Vault of Heaven (Figs. 2.23 and 2.24), are all circular structures. However, the foundations of the Hall of Prayer for Good Harvest and the Circular Mound Altar are both square. The choice of these shapes and their juxtaposition within different structures are both reflections of "round heaven and square earth".

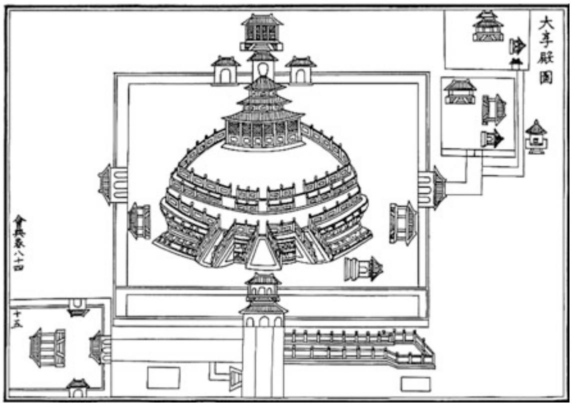


Fig. 2.20 Drawing produced during Emperor Jiajing's reign (1522–1566) from *Statutes of the Ming Dynasty* depicts the Hall of Prayer for Good Harvest with its affiliated gate and the Hall of Imperial Zenith. The overall form of the temple complex is similar to that of today's temple. *Source* Pan (2001c: 123)

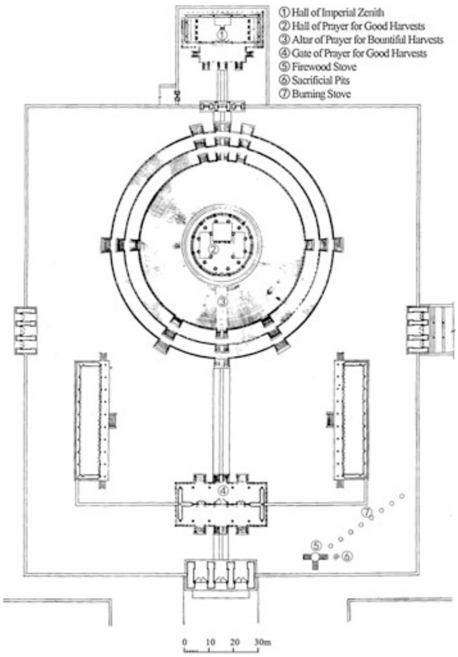


Fig. 2.21 Site plan of the Hall of Prayer for Good Harvest. The primary structure of the hall is circular, whereas the foundation is square. The Hall of Prayer architectural complex consists of, from south to north, the Gate of Prayer, the Hall of Prayer for Good Harvest and the Hall of Imperial Zenith. The Gate of Prayer and the Hall of Imperial Zenith are both highly valuable cultural relics from the Ming Dynasty. Both retain their original appearance, and neither has been reconstructed. The Hall of Prayer was reconstructed in the 15th year (1889) of the Qing Dynasty Emperor Guangxu's reign (1875–1908), after lightning and fire had destroyed the original structure. *Source* Liu (1984: 354)

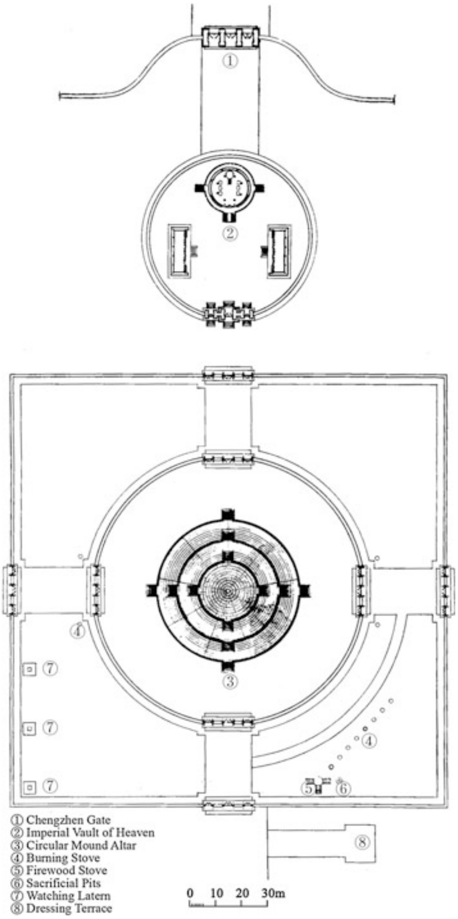


Fig. 2.22 Floor plans of the Circular Mound Altar and the Imperial Vault of Heaven. The structures currently standing, shown in the plans above, are similar in layout and scale to those depicted in the record of the Ming Dynasty. The Circular Mound Altar is enclosed by double short walls, the inner circular and the outer square, indicating the "round heaven and square earth" motif. The shortness of the walls helps allow the platform space to extend beyond, causing the Altar to appear larger than it actually is. This effect accentuates a worshipper's sense of proximity to heaven above. *Source* Liu (1984: 352)

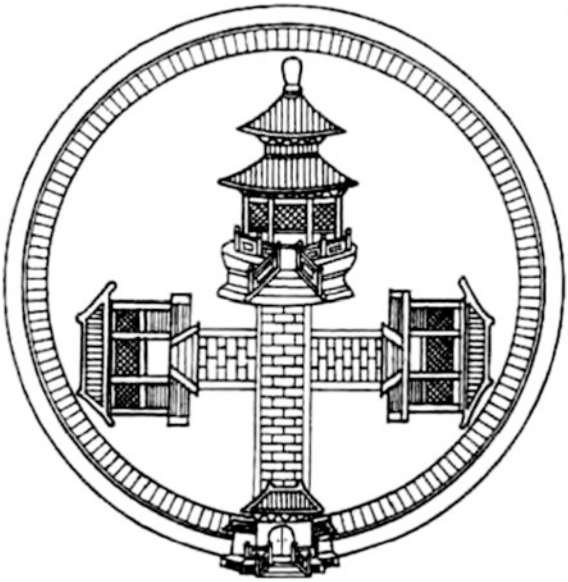


Fig. 2.23 Plan drawing of the Imperial Vault of Heaven inside the Circular Mound Altar produced during the Ming Dynasty Emperor Jiajing's reign (1522–1566) from *Statutes of the Ming Dynasty*. The current structure differs from the one in the plan. The older structure featured two-layer double-eaved roof. However, the layout of the two tiny square palaces that sit on either side of the central structure and the circular walls shown in the plan is similar to the layout we see today. *Source* Pan (2001c: 123)

Fig. 2.24 The Imperial Vault of Heaven as it stands today. The original two-layer double-eaved roof structure was remodeled in the beginning of the 18th century. *Source* Photograph by Yu Zhou, provided by Ming Jiang

Extended Reading: Round Heaven and Square Earth

The notion of "round heaven and square earth" constituted the Ancient Chinese people's earliest conception of the universe and originated from a rationalistic philosophy of the relationship between heaven and earth—heaven was dynamic and earth static. The classic work, *Zhou Bi Suan Jing*, claims that this view appeared no later than the 11th century BC at the transition from the Shang to the Zhou Dynasty. The same opinion was also

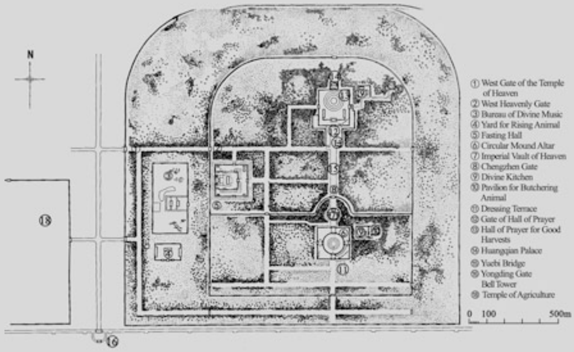


Fig. 2.25 Site plan of the Temple of Heaven. Double walls surround the temple complex, with curvilinear corners in the north and sharp corners in the south reflecting the "round heaven and square earth". The temple complex consists of four main buildings: the Circular Mound Altar, which sits on the southern end of the main axis; the Hall of Prayer for Good Harvest, which sits on the northern end; the Bureau of Divine Music, outside the western inner wall; and the Hall of Abstinence, inside the inner wall. *Source* Liu (1984: 351)

shown in the book *Bai Hu Tong*.[5] According to this philosophy, heaven above, spherical, covered the entire earth, whereas earth below, square, supported all things (Xie 2006). This deeply rooted belief prevailed for over 2,000 years, from the Qin (221–207 BC) to Qing Dynasty (1644–1911). Emperors throughout the dynasties each built temples for the worship of heaven and earth according to the circle-square motif: a circular platform for heaven and a square platform for earth. These were called the Circular Mound Altar and square mound, respectively (Wang 2003) (Fig. 2.25). After centuries of use, the notion of "round heaven and square earth" is no longer merely a geographic mindset but has evolved into an important socio-political concept with implications for the relationship between the central government and outlying lands.

In addition to reflecting the notion of "round heaven and square earth", the layout in the Temple of Heaven complex also communicated the supremacy and sanctity of "heaven" through the use of the number nine as a multiplication factor for a number of key design elements. The Circular Mound Altar features three, stepped-down platforms, which measure 9 *zhang*,[6] 15 *zhang* and 21 *zhang* in diameter, respectively. The platform is paved with nine concentric rings of

[5]***Bai Hu Tong***, a Chinese classical Confucian book, was compiled in the Eastern Han Dynasty (25–220).

[6]***Zhang***, *chi* and *cun* are traditional Ancient Chinese units of length. 1 m ≈ 3 chi, 1 m ≈ 0.3 *zhang*, 3.33 cm ≈ 1 cun.

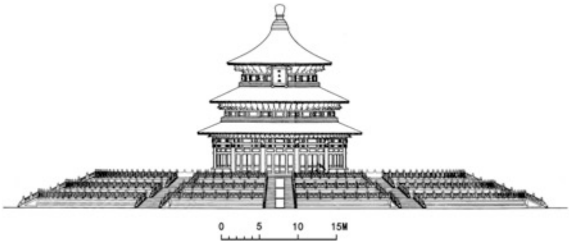


Fig. 2.26 Elevation of the Hall of Prayer for Good Harvest. The tri-level platform and three-layer double-eaved roof reflect the sanctity of the building. *Source* Liu (1984: 354–355)

fan-shaped stones. The first ring is made up of nine stones, the second ring 18 stones and so on, each successive ring containing an additional nine stones, with the ninth and final ring made up of 81 stones. Complementing the tri-level platform of the Circular Mound Altar is the three-layer double-eaved roof that tops the Hall of Prayer for Good Harvest (Fig. 2.26). In the hall, 12 peripheral columns representing the 12 *shichen,*[7] 12 golden interior columns representing the 12 months, and four central dragon-spiral columns representing the four seasons together support the lofty hall structure.

In addition, the Temple of Heaven complex's design cleverly incorporates the use of echo, further enhancing the divine quality of both emperor, son of heaven, and heaven expressed by the site. If one makes a sound while standing on the round stone at the center of the Circular Mound Altar, the sound is diffracted by the rounded surface of the stone piece, reverberates off of the surrounding circular wall and returns to the speaker from all sides at once. Emperors interpreted this echo as the voice of heaven, an imperial decree passed down from the sky, and cited this heavenly edict as proof of the close relationship between themselves and heaven.

Geographical Interpretation

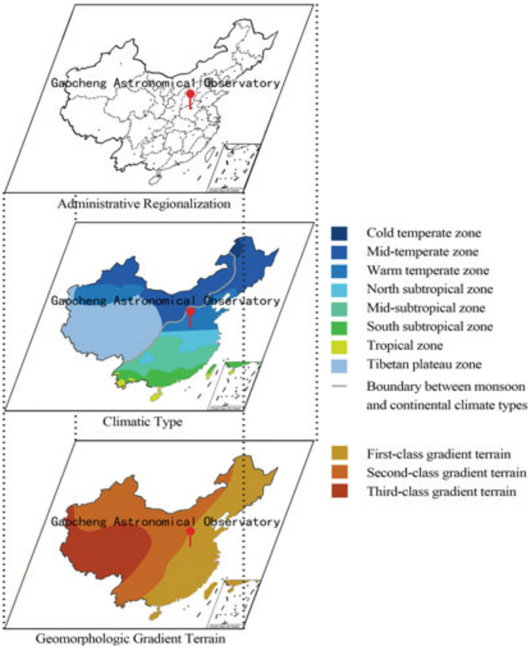
The Temple of Heaven rises from low, flat surroundings in the embrace of cypress trees hundreds of years old to achieve an atmosphere of infinite proximity to heaven above. The complex's overall layout and the architectural design of individual buildings both thoroughly incorporate the cosmology of a "round heaven and square earth". The holiness of the site also serves to communicate the supremacy of imperial power.

[7]***Shichen*** is an Ancient Chinese unit of time. One *shichen* is equal to two hours.

2.3 Gaocheng Astronomical Observatory: Speaking with the Sun in the Daytime and the Stars at Night

Location: Dengfeng, Henan Province
Key Geographical Concept: Earth's core in the notion of round heaven and square earth

The idea of "the earth's core" was a part of the Ancient Chinese world view. The Gaocheng Astronomical Observatory was the most important location for observing celestial events in Ancient China. The observatory was built in Gaocheng County of Dengfeng City, the so-called "earth's core" of Ancient Chinese celestial theory.



Geomorphologic Features

The Gaocheng Astronomical Observatory is located in Gaocheng County of Dengfeng City, on a plain, at the intersection of the Linying and Wudu Rivers. Broad and open, this location is very suitable for making celestial observations.

Climatic Features

Dengfeng falls within the warm temperate continental monsoon climate zone. Summers are typically muggy and rainy; winters are dry and rarely snowy. The weather is often sunny, with clear nights, making this location ideal for a celestial observatory.

Cultural Features

The Gaocheng Astronomical Observatory is currently the oldest one in China (Fig. 2.27). The main parts of the structure were built during the Yuan Dynasty (1271–1368). After the establishment of the Yuan Empire, the central government appointed Guo Shoujing (1231–1316) and Wang Xun (1235–1281) to institute a series of Calendar Reforms. In addition to constitutional reform, these officials were also charged with organizing orderly celestial observation for the establishment of a calendar to be standardized nationwide. To this end, officials commissioned the construction of 27 observatories and so-called "observation stations" across the country. Gaocheng County in Dengfeng, known as Yangcheng in ancient times, had been the site of the ancient Xia Dynasty (around the 21st to 16th centuries BC) Capital. For this reason, Gaocheng Country was determined to be the earth's core—the most central point on the surface of the earth. The Gaocheng Astronomical Observatory located in Gaocheng County was therefore the most important of the 27 observatories (Guan 2005).

Every important city, every important work of architecture that has been preserved throughout China's extended history reflects the Ancient Chinese people's interest in the celestial universe, as well as their beliefs and philosophies regarding the universe. These works, though on different scales, all embody a great amount of celestial and terrestrial information. Thus, they form a unified cultural system composed of heaven, earth, and humankind. Architecture was viewed as a metaphor for the universe: Heaven and earth were one enormous house, whereas the dwellings of human residence were themselves tiny universes. However, the notion that architectural layout and form resembled that of heaven and earth was not merely a simple metaphor; it was the way in which Ancient Chinese people comprehended what they perceived as parallels between nature, society and mankind. The Gaocheng Astronomical Observatory architecture reflects Ancient Chinese scientific development, but it also reflects the philosophical ways in which the Ancient Chinese people understood the universe.

Fig. 2.27 Built in 1276, the Gaocheng Astronomical Observatory in Dengfeng is currently the oldest observatory in China. *Source* Photograph by Bihu Wu

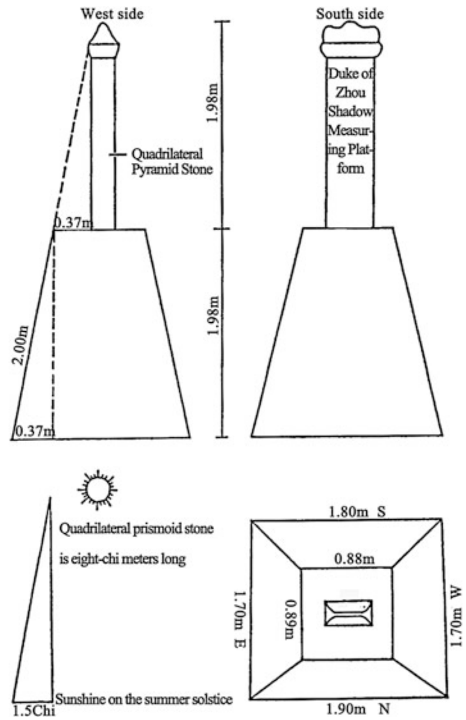


Fig. 2.28 Elevation and plan drawings show that the Duke of Zhou Shadow Measuring Platform was carefully calibrated. *Source* Pan (2001c: 409)

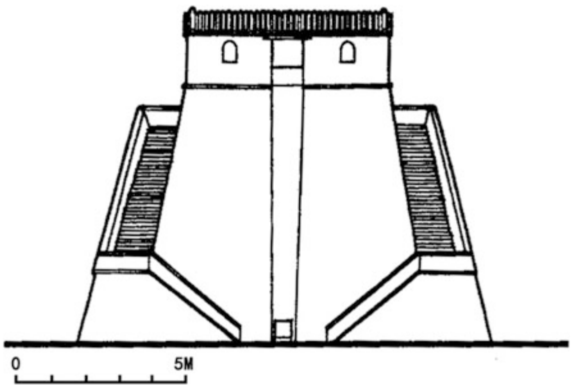


Fig. 2.29 This elevation drawing depicts the Gaocheng Astronomical Observatory's trapezoidal shape. The sides taper inward to meet the observation platform. *Source* Pan (2001c: 410)

The Gaocheng Astronomical Observatory consists primarily of the Duke of Zhou[8] Shadow Measuring Platform, the Astronomical Observatory and the Duke of Zhou Temple. The Duke of Zhou Shadow Measuring Platform (Fig. 2.28) was built by the Court Historian Nangong Yue in the 11th Kaiyuan year (723) of the Tang

[8]**Duke of Zhou**, personal name Ji Dan, was a politician, militarist, thinker, educator in the Zhou Dynasty (1046–256 BC).

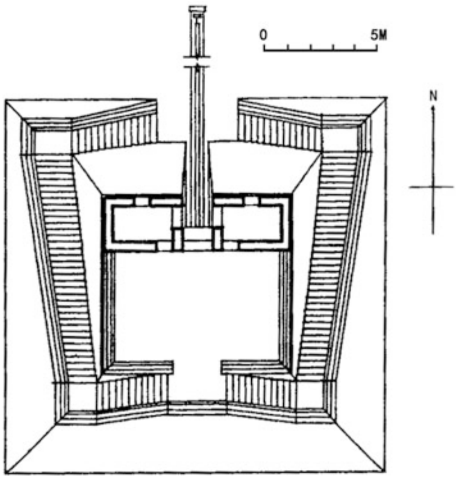


Fig. 2.30 The plan drawing of the Gaocheng Astronomical Observatory is trapezoidal as well. In the north is the "heaven-measuring ruler", which protrudes through a notch in the middle of the northern wall. Two small rooms flank the ruler on its eastern and western sides, respectively. *Source* Pan (2001c: 410)

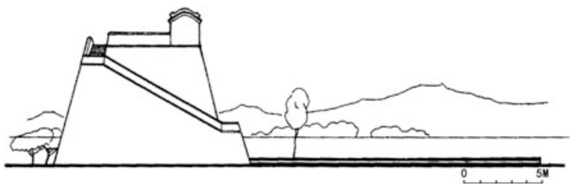


Fig. 2.31 Side elevation drawing of the Gaocheng Astronomical Observatory. The relative size difference between the observatory and the ruler is apparent. *Source* Pan (2001c: 410)

Dynasty; the Astronomical Observatory (Figs. 2.29, 2.30 and 2.31) was built by Guo Shoujing (1231–1316) in 1276, the 13th Zhiyuan year of the Yuan Dynasty; and the Duke of Zhou Temple was built during the Ming Dynasty (1368–1644) to commemorate the Duke of Zhou's great achievements in clarifying the place of the earth's core by shadow measurement.

Extended Reading: Yangcheng, the Earth's Core

The notion of "round heaven and square earth" was the foundation of the ancient Chinese cosmology. According to this theory, because earth was flat and of quantifiable size, it therefore had to have a quantifiable center. The earth's core was considered a significant component within the structure of the universe. A number of theories posit different locations for the earth's core. Among these theories, the most influential is the theory of a canopy heaven, which asserts, "the point below the North Pole is the center of the earth and sky," and the theory of a spherical heaven, which places the center of the earth in either Luoyi (now Louyang City) or Yangcheng (now Gaocheng County). The Yangcheng-centric theory is especially widely held (Guan 2000). One work, *Rites of Zhou*, tells us, "the earth's core is where the shadow of the sun measures five *cun*[9] long, where earth and sky, the four seasons, wind and rain and *yin* and *yang*[10] all meet. Build the kingdom's capital there, and there shall be peace and an abundance of all things." It was using this standard of the five-inch shadow that the Duke of Zhou, a politician, militarist, thinker, educator in the Zhou Dynasty (1046–256 BC), determined the location of the earth's core to be in Gaocheng and established *Yangcheng* (lit. Sun City) there. The Duke of Zhou Shadow Measuring Platform of the Tang Dynasty (618–907) in the Gaocheng Astronomical Observatory commemorates the Duke of Zhou's far-reaching influence (Zhao

Fig. 2.32 The Duke of Zhou Shadow Measuring Platform. By using a pile of earth and a wooden pole, the Duke of Zhou, the fourth son of Emperor Wenwang (1152–1056 BC) of the Western Zhou Dynasty (the 11th century–771 BC), also named Ji Dan, measured shadows to find the earth's core and quantify seasonal variation in Yangcheng (now Gaocheng County) during the construction of the Eastern Capital Luoyi (now Louyang City). In the 11th Kaiyuan year (723) of the Tang Dynasty (618–907), the Court Historian Nangong Yue created the Shadow Measuring Platform in the likeness of that used by the Duke of Zhou. *Source* Photograph by Ying Li

[9]***Cun***, *chi* and *zhang* are traditional Ancient Chinese units of length. 1 m ≈ 3 chi, 1 m ≈ 0.3 zhang, 3.33 cm ≈ 1 cun.

[10]***Yin* and *yang*** are a pair of traditional Chinese philosophical concepts that represent the two opposite or contrary principles in nature and how they give rise to each other as they interrelate to one another. They are used in various fields of traditional Chinese culture, including religion, philosophy, calendar, *fengshui*, etc.

2009) (Fig. 2.32). The earth's core was considered to be the ideal location for making those celestial observations necessary for the establishment of a standard calendar. Thus, in dynasty after dynasty, Yangcheng consistently served as the most important location for celestial observation.

The main structure of the Gaocheng Astronomical Observatory architectural complex, the celestial observatory, is constructed of a mixture of brick and stone and could be used to make round-the-clock observations of the sun and the stars. The observatory structure as a whole is trapezoidal; the structure tapers as it ascends to the observation platform. The groove in the middle of the northern wall, which measures four *zhang* high, is called the "Tall Ruler", and a stone tablet called the "heaven-measuring ruler" under the northern wall, perpendicular to the groove and built of 36 square bluestones, extends directly northward from the south wall. Below the heaven-measuring ruler, the brick foundation corresponds to the orientation of the planetary meridian line. The grooves on the south and north were designed for pouring and draining water, respectively; twin channels stretch the length of the device, linking the pouring and draining grooves. When water is poured into the channels, the device can be used to determine the orientation of the horizon (Fig. 2.33).

In addition to functioning as a complex sundial mechanism, the Gaocheng Astronomical Observatory is considered to have also been a significant site for celestial observation. Observations of Polaris, the North Star, made at the

Fig. 2.33 Northern facade of the Gaocheng Astronomical Observatory platform structure and the heaven-measuring ruler. There is a groove in the middle of the northern wall and a stone tablet called "the heaven-measuring ruler" under the northern wall, perpendicular to the groove. This photograph also illustrates that the heaven-measuring ruler is built of bluestone over a brick foundation. On it, the draining groove in the north and the twin channels were designed to connect to the pouring groove. *Source* Photograph by Songtao Gong, provided by Jun Hu

observatory date back to at least the early Yuan Dynasty period of land surveying. Indeed, there is mention of Polaris in *History of the Yuan Dynasty*[11]; Polaris also appears in an inscription of *Chong Xiu Yuan Sheng Zhou Gong Ci Ji*[12] carved by Sun Chengji in the 10th year (1582) of the Ming Dynasty Emperor Wanli's reign. From these references we can infer that the Gaocheng Astronomical Observatory was a multi-function complex that afforded shadow measurement, celestial observation and highly accurate time telling (Figs. 2.34 and 2.35).

Fig. 2.34 Close-up photograph of the stairway of the Gaocheng Astronomical Observatory. *Source* Photograph by Changsong Wang

[11]***History of the Yuan Dynasty*** (Mandarin: *yuan shi*), a historical work that consists of 210 chapters chronicling the history from 1162 to 1227, was edited chiefly by Song Lian and Wang Wei and composed in 1370, during the early Ming Dynasty.

[12]Literally, *Record of the Duke of Zhou Temple Renovation.*

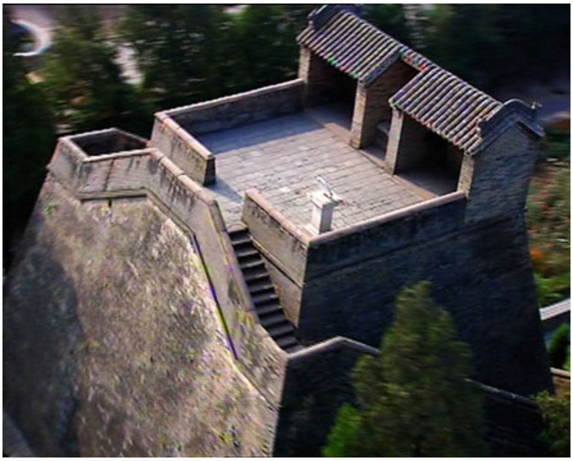


Fig. 2.35 Viewing the observatory from the south, two small rooms that were used for storing observation equipment are visible on the east and west sides of the platform. *Source* Photograph by Songtao Gong, provided by Jun Hu

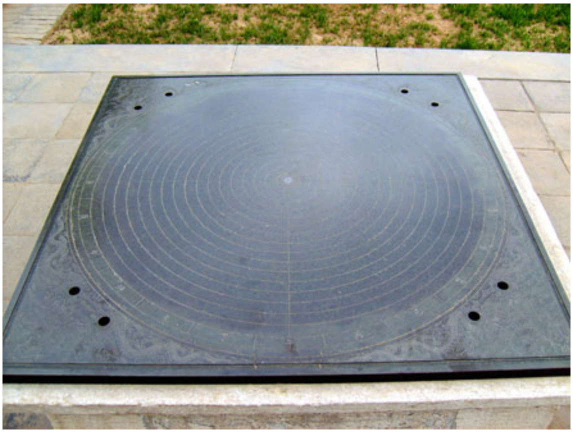


Fig. 2.36 The Direction Determining Board is a device used for establishing directional orientation. Invented by Guo Shoujing (1231–1316), the device was originally of wooden construction, but in later times copper was used instead. The square board measures four *chi* to a side. *Source* Photograph by Changsong Wang. *Note* ***Chi***, *cun* and *zhang* are traditional Ancient Chinese units of length. 1 m ≈3 chi, 1 m ≈0.3 zhang, 3.33 cm ≈1 cun.

Currently, a variety of observation tools are preserved in the Gaocheng Astronomical Observatory, including the Direction Determining Board (Fig. 2.36), the Scaphe (Fig. 2.37), the Tall Ruler (Figs. 2.38 and 2.39), and the Shen Kuo

Fig. 2.37 This Scaphe is a one-fourth-scale replica of the original created by Guo Shoujing (1231–1316). It is actually a spherical sundial composed of an upward-looking cauldron, two crosses, and a silhouette aspheric board. The device was used to determine the sun's spherical location; it could also be used to measure solar displacement throughout the year and observe solar eclipses. *Source* Photograph by Changsong Wang

Fig. 2.38 A scaled-down replica of the Tall Ruler. This replica is one-fifth the size of the original. In most of the 27 observation stations in the early Yuan Dynasty (1271–1368), the Tall Rulers measure eight *chi* long; only the ones of the observatories in Beijing and Gaocheng measure four *zhang* long. *Source* Photograph by Ying Li

Clepsydra, most of which feature sophisticated design. It was with these tools that Guo Shoujing (1231–1316) organized the most advanced calendar, named the Shoushi Calendar,[13] in his time. The location, architectural design and interior facilities of the Gaocheng Astronomical Observatory all reflect the wisdom of the Ancient Chinese people in the field of scientific observation.

---

[13]**Shoushi Calendar**, a calendar system, was implemented in the year 1281 during the Yuan Dynasty (1271–1368).

Fig. 2.39 Partial view of the scaled-down replica of the Tall Ruler. At the top of the Tall Ruler, two dragons support a horizontal beam, which was used to ensure that the ruler stood perfectly vertical. *Source* Photograph by Ying Li

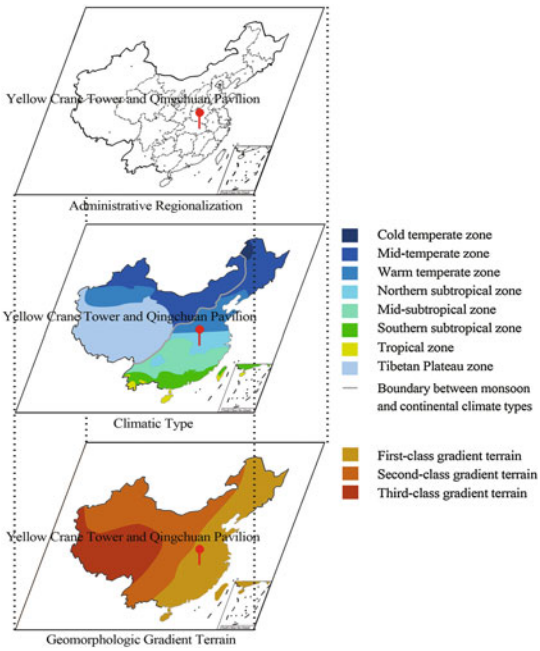
Geographical Interpretation

The Gaocheng Astronomical Observatory is the oldest observatory remaining in China and one of the earliest built works of architecture worldwide related to celestial observation. The observatory reveals a relatively high level of scientific observation on the part of the Ancient Chinese. However, scientific observation was not free from the influence of contemporary ideology. Indeed, the Ancient Chinese people's limited notions regarding the nature of the universe, among which "round heaven and square earth" and "the earth's core" were particularly significant, played a prominent role in the site selection process for the observatory.

2.4 Yellow Crane Tower and Qingchuan Pavilion: Facing Each Other Across the Yangtze River

Location: Wuhan, Hubei Province
Key Geographical Concept: Architecture closely related to ancient poetry

The Yellow Crane Tower and the Qingchuan Pavilion were both built by the water's edge, a traditional location for the composition of poetry in China. A great number of famous poetic works have been composed in the two buildings.



Geomorphologic Features
The Yellow Crane Tower stands on a small hill on the bank of the Yangtze River, in Wuhan City of Hubei Province. The Qingchuan Pavilion is within sight across the Yangtze River. Ancient Chinese Poets liked to look out across a body of water from a high vantage point as they composed; the Yellow Crane Tower and the Qingchuan Pavilion were ideal for this purpose, for they were both surrounded by low-lying flat ground. Destroyed and rebuilt numerous times throughout history, these two buildings have become famous landmarks for looking far into the distance (Fig. 2.40).

Fig. 2.40 Bird's eye view of the Yellow Crane Tower. The tower adjoins a hill, facing the Yangtze River. *Source* Drawing by Wen Zhang, provided by Yaogen Peng

Climatic Features

Wuhan area falls within the subtropical humid monsoon climate zone; the city enjoys abundant rainfall and ample sunshine. Because of its climate and low-lying terrain, Wuhan is known as the city of numerous lakes. The Yellow Crane Tower and the Qingchuan Pavilion are built along the river and joined by the Yangtze River Bridge. The tops of the two buildings afford grand views of the Yangtze River, a vast expanse of misty, rolling waters that merge with the distant sky (Figs. 2.41 and 2.42).

Fig. 2.41 Looking over the Yangtze River from the fifth floor of the *Yellow Crane Tower*, tourists can see the Yangtze River Bridge extending out to the other side of the river, where it connects with the Qingchuan Pavilion. *Source* Photograph by Fang Wang

Fig. 2.42 View of the *Yellow Crane Tower* from the Qingchuan Pavilion. *Source* Photograph by Fang Wang

Cultural Features

Chinese poets often sought high places from which to better appreciate natural scenery. These poets expressed a wide range of emotions in terms of the natural landscape they saw—a landscape that often included or was afforded viewing by architecture. Through its association with poetry, architecture was imbued with great cultural significance and treated as a component of the Chinese cultural landscape. A great number of famous inscriptions take the Yellow Crane Tower as their subject of interest, establishing the tower's dual significance as a part of both natural and cultural landscapes. The Qingchuan Pavilion, which stands opposite the Yellow Crane Tower, takes its name from a poem by Cui Hao (approximately 704–754), a poet in the Tang Dynasty (618–907), entitled *Yellow Crane Tower,*[14] which reads: "the Qingchuan River reflects each tree in Hanyang." The two buildings appear as if calling to one another from opposite sides of the river.

Over the course of the past 2,000 years, the Yellow Crane Tower has been destroyed and rebuilt numerous times. The original tower was built in the second year (223) of the Wu State King Huangwu during the Three Kingdoms period (220–280). The tower was located on the Yellow Swan Rock, on the bank of the Yangtze River, in the strategic city of Xiakou (now Wuchang). There, the tower served sentry purposes and formed a crucial military outpost in the flow of river traffic. The tower later became a riverside inn, reaching the height of its popularity

[14]***Yellow Crane Tower*** is a poem written by Cui Hao (approximately 704–754) during the Tang Dynasty (618–907). It is the most important poem among others like it on the topic of Yellow Crane Tower.

during the Tang Dynasty (618–907). During the Ming (1368–1644) and Qing (1644–1911) Dynasties the tower was destroyed and rebuilt a total of seven times. At one point in the Qing Dynasty, a large fire reduced the tower to rubble. The tower that stands today was rebuilt in 1985, stepped back from the bank, up against Sheshan Mountain.

The Yellow Crane Tower does not reflect a traditional, official architectural style. Thus, the layout and structure of the tower have not been restricted in form to any of China's traditional governmental architectural styles. Indeed, the tower has taken on a range of layouts and structures throughout the course of its many reconstructions. A description of the Yellow Crane Tower as it stood in the Tang Dynasty (618–907) is found in a poem that reads "the tower stands high up to the sky, down to the river, its double-eaved roof resemble a crane, its gates open to four directions, sitting on the tower people can look over the towns far away and touch the steams close by" (Gao, 1996). In the Song Dynasty (960–1279), the Yellow Crane Tower featured a single-layer double-eaved roof and the entire structure closely hugged Yellow Swan Rock (Fig. 2.43). In the Ming Dynasty (1368–1644), the roof was two-layer double-eaved and featured a four-directional pediment (Fig. 2.44). During the Qing Dynasty Emperor Tongzhi's reign (1862–1874), the tower was

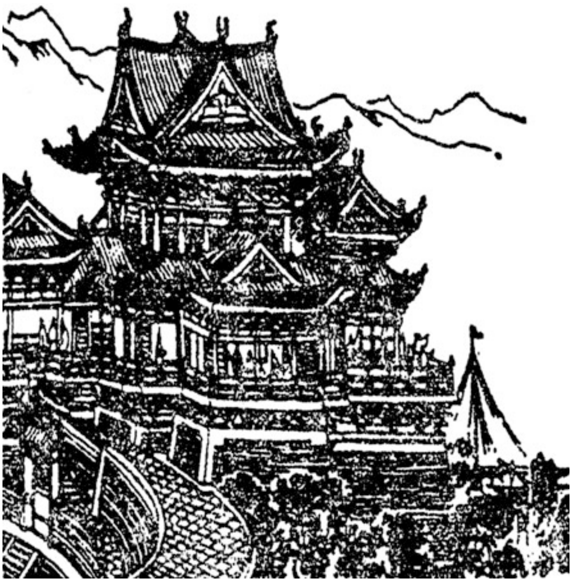


Fig. 2.43 The Yellow Crane Tower in the Song Dynasty (960–1279). The Song drawing *Yellow Crane Tower* depicts a relatively short tower that stands close to the riverbank. *Source* Cheng (2005: 67)

Fig. 2.44 The Yellow Crane Tower in the Ming Dynasty (1368–1644). The Ming drawing *Yellow Crane Tower in Snow* by An Zhengwen depicts a *paifang* standing on the approach to the tower, which has two-layer double-eaved roof and four-directional pediments. *Source* Cheng (2005: 68) *Note* ***Paifang*** (lit. memorial gate), one type of monument in the form of gates and arches, is used to commemorate the merit or worship the ancestor.

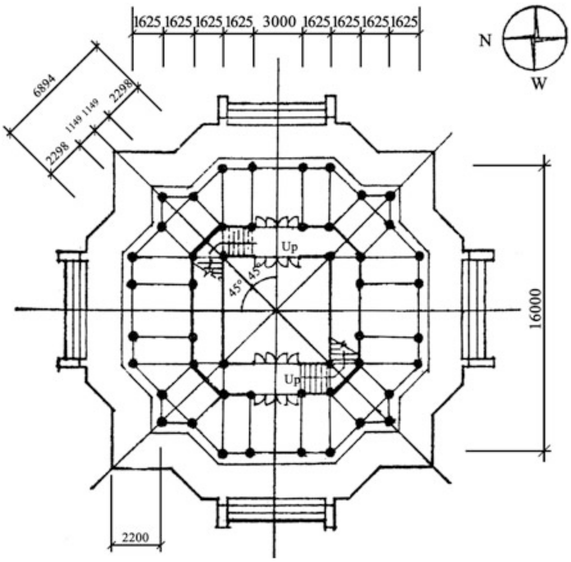


Fig. 2.45 First-floor plan drawing of the *Yellow Crane Tower* as it stood during the Qing Dynasty Emperor Tongzhi's reign exhibits the tower's octagonal symmetry and depicts a central stairway. *Source* Cheng (2005: 69)

three stories tall and had a square shape (Figs. 2.45 and 2.46). In plain view, today's tower is a square enclosed by an octagon, which signifies the notion of "everywhere" (from the Mandarin idiom meaning *four sides and eight directions*).

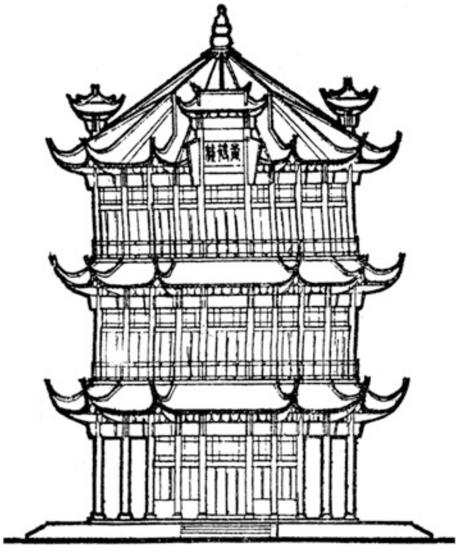


Fig. 2.46 This elevation drawing of the *Yellow Crane Tower* as it stood during the Qing Dynasty Emperor Tongzhi's reign depicts the tower with three floors and the appearance of a pagoda. *Source* Cheng (2005: 70)

In elevation, the eaves appear to resemble yellow cranes setting flight, hence the origin of the tower's name, the Yellow Crane Tower. The building is powerful yet elegant, consistent in form yet not lacking in variation (Figs. 2.47 and 2.48).

The Qingchuan Pavilion, which stands on the opposite side of the Yangtze River, takes its name from Cui Hao's poem *Yellow Crane Tower*, but the pavilion, first constructed during Emperor Jiajing's reign (1522–1566) of the Ming Dynasty (1368–1644), has a shorter history than its neighbor. The Qingchuan Pavilion has been renovated many times and was twice entirely rebuilt. The pavilion that exists today was rebuilt in 1983 in a manner similar to that of the Yellow Crane Tower based on

Fig. 2.47 The *Yellow Crane Tower* as it stands today. The rebuilt architectural complex maintains an elegant atmosphere, despite a powerful appearance. *Source* Provided by Yaogen Peng & Hubei Tourism Bureau

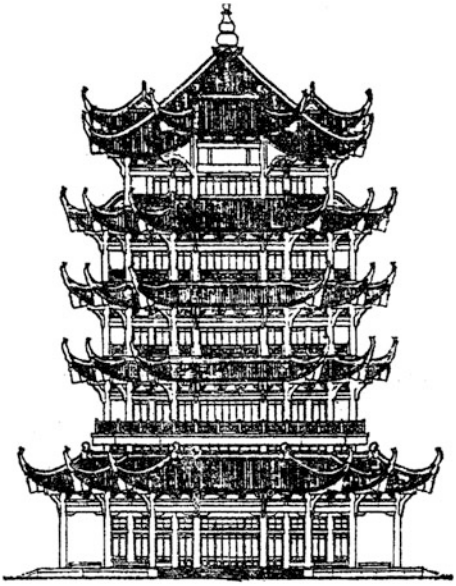


Fig. 2.48 Elevation drawing of the current *Yellow Crane Tower*. The newly built tower, heightened to five floors, is similar to the one that stood during the Qing Dynasty Emperor Tongzhi's reign. *Source* Cheng (2005: 57)

historical images. The pavilion is very delicate in appearance; with only two floors, it appears less imposing than its counterpart across the river (Figs. 2.49, 2.50 and 2.51).

Whereas the Qingchuan Pavilion derives its name in close relationship with the poem *Yellow Crane Tower* by Cui Hao (approximately 704–754), the Yellow Crane Tower draws its own name from a legend. According to the legend, a Taoist priest

Fig. 2.49 The Qingchuan Pavilion appears refined in comparison with the imposing *Yellow Crane Tower*. Flexible and steadfast, one building complements the other in style. *Source* Provided by Yaogen Peng & Hubei Tourism Bureau

Fig. 2.50 Close-up of the Qingchuan Pavilion. *Source* Photograph by Jing Jin

Fig. 2.51 Sunset over the Qingchuan Pavilion. *Source* Photograph by Jing Jin

once stayed at the as yet un-named Yellow Crane Tower inn. To express his appreciation for the innkeeper's hospitality, the Taoist priest drew a yellow crane on the inn wall. To everyone's surprise, the crane came to life and flew away. It is said that thereafter the building was named the Yellow Crane Tower. An alternative explanation holds that the tower was named for the Yellow Swan Rock (modern-day Sheshan Mountain) upon which it sits (Fig. 2.52).

Facing each other across the rolling waters of the Yangtze River, the Yellow Crane Tower and the Qingchuan Pavilion both afford incredible views to those who venture to ascend their steps. The remarkable view has drawn countless poets

Fig. 2.52 The crane is an animal of special significance in Chinese culture. The *Yellow Crane Tower* is closely related to cranes because of its name. *Source* Provided by Yaogen Peng & Hubei Tourism Bureau

Fig. 2.53 The Yellow Crane Tower remains a widely known tourist attraction. This photograph depicts a performance of ancient music in front of the tower. *Source* Provided by Yaogen Peng & Hubei Tourism Bureau

Fig. 2.54 The rebuilt Yellow Crane Tower retains its original elegant appearance. *Source* Photograph by Jing Jin

throughout history to the two buildings. Thus, the buildings have become an important site where traditional Chinese culture is passed down from generation to generation (Figs. 2.53 and 2.54).

Extended Reading: Poetry about the Yellow Crane Tower

Numerous poems speak of the Yellow Crane Tower. The great poet Li Bai (701–762) of the Tang Dynasty (618–907) once wrote: "My old friends said goodbye to the west, here at Yellow Crane Tower; in the third month's cloud of willow blossoms, he departs for Yangzhou." Many of China's most famous poets, the likes of Song Zhiwen (660–712), Meng Haoran (691–740), Wang Changling (698–756), Wang Wei (698–756), Gu Kuang (725–814), Bai Juyi (772–846), Liu Yuxi (772–842), Jia Dao (779–843), Du Mu (803–852), among others, have composed words about the site. However, of the countless literary works that mention the Yellow Crane Tower, Cui Hao's *Yellow Crane Tower* is by far the most widely renowned. *Yellow Crane Tower* is a Qilü style poem, meaning it was written with a total of eight lines, with seven characters per line. In its time, the poem earned the admiration of Li Bai, and in more recent years, it has become the most eminent of all Qilü poems. Cui Hao composed the poem at the age of 30, when he was traveling in Hubei Province. In the poem's first sentence, which reads, "Long ago the immortal rode off on a yellow crane; all that remains here is the Yellow Crane Tower," Cui Hao borrows the opening of the legend of the Yellow Crane Immortal (Fig. 2.55). In this manner, he evokes emotion from his reader, with

Fig. 2.55 "Long ago a man rode off on a yellow crane, all that remains here is the Yellow Crane Tower"; this scene is described in the poem *Yellow Crane Tower* by Cui Hao (approximately 704–754). *Source* Provided by Yaogen Peng & Hubei Tourism Bureau

the emotion inseparably tied to the scenery. The immortal's sudden mounted departure, which leaves the tower standing empty and alone on the cloudy horizon, suggests the passage of time that flies away without return. We are left also with a faint impression of a tower's majestic stance amid misty surroundings (Pan 2008). The poem's third sentence, which reads, "the clear river reflects each trees of Hanyang City; fragrant grasses grow lush on Parrot Island," transitions from the imagery of the legend to the reality of the beautiful Hanyang trees and fragrant grasses that surround the sun-shining plain (Mandarin: *qingchuan*), the clear river, next to the Yellow Crane Tower (Yang 2005). This description later inspired the construction of the Qingchuan Pavilion across the Yangtze River. This cycle is typical of Chinese architecture throughout its history: Architecture inspires poetry; poetry in turn inspires architecture.

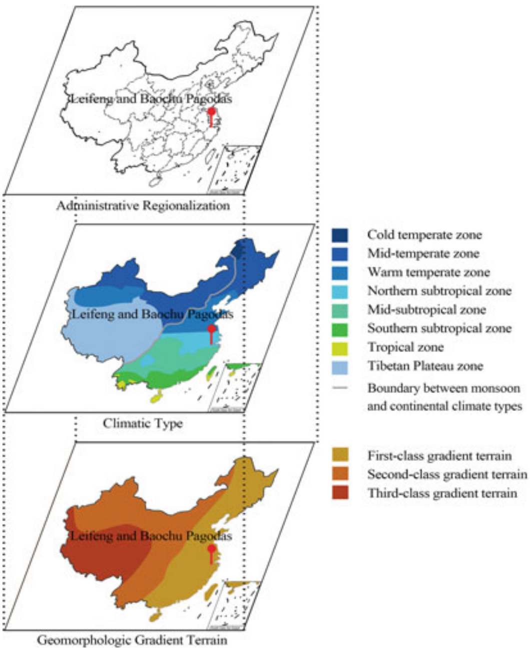
Geographical Interpretation

Seated beside the Guishan and Sheshan Mountains, where mountains and water meet, the Yellow Crane Tower and the Qingchuan Pavilion face each other across the Yangtze River. The two structures have been rebuilt many times; indeed, they are no longer the same buildings that the famous poets ascended to compose their great works. Yet, even today, the two buildings continue to illustrate for us the capacity for architecture to convey profound connotation as a physical embodiment of culture.

2.5 Leifeng and Baochu Pagodas: Two Pagodas Opposite to Each Other in One Lake

Location: Hangzhou, Zhejiang Province
Key Geographical Concept: Evolution of the cultural significance in architecture over time

The Leifeng and Baochu Pagodas were stupas, both built during the Wuyue Kingdom (907–978), during the Five Dynasties period. In the thousands of years since their construction, the two pagodas have accumulated a great deal of cultural significance, from their early mention in *Legend of the White Snake* to their redefinition in the modern essay, *Comment on the Collapse of the Leifeng Pagoda*.



Geomorphologic Features

Hangzhou's West Lake is surrounded by a ring of low mountains. East of the lake is the urban district of Hangzhou. West of the lake is a range of hills. The Baochu Pagoda, located upon the ridge of Baoshi Hill, faces the lake from the north (Fig. 2.56). The Leifeng Pagoda, seated on Xizhao Hill, south of the lake, faces the lake from the south (Figs. 2.57 and 2.58). Together, these hills and the lake form a picturesque setting.

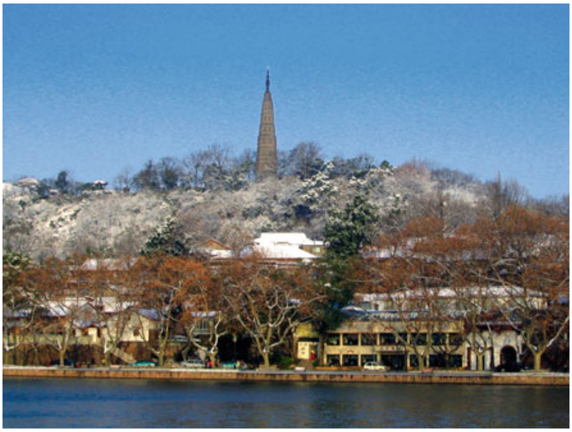


Fig. 2.56 The magnificent Baochu Pagoda was constructed on the ridge of Baoshi Hill. *Source* Photograph by Yi Chen, provided by Yiwen Xu

Fig. 2.57 The Leifeng Pagoda is located on a flat area of land, east of Xizhao Hill, at thirty meters above sea level. *Source* Photograph by Mingming Li, provided by Lin Yan

Fig. 2.58 The Leifeng Pagoda affords a grand view of West Lake. Tourists can look out from balconies on the second through the fifth floors. *Source* Photograph by Bihu Wu

Climatic Features

Hangzhou, which falls within the mid-northern subtropical transitional district, experiences four distinct seasons. Hangzhou has a warm, humid climate, sufficient rainfall and plentiful sunshine. The weather is rainy in spring, muggy in summer, cool in fall and cold in winter, generating many different beautiful scenes for West Lake throughout the year.

Cultural Features

Over the several thousand years during which the Leifeng and Baochu Pagodas have stood, the two structures have come to signify a number of different ideas in different eras. The original purpose of the two pagodas, at the time of their construction during the Wuyue Kingdom (907–978) of the Five Dynasties period, was the enshrinement and worship of Buddhist texts. Over the following years, the pagodas were drawn into the surrounding warfare, during the course of which they were destroyed and rebuilt several times. Through this cyclical process, the pagodas slowly shed their cultural and religious significance. From the writing of *Legend of the White Snake* to the publication of *Comment on the Collapse of the Leifeng Pagoda*, the two pagodas represented the oppression of Confucian ritualism. Today, the two pagodas serve a largely aesthetic role as part of two famous vistas: "Twilight at the Leifeng Tower" and "Rosy Clouds of Sunset at the Baochu Pagoda

Fig. 2.59 The Twilight at the Leifeng Tower is one of the renowned Ten Scenic Landscapes of West Lake in Hangzhou. *Source* Photograph by Mingming Li, provided by Lin Yan

Fig. 2.60 Rosy Clouds of Sunset at the Baochu Pagoda on Baoshi Hill is one of the new Ten Scenic Landscapes of West Lake in Hangzhou. *Source* Photograph by Zhihua Chen, provided by Jianqiang Jia and Yunwen Chen

of Baoshi Hill" (Figs. 2.59 and 2.60); the pagodas have contributed a great deal to the fame of Hangzhou's West Lake scenic area.

The Leifeng and Baochu Pagodas were both built during the Five Dynasties period (907–960), under the rule of the Wuyue Kingdom (Zhejiang Cultural Relics and Archaeology Research Institute 2002). The Wuyue King, a devout Buddhist, commissioned a large number of monasteries and pagodas, including the Leifeng and Baochu Pagodas, to be built in the Hangzhou area.

Extended Reading: Kingdom of Wuyue and Buddhism

The Kingdom of Wuyue was one of 10 kingdoms that existed during China's Five Dynasties period (907–960). Founded in the year of 907, the Wuyue was ruled by a succession of five kings before it was finally annexed into the Song Dynasty (960–1279) in the year 978. With its capital city of Hangzhou, the Kingdom of Wuyue ruled over an area comprised of today's Zhejiang Province, Shanghai, Suzhou (in the southeast of Jiangsu Province) and Fuzhou (in the north of Fujian Province), all of which belong to the prosperous *Jiangnan*[15] region along the southern bank of the Yangtze River. Under the Wuyue policy of internal stability and avoidance of war, Zhejiang prospered economically, and Hangzhou became a regional and cultural epicenter (Zhejiang Cultural Relics and Archaeology Research Institute 2002).

As devout Buddhists, the Wuyue kings helped to foster the development of Buddhism within their realm. Under their rule, Buddhism flourished, so much so that the Wuyue gained the title, "Southeastern Realm of Buddhism". Prior to this period, Buddhism had enjoyed very little support; construction of

[15]***Jiangnan*** refers to the region to the south of the Yangtze River.

Fig. 2.61 The Leifeng Pagoda sitting behind the greenery contributes greatly to the fame of Hangzhou's West Lake. *Source* Photograph by Haoyang Dou, provided by Ming Jiang

Buddhist monasteries, pagodas and sculptures, carvings of scriptures, and sponsorship of monks were all relatively rare practices until the Wuyue period (907–978) (Ni 1989). In the period of the Kingdom of Wuyue, more than 150 monasteries and dozens of pagodas were constructed, including famous monasteries such as the Xianyan, Zhaoqing, Jingci and Lingfeng Monasteries, and renowned pagodas as well, such as the Leifeng, Baochu, and Liuhe Pagodas. These prominent monasteries and pagodas infused Hangzhou's West Lake scenic area with Buddhist culture and contributed greatly to the lake's fame (Fig. 2.61).

The Leifeng Pagoda, which is located south of West Lake atop Xizhao Hill, was used in the past to store the Buddha's hair and Buddhist holy relics and scriptures. First constructed between 976 and 977 under the Northern Song Dynasty, the original seven-story, brick-wood structure had an octagonal shape and was called the Xiguan Brick Pagoda (another name of the Leifeng Pagoda). When the Leifeng Pagoda was rebuilt in 2002, a number of Buddhist historical relics, including the Ashoka Tower (an intricate gold-silver box) with the "Buddha's Hair" inside, and ancient Buddhist scriptures were found in the basement of the pagoda. The presence of these relics illustrates the importance of the Leifeng Pagoda as a stupa in the Wuyue period (Figs. 2.62 and 2.63).

The Baochu Pagoda is also closely linked to Buddhism. It is unknown when exactly the Baochu Pagoda was first constructed; however, the pagoda is generally considered to have been erected immediately after the Wuyue King Qian Chu

Fig. 2.62 Front elevation drawing of the restoration image of the Leifeng Pagoda during the Wuyue period. The original seven-story, octagonal pagoda burned to the ground during the Fangla Peasant Uprising (1120–1121). Its replacement, built after Hangzhou became the capital of the Southern Song Dynasty (1127–1279), was a squat, five-story tower. The current pagoda was built in the likeness of the tower from the Southern Song Dynasty era. *Source* Yang (2002: 18)

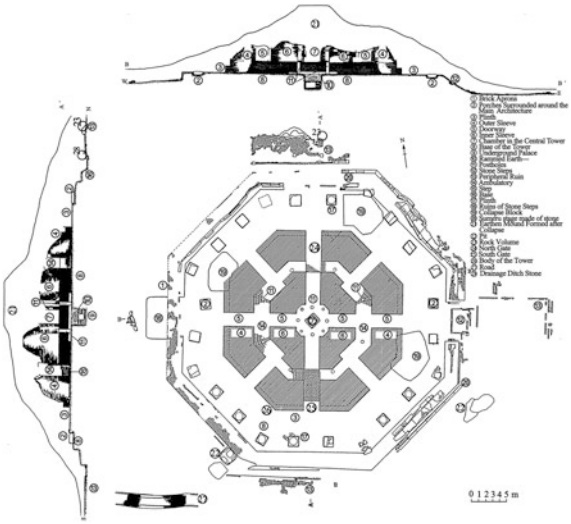


Fig. 2.63 Plan and section drawings of the Leifeng Pagoda archeological site. After the pagoda collapsed, it was covered by soil, which formed an earthen mound, within which were contained preserved relics such as the Ashoka Tower and ancient Buddhist texts. *Source* Zhejiang Cultural Relics and Archaeology Research Institute, 2005: the illustration between pages 16 and 17

Fig. 2.64 A panorama of Baoshi Hill. The Baochu Pagoda sits on the crest of the hill. *Source* Photograph by Fang Wang

Fig. 2.65 Beili Lake in snow, with the Baochu Pagoda in the background. *Source* Photograph by Yi Chen, provided by Yiwen Xu

named Baoshi Hill, on which the tower stands (Figs. 2.64 and 2.65). According to the *Xianchun Lin'an Records*[16] from the Southern Song Dynasty (1127–1279) and *Rebuilding Chongshou Monastery on Baoshi Hill*[17] from the Ming Dynasty (1368–1644), a monk named Yongbao raised funds for the pagoda's reconstruction during the Northern Song Dynasty (960–1127). The pagoda was named "Baoshu", as a combination of the monk's name "Yongbao" and title "Shishu". The name "Baoshu" was later renamed "Baochu".

Over time, the integration between Buddhism and the Leifeng and Baochu Pagodas was replaced by a new significance in a number of other capacities, aesthetic, cultural, superstitious and socio-political. From the establishment of the Southern Song Dynasty (1127–1279) forward, "Twilight at the Leifeng Tower" became one of the Ten Scenic Landscapes in West Lake. The pagoda was also universally known for its role in *Legend of the White Snake*, one of China's most famous legends. In the 33rd year (1554) of the Ming Dynasty Emperor Jiajing's

[16]Literally, *Lin'an Records in the Southern Song Dynasty.*

[17]***Rebuilding Chongshou Monastery on Baoshi Hill*** (Mandarin: *chong jian bao shi shan chong shou yuan ji*), an essay, was written by Xu Yikui during the early Ming Dynasty (approximately the 14th century).

reign, Japanese pirates invaded Hangzhou and destroyed it. With only the structure's brick core still standing amid the ashes, the building lost all its capacity as a Buddhist pagoda. Yet, the pagoda's fate and religion were still intertwined. In later years, a superstition arose that pagoda bricks could ward off evil spirits and cause mothers to give birth to male children. This led to a large-scale pillaging of tower materials that eventually resulted in the pagoda's thunderous collapse in the 13th year (1924) of the Republic Era (Shi and Hangzhou Garden and Cultural Relics Administration 1995). At that time, Lu Xun (1881–1936) wrote an essay, *Comment on the Collapse of the Leifeng Pagoda*, as society had already begun to endow the tower with a new socio-political significance, and the pagoda's former function within Buddhism was gradually forgotten.

The Leifeng Pagoda that stands today was built in 2002 as a tourist attraction. The design is based upon a number of the Song Dynasty era (960–1279) pagodas, including the twin stone pagodas that stand in front of the Lingyin Temple's main hall and the White Pagoda at Zhaokou, as well as an image of the Leifeng Pagoda from Li Song (1166–1243)'s painting *West Lake* during the Song Dynasty (Guo and Li 2003). Built in the likeness of the Song Dynasty Leifeng Pagoda, the tower is octagonal and has five stories; balconies on the second through fifth floors afford views of the surrounding landscape (Figs. 2.66 and 2.67).

Similar to the Leifeng Pagoda, the Baochu Pagoda has also been destroyed and rebuilt a number of times. Its original religious significance has also gradually diminished; it is now only known as one of West Lake's great vistas. The Baochu Pagoda owes its reconstruction largely to the collapse of the Leifeng Pagoda. When the Leifeng Pagoda collapsed in the 13th year (1924) of the Republic Era, a portion of the funds allocated for its reconstruction were used to rebuild the Baochu Pagoda as well. The rebuilt Baochu Pagoda is octagonal and features a solid-brick core.

Fig. 2.66 The rebuilt Leifeng Pagoda was built in the shape and structure of a typical Southern Song Dynasty pagoda at the same scale. The pagoda's somewhat squat stature has been likened to that of an old monk. *Source* Photograph by Yu Zhou, provided by Ming Jiang

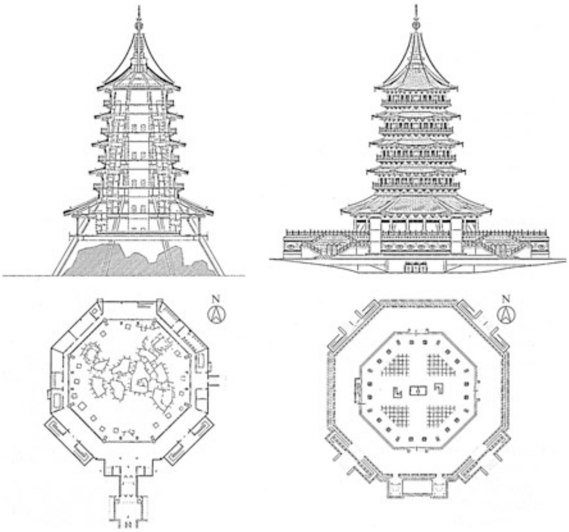


Fig. 2.67 Planning, elevation and section drawings of the new Leifeng Pagoda: (*upper left*) section drawing, (*upper right*) southern elevation, (*bottom left*) plan drawing at an elevation of −9.920 m, and (*bottom right*) at −0.045 m. The new pagoda was rebuilt on the original site. Efforts were made to protect the remains of the original tower. *Source* Guo and Li (2003: 52)

At seven stories, the pagoda has a height of 45.3 m, rising above a foundation that measures 3.26 m on each side. The structure's iron components are relics from the Ming Dynasty (Shi 1995) (Fig. 2.68).

Today, the Leifeng and Baochu Pagodas are important parts of West Lake's scenery. "Twilight at the Leifeng Tower" has traditionally enjoyed renown as one of West Lake's famed "Ten Scenic Landscape in West Lake". The "Rosy Clouds of

Fig. 2.68 The Baochu Pagoda has been destroyed and rebuilt many times. The current pagoda features iron structural components that date from the Ming Dynasty (1368–1644). The Baochu pagoda is tall and slight in contrast to the short and thick Leifeng Pagoda that stands across the lake. *Source* Photograph by Ziqi Tian, provided by Jing Liu

Fig. 2.69 From a distance, the Leifeng Pagoda stands somewhat squat and simple, like an old monk. *Source* Photograph by Yi Chen, provided by Yiwen Xu

Fig. 2.70 Viewed from afar, the Baochu Pagoda on Baoshi Hill stands thin and elegant, like a beautiful maiden. *Source* Photograph by Yi Chen, provided by Yiwen Xu

Sunset at the Baochu Pagoda of Baoshi Hill" is listed as one of the New Ten Vistas. Because the Leifeng Pagoda stands relatively short and squat whereas the Baochu Pagoda stands tall and slight, the two pagodas have been compared to an old monk and a beautiful maiden (Figs. 2.69 and 2.70).

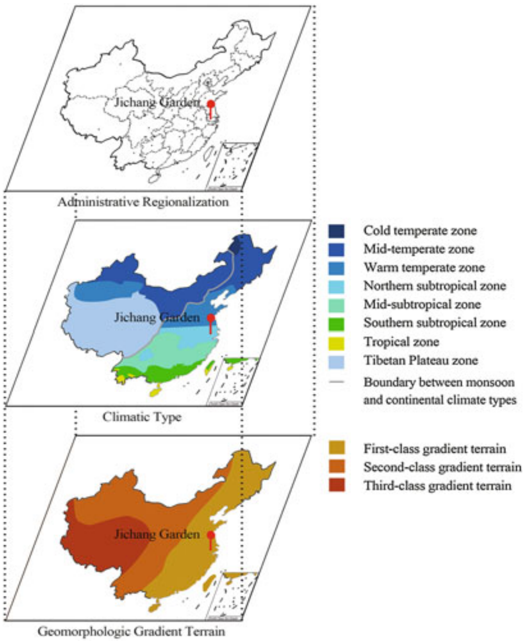
Geographical Interpretation

The Leifeng and Baochu Pagodas always appear prominently in famous depictions of Hangzhou's West Lake. Although the two pagodas have long since lost their religious significance, they have become an integral part of the stunning beauty of West Lake.

2.6 Jichang Garden: A Dialogue with Fish

Location: Wuxi, Jiangsu Province
Key Geographical Concept: Architecture is closely related to ancient poetry

The notion of combining emotion into landscape and expressing emotion through landscape is fairly central to traditional Chinese landscape architecture. As a private garden, the Jichang Garden reflects at every turn both the philosophies and the emotions of its owner.



Geomorphologic Features
The Jichang Garden is located in Wuxi City, in an area predominantly made up of flatlands. The terrain is interrupted briefly west of the city by Huishan Mountain. Located in the east of Huishan Mountain, the Jichang Garden subtly incorporates the distant mountain peaks into its own scenery.

Climatic Features
Wuxi lies in the northern subtropical humid zone and is periodically influenced by monsoon circulation. Seasons in Wuxi are distinct, though the weather is generally warm, with plentiful rain, sunshine and a long, frost-free period in a year. Wuxi,

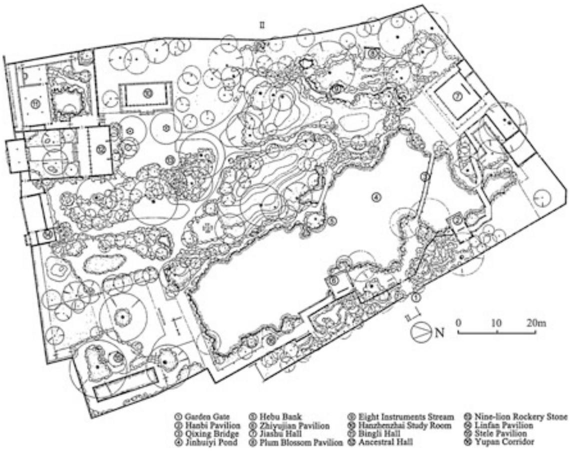


Fig. 2.71 Site plan of the Jichang Garden. The garden, which measures one hectare in area, stretches a long distance from north to south, but it is narrow in its east–west dimension. The garden is comprised of two parts: on the eastern end are a number of ponds and on the western end is a rockery. The focuses of the garden are the water and the rockeries. Water covers a third of the garden; there are few structures. *Source* Pan (2001a: 172)

which sits by the northern edge of Lake Taihu, enjoys abundant surface water and extraneous water supplies: 3,100 river channels criss-cross the city limits with a total length of 150 km and a water capacity of eight million cubic meters (Editorial Committee on the Wuxi Municipal Records 1995). Convenient access to water due to Wuxi's humid climate and dense network of waterways are the main factors that enable the Jichang Garden to include such a vast number of water landscapes (Fig. 2.71).

Cultural Features

The Jichang Garden was constructed during the Ming Dynasty Emperor Zhengde's reign (1506–1521). For over 500 years, each successive owner endowed the garden with his own emotions, in turn producing scenery that could intimately move those who came to see the garden. Visitors also expressed their own emotions as well by describing the beautiful scenery before them. In this way, many famed poems came to be written about the garden.

The Jichang Garden takes its name from a verse composed by China's most renowned early calligrapher, Wang Xizhi. The verse reads, "take joy in *ren,*[18] *zhi*[19] and *le,*[20] place your happiness (Mandarin: *ji chang*) amongst the mountains and the waters".

[18]Literally, benevolence.

[19]Literally, wisdom.

[20]Literally, happiness.

After the garden's owner Qin Yao was dismissed from imperial office, he returned to Wuxi. Placing his emotions into the landscape around him, he rebuilt his garden and named it the Jichang Garden. The concept of *ren*, *zhi* and *le* mentioned in Wang Xizhi's verse refers to the pleasure of traveling amidst mountains and waters. Qin Yao's choice of the name "Jichang Garden" expressed his feeling of hopelessness towards imperial politics and his determination to seclude himself within nature. Nearly every name that appears in the garden is a literary reference that ties back either to this despondence or to Wang Wei's verse in his painting of *Wangchuan Garden*[21]: the Yupan Corridor is a clever play on a single word that can mean "winding and enchanting" in reference to nature but also "melancholy basin" if taken out of context; the Zhiyujian[22] Pavilion plays on a verse by Zhuangzi (369–286 BC), an influential Taoist philosopher during the Warring States period (475–221 BC), that famously asks "You are not I. How do you know that I do not know what constitutes the enjoyment of fishes?"[23] (Fig. 2.72) Visitors to the garden were moved and expressed their emotions through the garden as well. Often, visitors composed poetry about the garden; in one famous example, standing on the Seven Stars Bridge beside Jinhuiyi Pond, the Qing Dynasty Emperor Qianlong (reign 1736–1795) chanted, "a bridge flies over glazed roof tile" (Fig. 2.73).

Fig. 2.72 Approximately twenty meters in length and 8 m in width, Jinhuiyi Pond is the largest water feature in the Jichang Garden. The Yupan Corridor, the Zhiyujian Pavilion and the Seven Stars Bridge are all located near the pond. *Source* Photograph by Bo Zhang, provided by Wuxi Landscape Bureau

[21]***Wangchuan Garden*** (Mandarin: *wang chuan yuan tu*), is a painting drawn by Wang Wei (699–759), a prominent poet, musician, painter, and statesman during the Tang Dynasty (618–907).

[22]Literally, the name of the Pavilion means "understanding fish as the fish's friend".

[23]Translated by James Legge (1815–1897), who was a noted Scottish sinologist.

Fig. 2.73 The buildings in the Jichang Garden appear even more exquisite against a backdrop of beautiful trees. With the beautiful scenery of mountains and lakes in the distance, the garden makes one feel completely immersed in nature. The Seven Stars Bridge is located above Jinhuiyi Pond, in such a way as to make the water appear deeper and more expansive. *Source* Photograph by Bo Zhang, provided by Wuxi Landscape Bureau

Extended Reading: Zhiyujian Pavilion

The Zhiyujian Pavilion is located at the center of Jinhuiyi Pond. The name Zhiyujian is derived from the story of a conversation between ancient Chinese philosophers Zhuangzi and Huizi. In the story, Zhuangzi states, "The fishes come out and play about at their ease; that is the enjoyment of fishes." The other said, "You are not a fish; how do you know what constitutes the enjoyment of fishes?" Zhuangzi rejoined, "You are not I. How do you know that I do not know what constitutes the enjoyment of fishes?"[24] This famous dialogue, simple, yet dialectically ingenious, has been passed down for thousands of years. In his poem *Zhiyujian Pavilion*, the Jichang Garden's owner Qin Yao writes, "Water flows under the pavilion, knowing I am not the fish, but the thinking just reminds me of Zhuangzi." In the Jichang Garden, the fish is not only a design element but also an indispensable medium for the creation of landscape architecture's aestheticism and frame of mind (Guo 2008). Representing a high level of aesthetic understanding with regards to landscape architecture, Zhuangzi's statements have been reflected in a number of garden works. The Zhiyujian Pavilion in the Jichang Garden is one such example (Fig. 2.74).

[24]Translated by James Legge (1815–1897), who was a noted Scottish sinologist.

Fig. 2.74 The Zhiyujian Pavilion, a waterside pavilion, sits above Jinhuiyi Pond at the heart of the Jichang Garden. *Source* Photograph by Chunhua Yan

The Jichang Garden was, for many years, the private property of an aristocrat. Landscape, rather than architecture, is the focus of the garden. Originally, the garden was owned by Qin Jin, a Minister of War in the Ming Dynasty (1368–1644). The garden was initially named *Feng Gu Xing Wo* Garden (lit. Phoenix Nestle Garden) in relation to Qin Jin's other name, Feng Shan (Pan 2001a). His nephew Qin Yao inherited the garden. Disappointed in politics, Qin Yao invested his emotions into landscape architecture. Qin Yao focused primarily on the construction of his garden's landscape elements. As Wang Zhideng (1535–1612) documented in his *Jichang Garden Records*, the garden was famous for its water, stone, then vegetation and lastly architecture (Zhou 1990).

The Jichang Garden features a design style typical among gardens in the *Jiangnan* region—a style characterized by a focus on borrowing elements skillfully and keeping in perfect scale. Primarily, the aim of this type of design is to realize a fusion of the outside and the inside or to draw the surrounding natural landscape into a man-made area by means of borrowing forms from the surrounding landscape (Fig. 2.75). The rockeries in the Jichang Garden, for example, are an extension of Huishan Mountain. Made from local yellow stone,[25] the garden rockeries form a simple and unsophisticated natural landscape (Huang 1994). The garden, which covers around one hectare in area, is long in its north-south dimension and short in its east-west dimension. It consists of two components: Jinhuiyi Pond and surrounding pools in the east, with rockeries and trees in the west. At 80 m in length

[25]**Yellow stone** is a type of sedimentary rock that serves as the main stone material in the uplands area beside Lake Taihu. It features a broad stone face, large size and well-defined shape.

Fig. 2.75 Section drawing of the Jichang Garden. The garden primarily features natural landscape elements including mountains, water and trees. The relatively few architectural works appear more elegant and delicate amidst the surrounding garden landscape. *Source* Feng (2000: 88)

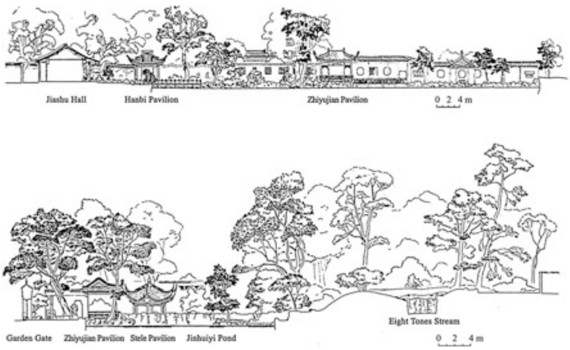


Fig. 2.76 Section drawings of the Jichang Garden from the eastern (*above*) and southern perspectives (*bottom*). The eastern side section drawing illustrates a series of pavilions on the east bank of Jinhuiyi Pond with the Zhiyujian Pavilion in the center. The Southern side section drawing depicts the garden gate, the Zhiyujian Pavilion, the Stele Pavilion, Jinhuiyi Pond and the Eight Tones Stream. The stream carries water from Huishan Mountain. *Source* Pan (2001a: 173)

and 20 m in width, Jinhuiyi Pond is the largest body of water in the garden. Water in the pond comes from Huishan Mountain (Fig. 2.76).

The Zhiyujian Pavilion is named from the book *zhuang zi*.[26] On the east side of Jinhuiyi Pond is a row of pavilions and galleries. The Zhiyujian Pavilion sits in the center, protruding out over the surface of the pond and is square in shape (Fig. 2.77). Originally, the Zhiyujian Pavilion was built as a covered bridge, connecting the Qingyu Pavilion and the Yupan Corridor. In 1883, during the Qing Dynasty, the bridge was rebuilt as a waterside pavilion with a gable-and-hip roof[27]

[26]***Zhuang zi***, a famous ancient Taoist book, is named after Zhuangzi (369–286 BC), an influential philosopher during the Warring States period (475–221 BC), and consists of three parts but actually only some contents finished by Zhuangzi and his students.

[27]**Gable-and-hip roof** is a typical roof style in traditional Chinese architecture, usually comprising four sloping roofs with two large roof sections in the front and back, whereas on each of the other two sides is a smaller roof section with a gable.

Fig. 2.77 The Zhiyujian Pavilion, which extends out across the surface of Jinhuiyi Pond, is the centerpiece of the architecture east of the pond. *Source* Photograph by Bo Zhang, provided by Wuxi Landscape Bureau

Fig. 2.78 The Zhiyujian Pavilion, a square waterside pavilion with a gable-and-hip roof, faces water on three sides. *Source* Photograph by Bo Zhang, provided by Wuxi Landscape Bureau

(Sha 2007). Surrounded on three sides by water, the pavilion affords an excellent view of Jinhuiyi Pond's many fishes. In this unique setting, where the worlds of man and fish meld for a moment, one cannot help but envy the carefree fish that swim lazily below the water's surface and recall Zhuangzi's timeless retort, "How do you know that I do not know what constitutes the enjoyment of fishes?" (Fig. 2.78).

As the property of imperial politicians in high position, the Jichang Garden gained considerable fame over time because of the multiple royal visits by the Kangxi (reign 1662–1722) and Qianlong (reign 1736–1795) Emperors (Fig. 2.79). Indeed, Emperor Qianlong admired the design of the Jichang Garden so much that he had an imperial garden constructed on a similar layout named the Huishan Garden, now the Xiequ Garden in the Summer Palace. Among the thousands of beautiful vistas that dot the Chinese landscape, the Jichang Garden is unique: the clever integration of poetic elements into the Jichang Garden's design infuses the garden with a cultural significance that augments the garden's aesthetic appearance. It is this quality that captured such great interests from the Kangxi and Qianlong Emperors.

Fig. 2.79 Illustration of the Jichang Garden from the book *Nan Xun Sheng Dian*. The illustration shows that in the Qing Dynasty Emperor Qianlong's reign, the Jichang Garden had already reached considerable size. *Source* Feng (2000: 20) *Note* ***Nan Xun Sheng Dian***, an official record during one of Emperor Qianlong's southern tours in the Qing Dynasty (1644–1911), was literally named *Pomp and Ceremony in the Southern Tour*

Geographical Interpretation

Settled in the midst of a beautiful natural environment, the Jichang Garden takes advantage of its topology to blend itself into the surroundings. Following the principle that scenery should change with movement of steps, the garden boasts stunning rock formations, a beautiful array of sparkling ponds and intricately constructed pavilions. Poetic elements embedded within the garden's landscape contribute cultural significance to the overall aesthetic experience.

References

Bai, C. X. (2004). *A harmony between nature and human beings: From philosophy to architecture: [Dissertation for Doctorate]*. Beijing: Chinese Academy of Social Sciences. (in Chinese).

Chen, W., Feng, W., & Jiao, Z. Y. (2001). Riverside landscape study and virtual reality technology. *Architectural Journal,* (6), 9–12. (in Chinese).

Cheng, J. J. (2005). *Tempering Ying and Yang: Traditional Chinese architecture and the philosophy in Zhouyi*. Beijing: China Film Press. (in Chinese).

Editorial Committee on the Hangzhou Municipal Records. (1995). *Hangzhou municipal records* (Vol. I). Beijing: Zhonghua Book Company. (in Chinese).

Editorial Committee on the Vegetation Maps, Chinese Academy of Sciences. (2007a). *Vegetation map of China* and *its geographic pattern: Illustration of the vegetation map of the People's Republic of China* (*1: 1,000,000)* (*Vol. I)*. Beijing: Geological Publishing House, (in Chinese).

Editorial Committee on the Vegetation Maps, Chinese Academy of Sciences. (2007b). *Vegetation map of China* and *its geographic pattern: Illustration of the vegetation map of the People's Republic of China* (*1: 1,000,000)* (*Vol. II*). Beijing: Geological Publishing House, (in Chinese).

Editorial Committee on the Vegetation Maps, Chinese Academy of Sciences. (2007c). *Vegetation map of the People's Republic of China* (*1: 1,000,000)*. Beijing: Geological Publishing House, (in Chinese).

Editorial Committee on the Wuxi Municipal Records. (1995). *Wuxi municipal records*. Nanjing: Jiangsu People's Publishing House. (in Chinese).

Feng, Z. (1994). Features and origin of the history of the Tibetan nationality in Yunnan. *Tibetan Studies,* (1), 75–81. (in Chinese).

Feng, Z. P. (2000). *Chinese garden architecture* (2nd ed.). Beijing: Tsinghua University Press. (in Chinese).

Gao, J. H. (1996). Yellow Crane Tower. *Huazhong Architecture, 14*(1), 58–61. (in Chinese).

Guan, Z. J. (1998). Dengfengtai observatory and the improvement of shadow measuring method by Guo Shoujing. *Journal of Zhengzhou University (Philosophy and Social Sciences Edition), 31*(2), 63–67. (in Chinese).

Guan, Z. J. (2000). The concept of the earth's core in Chinese astronomical history. *Studies in the History of Natural Sciences,* (3), 251–263. (in Chinese).

Guan, Z.J. (2005). The historical and cultural value of Dengfengtai Observatory. *Journal of Dialectics of Nature*, (6), 82–87, 114. (in Chinese).

Guo, F. (2008). *Fish philosophy in Chinese classical garden landscape: (Dissertation for Master).* Tianjin: Tianjin University. (in Chinese).

Guo, D. H., & Li, H. D. (2003). The new Leifeng Pagoda by West Lake in Hangzhou. *Architectural Journal,* (9), 50–53. (in Chinese).

Gyalthang Sherab Gyatso. (1994). A brief history of Ganden Sumtseling Monastery. *China Tibetology,* (1), 104–115. (in Chinese).

Hou, Y. B., & Li, W. Z. (2002). *A pictorial history of ancient Chinese architecture*. Beijing: China Architecture & Building Press. (in Chinese).

Huang, M. R. (1994). *Jichang garden of Wuxi*. Beijing: People's Daily Press. (in Chinese).

Khedrup Chosphel. (2009). *History of Tibetan Buddhism*. Beijing: China Religious and Culture Publisher. (in Chinese).

Lin, Y. L. (1999). Researches of public image in Wuhan City. *New Architecture,* (1), 41–43. (in Chinese).

Liu, D. Z. (1984). *History of ancient Chinese architecture* (2nd ed.). Beijing: China Architecture & Building Press. (in Chinese).

Liu, Z. P. (1990). *A brief history of Chinese residential architecture—City, house, garden*. Beijing: China Architecture & Building Press. (in Chinese).

Ni, S. Y. (1989). The buddhism culture of Wuyue Kingdom in the Five Dynasties period. *Southeast Culture,* (6), 160–164. (in Chinese).

Pan, G. X. (2001a). *The art of arranging the sceneries in Jiangnan*. Nanjing: Southeast University Press. (in Chinese).

Pan, G. X. (2001b). *A history of Chinese architecture* (4th ed.). Beijing: China Architecture & Building Press. (in Chinese).

Pan, G. X. (2001c). *History of ancient Chinese architecture (Vol. IV): Architecture in Yuan and Ming Dynasties*. Beijing: China Architecture & Building Press. (in Chinese).

Pan, Y. Y. (2008). Phoenix Tai, yellow crane tower: Li Bai and Cui Hao. *Jiangnan Forum,* (2), 60–61. (in Chinese).

Peng, Y. G. (1986). *Analysis of the traditional Chinese garden*. Beijing: China Architecture & Building Press. (in Chinese).

Sha, W. G. (2007). *Jichang garden in Huishan Mountain: Brilliant scenery in four seasons*. Suzhou: Guwuxuan Publishing House. (in Chinese).

Shag Dri Doeje. (2006). *Tibetan Buddhism of Gelukpa*. Tibet: Tibetan People's Publishing House. (in Chinese).

Shi, D. D., & Hangzhou Garden and Cultural Relics Administration. (1995). *The West Lake records*. Shanghai: Shanghai Ancient Books Press. (in Chinese).

Sun, Z. W. (2000). *Chinese architecture and philosophy*. Nanjing: Jiangsu Science Publishing House. (in Chinese).

Wang, S. Z. (1999). *Chinese vernacular architecture* (Vol. IV). Nanjing: Jiangsu Science and Technology Press. (in Chinese).

Wang, S. L. (2003). Origin of round heaven and square earth. *Jianghan Forum,* (11), 75–79. (in Chinese).

Xie, M. Y. (2006). Ancient Chinese concept of space from “er ya”. *Social Science Front,* (5), 274–276. (in Chinese).

Xu, L. H. (2002). Survey on classic Tibetan books in Yunnan. *China Tibetology,* (2), 90–96. (in Chinese).

Yang, H. X. (2002). Research on the renovation of Leifeng pagoda in Hangzhou. *Journal of National Museum of China,* (5), 13–22. (in Chinese).

Yang, Y. S. (2003). *A tour to ancient Chinese architecture*. Beijing: China Architecture & Building Press. (in Chinese).

Yang, Y. S. (2005). Difference in similarity with distinctive greatness: Comparison between Cui Hao’s “Yellow Crane Tower” and Li Bai’s “Mounting Jinling Phoenix Tai”. *Masterpieces Review,* (11), 91–93. (in Chinese).

Zeng, Y. H., & Cai, S. M. (2005). Influence of the geographical environment on Wuhan’s urban economic development in modern time. *Resources and Environment in the Yangtze Basin, 11* (4), 358–362. (in Chinese).

Zhang, Y., & Deng, H. B. (2005). Discussion of the evolution and use of the lakes in Wuhan. *Journal of Huazhong, 39*(4), 559–563. (in Chinese).

Zhao, Y. H. (2009). Zhou Bi Suan Jing and Yangcheng. *The Chinese Journal for the History of Science and Technology,* (1), 102–109. (in Chinese).

Zhejiang Cultural Relics and Archaeology Research Institute. (2005). *The historic site of Leifeng Pagoda*. Beijing: Cultural Relic Publishing House. (in Chinese).

Zhejiang Cultural Relics and Archaeology Research Institute. (2002). *Treasures of Leifeng Pagoda*. Beijing: Culture Relics Publishing House. (in Chinese).

Zhou, W. Q. (1990). *History of traditional Chinese garden*. Beijing: Tsinghua University Press. (in Chinese).

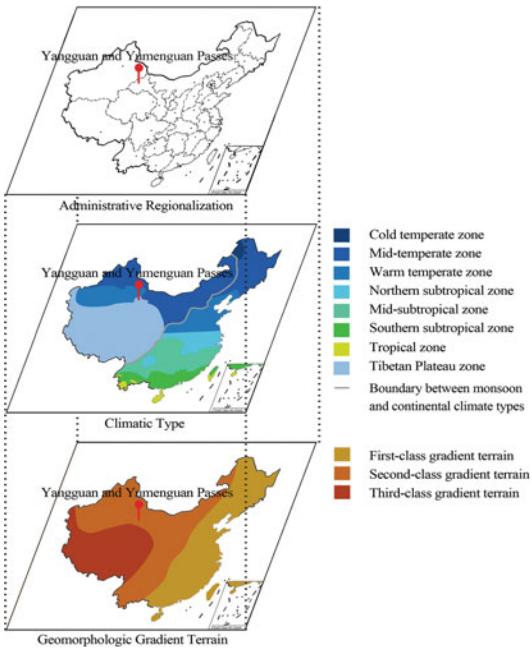
Chapter 3
"Sentiment" Cases

3.1 Yangguan and Yumenguan Passes: Places to Say Farewell

Location: Dunhuang, Gansu Province
Key Geographical Concept: Architecture closely related to ancient poetry.

The Yangguan and Yumenguan Passes are located on the former frontier of ancient China. The desolate landscape there has inspired generations of poets to express the sorrows of parting.

F. Wang, *Geo-Architecture and Landscape in China's Geographic and Historic Context*, DOI 10.1007/978-981-10-0483-4_3



Geomorphologic Features

The Yumenguan and Yangguan Passes are located on the northwestern and southwestern sides of Dunhuang City, respectively. The Yangguan Pass sits to the south of the Yumenguan Pass. Dunhuang is located on the western terminus of the Hexi Corridor, upstream from the Danghe River diluvial fan. Situated in the flattest land in the nearby area, Dunhuang entrenches the west end of the Hexi Corridor,[1] which is the gateway to Serindia[2] and an important stop along the southern section of the Silk Road. In ancient times, the Yangguan and Yumenguan Passes guarded the western approach to Dunhuang; together, they constituted a critical portal between the *Zhongyuan*[3] and Serindia regions.

[1]**Hexi Corridor** is a historical route in northwest China that lies to the west of the Yellow River. It was the main access point from ancient *Zhongyuan* (lit. the Central Plain region in China) to Central Asia and West Asia for trade and military.

[2]**Serindia** or the Western region (Mandarin: *xi yu*), refers to the regions to the west of the Yangguan and Yumenguan Passes in Dunhuang, including what is now Sinkiang and parts of Central Asia, although it is sometimes used more generally to refer to other regions to the west of China as well, such as the Indian subcontinent.

[3]***Zhongyuan*** is referred to the central plain region in China, where dynasties were usually led by the Han people in the ancient China.

Fig. 3.1 Decorating the Gobi desert with spots of greenery, snowmelt from Qilian Mountain gives rise to a number of oases. The mouthwatering sight of ripe grapes greets September travelers to Yangguan Town. *Source* Photograph by Fang Wang

Climatic Features

Dunhuang is an inland city surrounded by the Gobi desert that falls within a typical continental climate zone, which is characterized by strong solar radiation, abundant sunshine, periodically high temperatures, a short frost-free period, little precipitation, substantial temperature fluctuations, rapid evaporation and frequent natural disasters (Editorial Committee on the Dunhuang Municipal Records 1994). Snowmelt from Qilian Mountain in the south creates the conditions necessary for oasis formation (Fig. 3.1). The Yangguan and Yumenguan Passes were once oases, and beyond the two passes was once desert (Fig. 3.2). Over time, climate change has brought about desertification, which has resulted in the submersion of the two passes into their barren surroundings.

Vegetation Features

Due to the area's arid, windy climate and intense sunlight, the landscape around the Yangguan and Yumenguan Passes is a mixture of dry grassland, semi-desert and desert groundcover, with simple, sparse, and low vegetation (Fig. 3.3) (Editorial Committee on the Dunhuang Municipal Records 1994). It creates desolate scene that evokes the feelings of sentimentality and sorrow that we associate with departure.

Cultural Features

The Yangguan and Yumenguan Passes were both the throat of the Silk Road and an important route as one of China's overland connections to foreign lands. To pass outwards through the two passes was to enter foreign territory; to return through them was to return home (Fig. 3.4). As delineators of China and foreign lands, the

Fig. 3.2 The Yangguan Pass historic site. rising from the flat desert, the Yangguan Pass affords a view of distant, snow-capped mountains. *Source* Photograph by Lida Fu, provided by Ming Jiang

Fig. 3.3 Relics of the Yumenguan Pass sit on barren land, surrounded by short shrubs. *Source* Photograph by Fang Wang

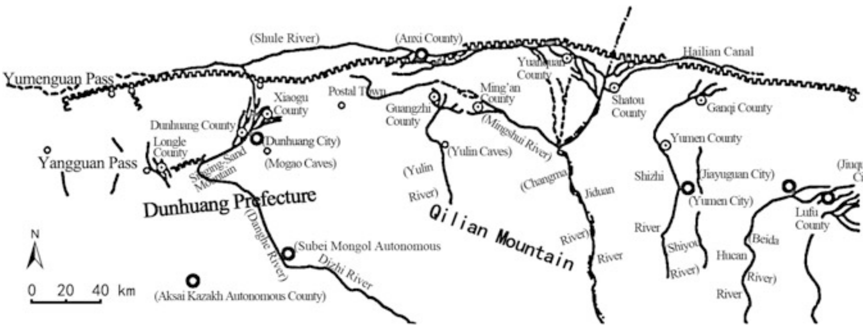


Fig. 3.4 Map of the west side of the Great Wall relics along the Hexi Corridor in the Han Dynasty (202 BC–220 AD). The Yangguan and Yumenguan Passes are on the far west side of the map. Lands further west were beyond the control of the *Zhongyuan* governments. *Source* Ji and Ji (2003: 185)

Fig. 3.5 From the secondary exit of the Yangguan Pass Museum, the fire beacon can be seen in the distance. *Source* Photograph by Fang Wang

passes represented and constituted a cultural boundary. Standing on the border between two markedly different landscapes, the passes served as a natural boundary as well. The many contrasts between within and without, familiar and foreign, and fertile and barren have found expression in several famous poetic works written about the two passes.

From the Han Dynasty forward, the Yangguan and Yumenguan Passes played important strategic roles in Chinese border defense. The two passes were established at approximately the same time, in the fourth Yuanfeng year (107 BC) of the Han Dynasty Emperor Wu. At that time, Emperor Wu ordered the construction of four *Jun*[4] and two passes. The two passes were the Yangguan and Yumenguan Passes. The two passes were located in Dunhuang, a border city at that time, and an important gateway on the Silk Road through the Hexi Corridor to Serindia (Figs. 3.5 and 3.6). During the Sui (581–618) and Tang (618–907) Dynasties, the northern, middle and southern routes to Serindia all originated from Dunhuang. As strategic military and commercial passes, the Yangguan and Yumenguan Passes were crucial gateways in two of the three routes and regarded as places of strategic importance.

[4]***Jun*** (lit. commandery or prefecture), was a traditional administrative division in China from the Warring States period (475–221 BC) until the early Tang Dynasty (618–907). Before the Qing Dynasty (1644–1911), it was smaller than a county, and it was larger than a county afterwards. Since the Tang Dynasty, it has been called "*Fu*".

Fig. 3.6 Dawn at the Yumenguan Pass. *Source* Photograph by Fang Wang

Extended Reading: Southern Route of the Silk Road

Formed near the time of the Han Dynasty (202 BC–220 AD), the Silk Road was a cultural route extending from China's Yellow and Yangtze River watersheds through India, Central Asia and finally Western Asia to connect with Northern Africa and Europe in Ancient and Medieval Ages (Lin 2006). The Silk Road by land was in use from the Han Dynasty, when Zhang Qian (164–114 BC) journeyed to Serindia around 200 BC, and it brought an end to the middle of the Qing Dynasty (around 1,800). Within China, the route originates in Chang'an City (now Xi'an City) and Luoyang City, from whence it extends through the Hexi Corridor to Dunhuang and Sinkiang, where the main route diverges into the northern, middle and southern sub-routes. These sub-routes make their way separately to reach Central Asia, heading either south to India or southwest to Afghanistan (Wu 2007). The exact route of the Silk Road changed on multiple occasions over time. Indeed, during any given period, a branch of the Silk Road might also have several parallel routes in use. As the exact route remains an issue of some debate today, it is only possible to determine its general direction. The southern route is described in the book, *History of the Han Dynasty*,[5] which tells us: "two roads stretch west from the Yumenguan and Yangguan Passes: the southern route travels through Shanshan, thence north of Nanshan Mountain, west of the Bohe River to Shache, then across Congling Mountain range to the Big

[5]***History of the Han Dynasty*** (Mandarin: *han shu*), a classical Chinese history book covering the history of the Western Han from 206 BC to 25 AD, was written and assembled by Ban Gu in the Eastern Han Dynasty (25–220).

Rouzhi Kingdom and the Empire Ashkanian." To the west of Dunhuang, the route essentially coincides with the route that travels between the Kunlun Mountains in the north and the Tarim Basin in the south (Fig. 3.7).

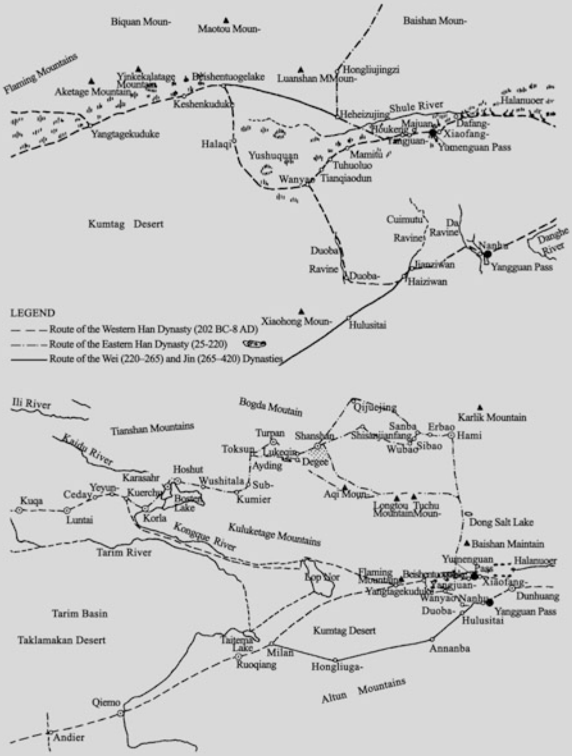


Fig. 3.7 Route to Serindia in the Han Dynasty: (*bottom*) the route to Serindia; (*upper*) part of the route to Serindia in the area of Dunhuang. The map shows the manner in which the Yangguan and Yumenguan Passes controlled access to Dunhuang. *Source* Li (1999: 230)

The Yangguan and Yumenguan Passes were located on the national border of that time and represented cultural boundaries. The Yangguan Pass was once an oasis and a prosperous town. Leaving the *Zhongyuan* region and going west out of the Yangguan Pass, travelers were faced with the desolate loess of Serindia. The stark contrast between inside and outside the Yangguan Pass, *Zhongyuan* and Serindia, oasis and desert, prosperity and barrenness, has had a significant emotional impact on travelers throughout Chinese history. A number of famous Chinese poets were inspired by the scene, such as Wang Zhihuan (688–742), who wrote in his poem, *Beyond the Border*,[6] "a Tartar under the willows is lamenting on his flute, that spring never blows to him through the Yumenguan Pass," and Wang Wei (699–759) who wrote a poem entitled *Wei Cheng Qu*,[7] "I pray you to quench one more full to the brim, this farewell cup of wine; for after thy departure from this western-Yangguan Pass, thou will have no friends of thine".[8] Many other famous poems speak of the passes, including Wen Zisheng (495–547)'s *Liang Zhou Yue Ge*,[9] Lai Ji (610–662)'s *Chu Yu Guan*,[10] Lu Zhaolin (approximately 634–686)'s *Guan Shan Yue*,[11] Wang Changling (698–756)'s *Cong Jun Xing*,[12] Wang Wei's *Song Liu Si Zhi Fu An Xi*,[13] and Li Bai (701–762)'s *Cong Jun Xing*,[14] among others.

The great disparity between the sociological and natural environments inside and outside the passes made the Yangguan and Yumenguan Passes psychological boundaries. As Wang Wei poetically describes in *Song Liu Si Zhi Fu An Xi*, departure from the Yangguan Pass was often a painful experience in which travelers were filled with sorrow at separation both from their loved ones and from their familiar cultural and geographic environment. Familiar landscapes in *Zhongyuan* region are replaced by the sight of endless desolate stretches of sand in Serindia (Fig. 3.8). As important strategic positions, the Yangguan and Yumenguan Passes remained consistently in the shadow of war. Beginning in the Han (202 BC–220 AD) Dynasty, the *Zhongyuan* government authority was under constant threat of attack from nomadic groups in the northwest. Thus, many associated the two passes with the relentless killing, the destruction of battle and the bravado of sorties undertaken to recapture territory. In the poem *Cong Jun Xing*, Wang Changling writes, "Qinghai Lake, white clouds and dim snow-capped mountains, lonely fortress looking at the Yumenguan Pass from far away; the sands of a hundred battles pierce through armor, the soldiers do not return home until they conquer Loulan."

---

[6]***Beyond the Border*** (**Mandarin**: *liang zhou ci)*, a poem, was written by Wang Zhihuan (688–742) in the Tang Dynasty (618–907). Its English translation was adapted from Witter Bynner, an American poet, writer and scholar.

[7]***Wei Cheng Qu***, a poem, literally *A Song at Weicheng*, was written by Wang Wei (699–759) during the Tang Dynasty (618–907).

[8]Translated by Sun Dayu (1905–1997), who was a famous Chinese literature translator.

[9]***Liang Zhou Yue Ge***, a poem, literally *A Happy Army Song at Liangzhou,* was written by Wen Zisheng (495–547) during the Northern Wei Dynasty (386–534).

[10]***Chu Yu Guan***, a poem, literally *Leaving Away from Yuguan Pass*, was written by Lai Ji (610–662) during the Tang Dynasty (618–907).

[11]***Guan Shan Yue***, a poem, literally *Moon Hanging on the Sky of the Guanshan Area,* was written by Lu zhaolin (632–695) during the Tang Dynasty (618–907).

[12]***Cong Jun Xing***, a poem, literally *Army Life*, was written by Wang Changling (690–756) during the Tang Dynasty (618–907).

[13]***Song Liu Si Zhi Fu An Xi***, a poem, literally *Saying Farewell Sizhi Liu to Anxi*, was written by Wang Wei (692–761) during the Tang Dynasty (618–907).

[14]***Cong Jun Xing***, a poem, literally *Army Life*, was written by Li Bai (701–762) during the Tang Dynasty (618–907).

Fig. 3.8 The old Yangguan Pass Road. Leaving Yangguan and crossing this route meant the departure from *Zhongyuan* and entry into Serindia. *Source* Photograph by Fang Wang

Fig. 3.9 The Yumenguan Pass relic. *Source* Photograph by Fang Wang

Taking the Yumenguan Pass together with the landscapes of cyan sea, snow-capped mountains, Loulan, the lonely fortress and sands, these references to Serindia express the determination and courage of the border garrison in their efforts to defeat their enemies (Fig. 3.9).

After the Song (960–1279) and Yuan (1271–1368) Dynasties, *Zhongyuan* and Serindia became less connected. The prosperity of the Silk Road faded gradually, and the Yangguan and Yumenguan Passes also exited history's stage. The former city wall and moat of the Yangguan Pass have since fallen into ruin and the once bustling oases were gradually overtaken by the desert as the result of climate

Fig. 3.10 A lonely fire beacon, the only remnant of the Yangguan Pass, sits on a hill. *Source* Photograph by Mu Yuan, provided by Piyan Jiang

Fig. 3.11 At dawn, the ruins of the Yumenguan Pass, surrounded by Gobi desert, appear even more desolate. *Source* Photograph by Fang Wang

change. A single fire beacon tower, the sole remnant of the Yangguan Pass, stands amidst the drifting sands (Fig. 3.10). Over the course of history, the Yumenguan Pass has changed locations several times, finally ending in ruins as well (Fig. 3.11). If poets of old could see the Yangguan and Yumenguan Passes in their current state, they would most likely recite additional sorrowful verses.

Extended Reading: Dunhuang Gudong Sands

South of the Yangguan Pass beacon is a concave area of land that is approximately 4–5 km^2, called the Gudong Sands (Fig. 3.12). The Gudong Sands are located in an area of crescent dunes that are shaped by the

Fig. 3.12 The Yangguan Pass fire beacon and its surrounding landscape. *Source* Photograph by Fang Wang

northwest wind and are generally oriented from northeast to southwest. Each dune measures approximately 3–5 m in height with 50 m between dunes, where huge swaths of ancient farmland—long since eroded by the desert wind—are visible. Levies that once separated fields from one another remain clearly visible. Scattered about on the surface is a plethora of ancient artifacts, including pieces of red and gray pottery, broken bricks, brass and iron items, pottery spindles, millstones, stone mortar and many types of coins. This place is named the Gudong Sands because the word "Gudong" in Chinese means antique (Li 1999). A legend explains the appearance of this archeological bounty. Once, an emperor in the Tang Dynasty decided to marry his daughter to a Serindia king to establish friendly diplomatic relations between their two nations. When the convoy—consisting of the princess, her servants and the dowry—paused at the town of the Yangguan Pass to rest, a sandstorm struck. The storm lasted seven days, over the course of which the town was buried, along with the princess, her servants and the dowry. Over time, when strong wind blow, items buried under sand dunes is revealed.

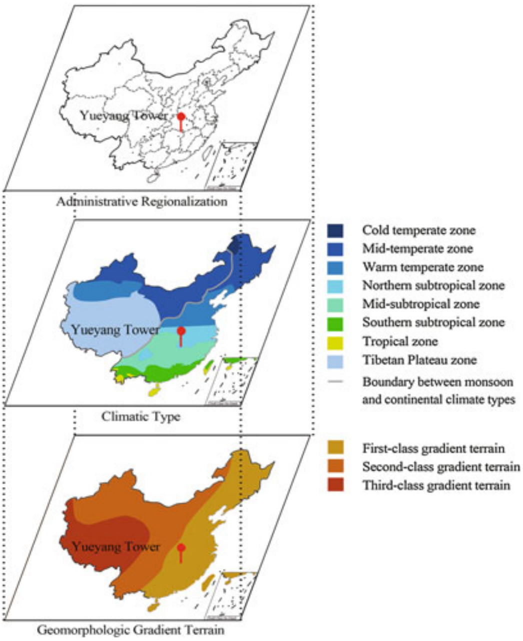
Geographical Interpretation

Because of their locations on ancient China's cultural and natural boundary, the Yangguan and Yumenguan passes have aroused in people the thoughts and emotions of history's flux. Nonetheless, the once-prosperous Silk Road is today quiet, and the flames of war that once extended across the land have died out, leaving only two lonely fire beacons of the Han Dynasty along the Hexi Corridor.

3.2 Yueyang Tower: Poem Composed with the Feeling of Considering the Country and People

Location: Yueyang, Hunan Province
Key Geographical Concept: Architecture closely related to ancient poetry.

The Yueyang Tower, which stands by the side of Dongting Lake, commands a magnificent view of misty fog and rolling waves. This vista has been a constant source of creative inspiration for Chinese intellectuals over time.



Geomorphologic Features
The Yueyang Tower stands on the bank of Dongting Lake at the foot of Baqiu Mountain on Dongting Lake Plain northwest of Yueyang City, Hunan Province (Figs. 3.13 and 3.14). As China's second largest subsiding basin, Dongting Lake has been called "Eight-hundred-*li* Dongting Lake". Viewed from the top of the tower, the misty Dongting Lake appears to join with the sky in the distance. This sight filled the hearts of visiting scholars and poets with emotion.

Climatic Features
Yueyang area falls in the humid northern subtropical monsoon climate zone and enjoys the greatest number of daylight hours of any area in Hunan Province. The

Fig. 3.13 The Yueyang Tower stands at the foot of Baqiu Mountain in the northwest of Yueyang City, Hunan Province. The topography in the area declines in elevation from southeast to northwest, sloping downward as it approaches the edge of the lake. *Source* Photograph by Biheng Wang

Fig. 3.14 Nighttime view of the Yueyang Tower, after the scenic area's expansion. The new scenic area encompasses 640 mu (approximately 0.43 km^2), up from 73 mu (approximately 0.05 km^2). *Source* Photograph by Zhijian Tang, provided by Hui Zhong and Zongfu Jiang

Fig. 3.15 View of the Yueyang Tower from Dongting Lake. *Source* Photograph by Zhijian Tang, provided by Hui Zhong and Zongfu Jiang

local climate features a sustained warm period, a short period of cold and seasonal weather with abundant rainfall. The pleasant climate sets a beautiful natural backdrop for the Yueyang Tower (Fig. 3.15).

Cultural Features

The Yueyang Tower is closely tied to Dongting Lake. It was first built at the end of the Eastern Han Dynasty (25–220) as the troop-reviewing platform for General Lu Su (172–217), commander of the Wu Kingdom's forces, from which to observe the naval forces stationed at Dongting Lake. In the third Kaiyuan year (715) of the Tang Dynasty (618–907), Zhang Yue (667–730) rebuilt the platform into a tower for defensive purposes. It was from this point onward that the tower gained fame as a place of pilgrimage for poets and other literati (Editorial Committee on the Yueyang Municipal Records Editorial Committee on the Yueyang Municipal Records 2002). A great many famous litterateurs including Li Bai (701–762), Du Fu (712–770), Bai Juyi (772–846), Lu You (1125–1209) and many others all composed well-known works here at some point. Of these, the most famous is *Yue Yang Lou Ji*[15] by Fan Zhongyan (989–1052), a prominent politician and litterateur in the Northern Song Dynasty (960–1127). Architecturally exquisite and surrounded by breathtaking landscape, the Yueyang Tower is most enchanting because it possesses distinctive open-minded humanistic emotions.

The Yueyang Tower ranks among the "Three Great Towers in the *Jiangnan* region"—along with the Yellow Crane Tower and the Tengwang Pavilion—largely owing to its incredible view of Dongting Lake. Seated on a hill northwest of Yueyang City, the Yueyang Tower faces west toward Dongting Lake, its back to Jin'e Mountain. To the south, one can see the distant four rivers—the Xiang, Zishui, Yuanshui and Lishui Rivers; the Yangtze River is visible to the north (Fig. 3.16). Over the years, many have sought to capture in words the beautiful view from the Yueyang Tower. For example, Fan Zhongyan writes in *Yue Yang Lou Ji*, "adjoining distant mountains, swallow the Yangtze River, rushing forth with great vigor, stretching without end; at dawn's light and in the setting sun, a scene majestic in all its variety." With succinct and condensed sentences, Fan's poem encapsulates the wondrous beauty to be seen should one ascend the Yueyang Tower (Figs. 3.17 and 3.18).

The Yueyang Tower stood on an important junction in water traffic that was highly used by the ancient Chinese literati. The tower is located at the mouth of Dongting Lake in the middle stretch of the Yangtze River. Traveling upstream from the Yueyang Tower, ships can reach *Bashu*[16]; traveling downstream leads to Wuhan, Nanjing, and Shanghai. The four rivers mentioned above lead to other areas of Hunan Province. In ancient China, when water transport played a critical role in trade and defense, the Yueyang Tower constituted a necessary transfer station between the Yangtze River and the four rivers mentioned above. The work *Yue Yang Lou Ji* states, "The lake connects with the Wu Gorge in the north and ends at

[15]***Yue Yang Lou Ji***, an essay, literally *On Yueyang Tower*, was written by Fan Zhongyan (989–1052) in the Northern Song Dynasty (960–1127).

[16]***Bashu*** refers to some districts of the Southwestern China during the pre-Qin period (approximately the 21st century to 221 BC) and now includes the area in the upper reaches of the Yangtze River.

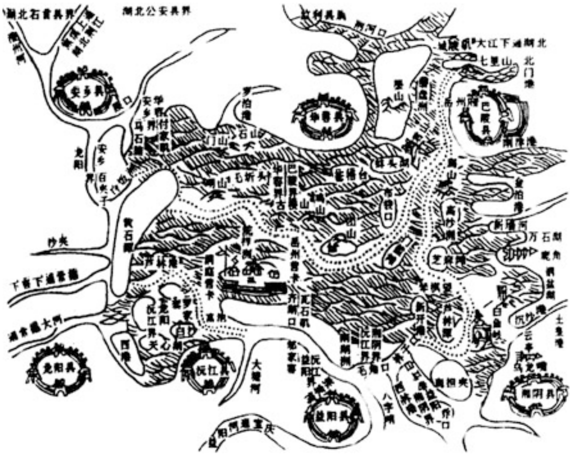


Fig. 3.16 The Qing Dynasty map of Yuezhou *Fu* (now Yueyang City) from a monograph, *Chu Bei Shui Li Di Fang Ji Yao*. In the Qing Dynasty, Yuezhou *Fu* belonged to Hunan Provincial Administrative Government and included four counties: Baling, Linxiang, Pingjiang, and Huarong. Located at the point where the Yangtze River enters Dongting Lake, the city is historically known for its role as water transport hub. *Source* Fu (2006: 149). *Note* ***Fu*** (lit. prefecture) was an administrative division during the Tang (618–907), Ming (1368–1644) and Qing (1644–1911) Dynasties of China. It was also called "*Jun*" prior to the Tang Dynasty. ***Chu Bei Shui Li Di Fang Ji Yao***, a monograph on water construction, literally *Irrigation and Embankment Record in Hubei Province*, was written by Yu Changlie in the Qing Dynasty (1644–1911).

Fig. 3.17 The illustration in the official record, *Annals of Yueyang Fu: Dongting Lake* in the 11th year (1746) of the Qing Dynasty Emperor Qianlong's reign. The Yueyang Tower faces the vast Dongting Lake. The lake surface ripples with waves as boats of many types shuttle back and forth. *Source* Yang (1993: 174). *Note* ***Annals of Yueyang Fu: Dongting Lake*** (Mandarin: *yue yang fu zhi: dong ting tu*), an official record, was finished in the Qing Emperor Qianlong's reign (1736–1795).

Fig. 3.18 In this view from the north, the Yueyang Tower is the building with the helmet-shaped roof on the far left. The boundless waters of Dongting Lake meld with the sky in the distance. *Source* Photograph by Zhijian Tang, provided by Hui Zhong and Zongfu Jiang

Fig. 3.19 *Lingxing* Gate on the approach to the Yueyang Tower. The four characters that adorn the gate's northern face read, "南极潇湘 (lit. ending at the junction of the Xiang and Xiao Rivers in the south)". The southern face reads "北通巫峡 (lit. connecting with the Wu Gorge in the north)". *Source* Photograph by Fang Wang. *Note* ***Lingxing*** **Gate**, a type of gate commonly used in residences and temples. Usually the gate was built with a plaque in the upper part between two wooden columns and had three doors installed. After the Ming and Qing Dynasties, stone columns were more widely used for mausoleums and temples

the junction of the Xiang and Xiao Rivers in the south, many exiled officials and literati often gather here" (Fig. 3.19). Thus, generations of intellectuals, flushed with political success or frustrated for lack of appreciation of their talent, have encountered the Yueyang Tower. Over the course of their stay, these travelers left behind a great number of famous poems and verses.

The Yueyang Tower rises from water landscape. The tower provides visitors with a place to rest, enjoy the view, and commit their emotions to verse. The powerful scene glimpsed from the top of the tower was a catalyst for the creation of these

Fig. 3.20 Close view of the facade of the Yueyang Tower, which faces Dongting Lake. Helmet-style roofs were not commonly used in ancient Chinese architecture; the Yueyang Tower is one of a few examples of the style. The 12 upturned eaves, graceful and nimble, contrast the prismatic form of the tower's body. *Source* Photograph by Yuyu Wang. *Note* **Upturned eave** is a type of eave in traditional Chinese architecture that builds the eaves upturned with special treatment.

individuals' most brilliant ideas and expression of their deepest emotions. Viewed from the distance, the tower melds with surrounding water landscape (Fig. 3.20). Great Chinese scholars and poets the likes of Yu Ji (1272–1348), Yang Weizhen (1296–1370), Li Dongyang (1447–1516), Yuan Mei (1716–1797) and Yao Nai (1731–1815) all ascended the steps of the Yueyang Tower at some point in time to peer out over the distance, wine in hand, and compose verses. Perhaps the most famous of these works reads, "concern about all over the world first and to enjoy oneself last." This poetic masterpiece from Fan Zhongyan's *Yue Yang Lou Ji* is preserved on the surface of two carved folding screens on the first and second floors. They are duplicates of a work written during the Qing Dynasty Emperor Daoguang's reign (1821–1850) and a work of the famed calligraphy expert Zhang Zhao (1961–1745) in the Qing Emperor Qianlong's reign (1736–1795) (Yang 1993).

Extended Reading: Masterpiece of *Yue Yang Lou Ji*

In the spring of 1044, in the fourth Qingli year of Northern Song Dynasty (960–1127), Teng Zijing (991–1047) was relegated to Baling *Jun* in Yuezhou (now Yueyang City) to assume the lesser role of Magistrate of prefecture. There, he began renovations to the Yueyang Tower. Meanwhile, upon the failure of the Qingli Reforms,[17] the reform leader Fan Zhongyan, Teng's

[17]**Qingli Reforms** were an attempt to introduce proposals covering various aspects of governmental affairs for better management efficiency. They were attempted under the leadership of Fan Zhongyan (989–1052) and Ouyang Xiu (1007–1072) from 1043 to 1045 in the Song Dynasty (960–1279) and finally ended in failure.

close friend, was to live in exile in Dengzhou as well. When Teng finished renovating the Yueyang Tower, he sent word to Fan in Dengzhou, inviting him to compose a literary work for the tower to bolster the tower's historical stature (Jiang 2003). Attached, Teng included the painting *Dongting Late Autumn Drawing.*[18] In September of the 6th Qingli year (1046), Fan took up his brush and began composition of the famous work *Yueyang Tower Record* in the Huazhou Academy. The mere 368-character piece does not mention the Yueyang Tower itself but portrays the various scenes one might witness while ascending the tower's steps (Fig. 3.21). Fan uses this description to convey of the joys and sorrows of mankind, expressing that although his body resided in a type of exile, his heart forever dwelled upon the pressing issues of the nation; he would not abandon his ideals. In the last verse of the *Yueyang Tower Record*, perhaps the most representative of Fan's personal principles and by far the most famous part of the essay, Fan writes, "concern about all over the world first and to enjoy oneself last."

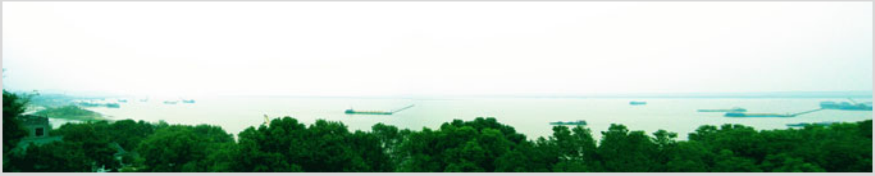


Fig. 3.21 View of Dongting Lake from the Yueyang Tower. Ascending the tower, one enjoys a panoramic view of Dongting Lake. The view has been a source of creative inspiration for poets and intellectuals throughout the tower's history. *Source* Photograph by Fang Wang

The Yueyang Tower has been rebuilt a number of times. The tower has taken different forms in each of the Tang (618–907), Song (960–1279), Yuan (1271–1368), Ming (1368–1644) and Qing (1644–1911) Dynasties (Fig. 3.22). Today's Yueyang Tower is a three-story wooden structure with a three-layer double-eaved helmet-shaped roof (Fig. 3.23). The structure measures three *kaijian*[19] wide, three *jinshen*[20] deep and 20.35 m in height. The second floor features an exterior corridor. Four gold-painted camphor wood columns, each with a diameter of 50 cm, extend all the way to the roof to support the structure (Yang 1993) (Figs. 3.24, 3.25, 3.26

[18]***Dongting Late Autumn Drawing*** was a painting given to Fan Zhongyan (989–1052) by Teng Zijing (991–1047) as a gift and a request for writing an essay on the Yueyang Tower.

[19]***Kaijian***, also known as *miankuo*, is a unit to measure the width of the building, which refers to the distance between two columns in the frontage of the traditional Chinese wooden architecture.

[20]***Jinshen***, a unit to measure the depth of the building, refers to the distance between two columns in the gable of the traditional Chinese wooden architecture.

Fig. 3.22 From left to right are the Yueyang Tower's respective forms in bronze across the Tang, Song, Yuan, Ming, and Qing Dynasties in the scene of "Tower of Five Dynasties Landscape" in the scenic area. The Yueyang Tower was first constructed in the Han Dynasty (202 BC–220 AD), but its earliest layout dates to the Tang Dynasty. *Source* Photograph by Fang Wang

Fig. 3.23 Skyline of the Yueyang Tower architectural complex. *Source* Zhang and Yan (1995: 15)

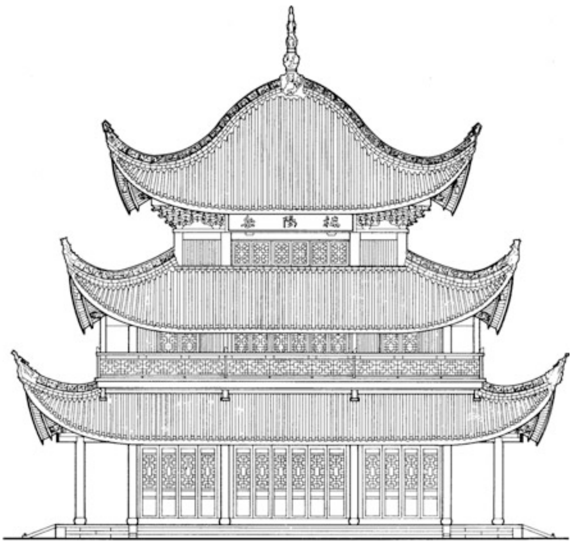


Fig. 3.24 Front elevation of the Yueyang Tower as it stands today. The tower is three *kaijian* and three *jinshen*. The foundation measures 17.24 m in length, 14.56 m in width, and 0.4 m in height. *Source* Yang (1993: 179)

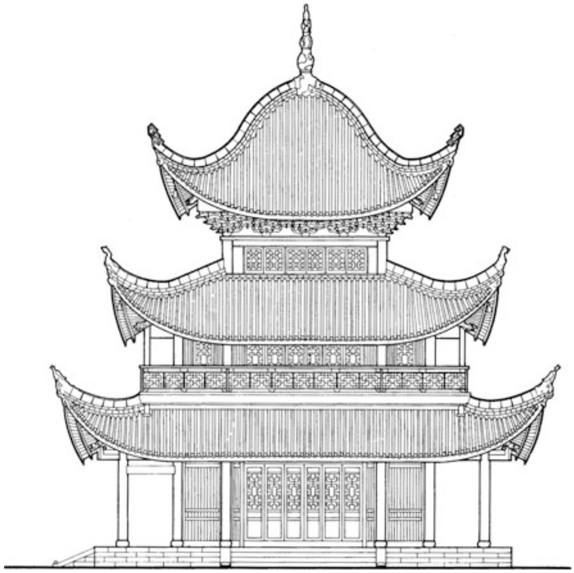


Fig. 3.25 Side elevation of the Yueyang Tower. The three-story structure has a three-layer double-eaved helmet-shaped roof. An exterior corridor girds the second floor. In total, the structure measures 20.35 m in height. *Source* Yang (1993: 180)

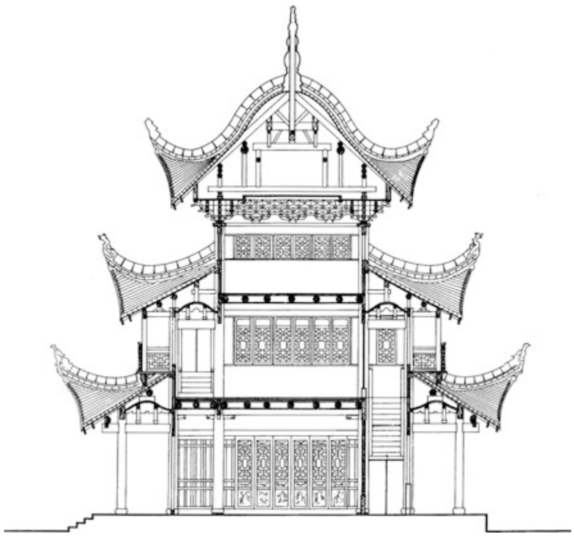


Fig. 3.26 Section drawing of the Yueyang Tower. The roof is of Column-and-tie construction, with upturned eaves. Within, four gold-painted camphor wood pillars and four additional gold-painted columns on the second floor support the weight of the structure. *Source* Yang (1993: 181). *Note* **Column-and-tie construction** is a typical style of traditional Chinese timber structures in which columns and beams are connected by mortise and tenon joints.

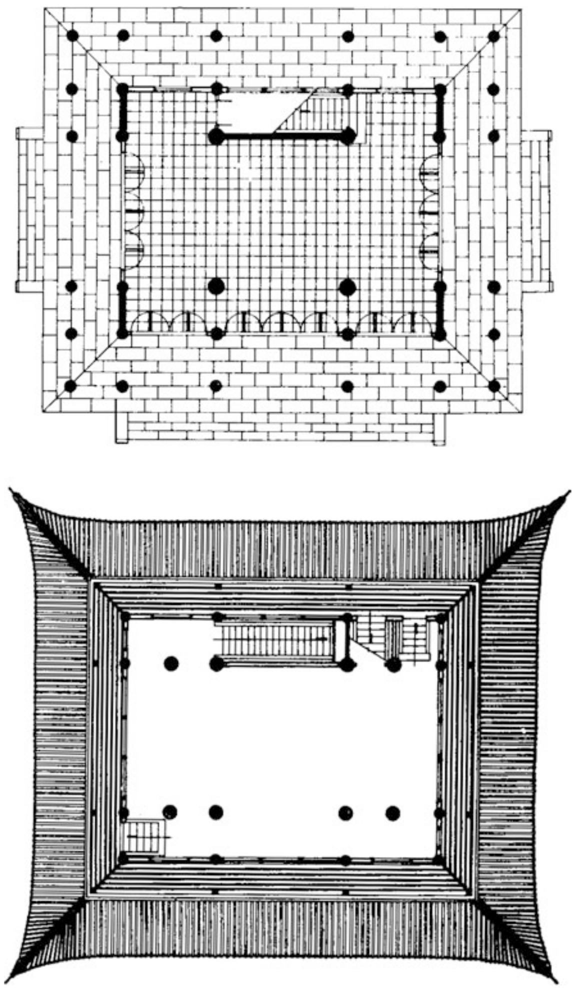


Fig. 3.27 Plan drawings of the first (upper) and second (bottom) floors (of the Yueyang Tower. The tower is three rooms long and three rooms wide, with an exterior corridor. *Source* Yang (1993: 179, 181)

and 3.27). The body of the tower is painted red, whereas the roof is adorned with yellow glazed tiles. The tower's ground floor corridor leads directly to the lake's edge, which becomes a unique scenic route (Fig. 3.28).

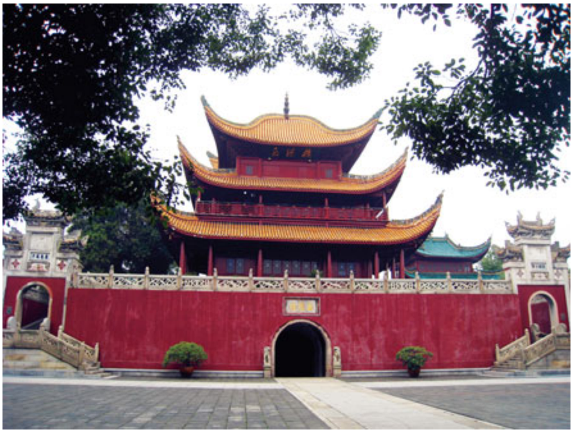


Fig. 3.28 A ground-floor corridor leads directly to the lake's edge. *Source* Photograph by Jie Liu

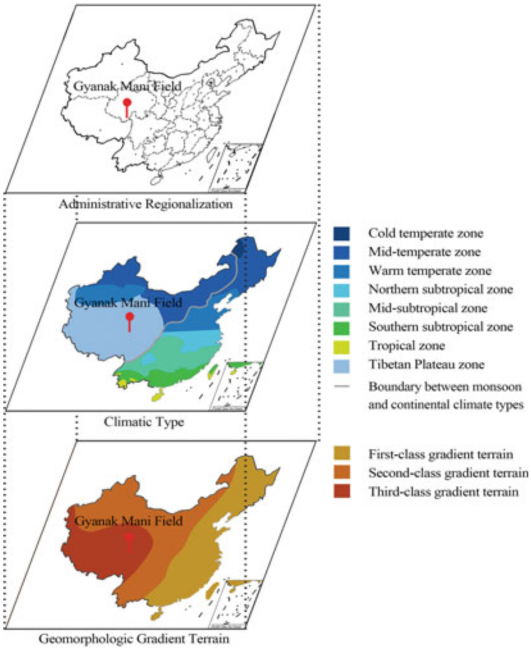
Geographical Interpretation

Located by the edge of Dongting Lake, where adjoining distant mountains, swallowing the Yangtze River, rush forth with great vigor, stretching without end, the Yueyang Tower has been a gathering place for China's intellectuals since ancient times. The tower gained renown for its distinctive appearance but to a greater extent for having both a unique natural environment and a pivotal geographic location that lends itself to a special state of mind.

3.3 Gyanak Mani Field: Prayer Stones Beyond Number

Location: Yushu, Qinghai Province
Key Geographical Concept: Tibetan Buddhism.

A Mani field represents a combination of worship of great stones and Tibetan Buddhism. The Gyanak Mani field has become the largest Mani field in the world due to its unique geographic location.



Geomorphologic Features
The Gyanak Mani field is located near the Jiegu Monastery in the town of Jiegu, which sits in Yushu Autonomous Prefecture of Tibetan Nationality, Qinghai Province. The Gyanak Mani field sits on the top of a hill that rises from the middle of a basin created by the Zhaqu and Naqu Rivers. From the field, there is a clear view over the town to the basin below. The basin is an important transportation node; Jiegu Town lies at a crossroads between routes connecting Qinghai, Sichuan, and Tibet. One by one, pilgrims add Mani stones to the Mani field as they pass through the area. Over time, this practice has produced a Mani field larger than any other in the world.

Climatic Features
Yushu falls within a typical plateau cold climate zone. Yushu's elevation—one third of that of the troposphere—has a significant influence upon atmospheric circulation in the area and contributes to the formation of the area's unique climate.

Fig. 3.29 A row of white pagodas sits on the edge of the Gyanak Mani field. The landscape that surrounds the Gyanak Mani field is barren, with outcroppings of exposed rock. *Source* Photograph by Yongkui Lin, provided by Jie Liu

Yushu has a short warm season with thunderstorms and hail and a lengthy cold season with sandstorms and powerful winds. The local climate is also characterized by concentrated rainfall, high temperature, abundant sunshine and extreme solar radiation (Editorial Committee on the Yushu Autonomous Prefecture of Tibetan Nationality Records 2005). Under these conditions, stones are rapidly weathered into small pieces, which provide abundant resources for the creation of the Mani field (Fig. 3.29).

Cultural Features

The primitive stone culture in ancient Tibet originated from the northeastern region in the vicinity of Qinghai Lake, generally taking the form of monolith worship. Mani stones are engraved with Buddhist texts—thus, they realize a physical fusion of stone worship and Tibetan Buddhism. Mani fields can now be found all across the mountains and valleys of Tibet. With an estimated 2.5 billion stones, the Gyanak Mani field is considered the largest Mani field in the world. The field is a shrine for the Tibetan people (Fig. 3.30).

Fig. 3.30 Estimated to contain some two and a half billion stones, the Gyanak Mani field is thought to be the largest Mani field in the world. *Source* Photograph by Yongkui Lin, provided by Jie Liu

First established in the Ming Dynasty (1368–1644), the Gyanak Mani field has existed for over 300 years. It is known also as the “Jiana Mani field,” in homage to its founder, the first Jiana Tulku. The field measures 283 m in length (east–west), 74 m in width (north–south) and 2.5 m in height. Several narrow passageways called “alley gates” provide access for visitors to enter the field, which occupies an area of land roughly equivalent to two soccer fields. A city wall of Mani stones adorned with prayer flags surrounds the field (Fig. 3.31). The stones piled at the Gyanak Mani field are of many different shapes and sizes. Most feature images of Buddharupa or Buddhist texts; some boast legal inscriptions and mathematical astronomy (Fig. 3.32). It is estimated that some twenty billion characters appear on the surface of the stones accumulated here.

Fig. 3.31 Within the embrace of prayer flags, innumerable stones pile up to form the Mani field. *Source* Photograph by Wei Fan, provided by Ming Jiang

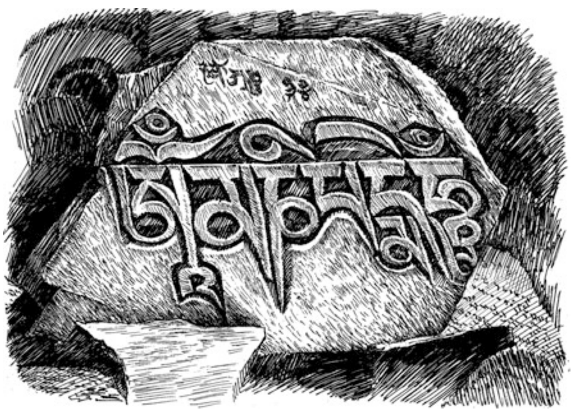


Fig. 3.32 A Mani stone, engraved with Buddhist scripture. *Source* Drawing by Kun Gao

Besides Mani stones, the Gyanak Mani field also includes a large area for religious rites, a grand Scripture Hall, two Buddhist sanctuaries, several dozen stupas, 10 large prayer wheels and over 300 smaller prayer wheels (Fig. 3.33). For hundreds of years, the clatter of stone carving has been accompanied by the murmur of worshippers reciting mantras. For many pilgrims, one recitation of the Six-syllable Mantra is equivalent to a recitation of one volume of scripture; therefore, they either recite the mantra, or carve it into stone, in order to clear themselves of vice.

Even today, pious believers continue to add Mani stones to the Mani field at an average rate of 300,000 new stones per year (Fig. 3.34). Each year in the twelfth month of the Tibetan lunar calendar, Tibetans travel great distances to gather at the Gyanak Mani field. After pilgrims contribute their stones, they circumambulate the field, singing and dancing to express the pious hearts with which they worship Buddha.

Fig. 3.33 In addition to Mani stones, the Gyanak Mani field includes a number of stupas. *Source* Photograph by Yongkui Lin, provided by Jie Liu

Fig. 3.34 The Gyanak Mani field is immense in scope. *Source* Photograph by Wei Fan, provided by Ming Jiang

Extended Reading: Mani Fields

Mani fields are known in Tibetan as *Lha tho*, *Lha kha*, or *La rdzas*. In Mandarin, equivalencies of these terms translate roughly to "heavenly cairn" or "heavenly platform." A Mani field is a man-made altar-mound composed of stones that have been carved with the Mani Six-syllable Mantra or other Buddhist prayer verses. However, mounds made up of stones carved with the likeness of Buddha, or not carved at all, can also be considered Mani fields. No rule governs the exact location of a Mani field, but the fields often appear at village entrances and exits, next to monasteries, beside sacred lakes, upon river shoals, atop hillcrests or puertos, and along important roads, frequently in the shape of cairns (Lhaba Tseden 2006). Mani fields vary in scale: some measure hundreds of meters in length and tens of meters in height, while others consist of merely a few pieces of slate stacked together. When Tibetans pass by a Mani field, they will generally circumambulate the mound of stones, reciting the Six-syllable Mantra as they walk, and then add to the mound a new stone carved with the Six-syllable Mantra, Oṃ Maṇi Padme Hūṃ (Fig. 3.35). As a mound of Mani stones grows through the years, Tibetans insert *fengma* (lit. wind and horse) flags or colored arrows. When this is done, the Mani field is considered to be formally established. The creation of a Mani field carries dual significance: by adding Mani stones to the mound, travelers complete an act of worship of mountains and deities; by building up the mound, they pray for the suppression of evil spirits that lurk below (Ma 1993).

Fig. 3.35 The Six-syllable Mantra carved in slates of the Gyanak Mani field. *Source* Photograph by Yongkui Lin, provided by Jie Liu

Geographical Interpretation

Mani fields cannot be considered "architecture" in the common sense of the word. However, if we are to consider the intention and time invested in their creation, could we deny that a Mani field is a city of memory, a city of faith? Over hundreds of years, the Gyanak Mani field has grown to an impressive size. It continues to grow steadily as new generations of Tibetan Buddhists each add their own stones to the site. Each stone itself is an exhibition of piety; indeed, the Gyanak Mani field, which has been referred to as "the largest Mani field in the world" stands as a monument to the Tibetan Buddhism faith.

References

An, J. S. (2008). *The great martial barrier in the world: Interpretations of the ancient gateways (Tian Xia Xiong Guan: Gu Dai Guan Ai Shi Du)*. Changchun: Changchun Publishing House (in Chinese).

Cheng, D. L. (2006). *The Great Wall, one of the miracles in the world*. Shanghai: Shanghai Literature and Art Publishing House (in Chinese).

Editorial Committee on the Dunhuang Municipal Records. (1994). *Dunhuang municipal records*. Beijing: Xinhua Publishing House (in Chinese).

Editorial Committee on the Vegetation Maps, Chinese Academy of Sciences. (2007a). *Vegetation map of China and its geographic pattern: Illustration of the vegetation map of the People's Republic of China (1: 1,000,000)* (*Vol. I*). Beijing: Geological Publishing House (in Chinese).

Editorial Committee on the Vegetation Maps, Chinese Academy of Sciences. (2007b). *Vegetation map of China and its geographic pattern: Illustration of the vegetation map of the People's Republic of China (1: 1,000,000)* (*Vol.II*). Beijing: Geological Publishing House (in Chinese).

Editorial Committee on the Vegetation Maps, Chinese Academy of Sciences. (2007c). *Vegetation map of the People's Republic of China* (*1:1000000*). Beijing: Geological Publishing House (in Chinese).

Editorial Committee on the Yueyang Municipal Records. (2002). *Yueyang Municipal Records* (Vol. 3). Beijing: Central Party Literature Press (in Chinese).

Editorial Committee on the Yushu Autonomous Prefecture of Tibetan Nationality Records. (2005). *Yushu Autonomous Prefecture of Tibetan Nationality records*. Xi'an: San Qin Press (in Chinese).

Fu, J. (2006). Urban construction of Yuezhoufu City in the Qing Dynasty Qianlong and Jiaqing periods. *Huazhong Architecture,* (11), 149–153 (in Chinese).

Hu, M. S., & Jiang, Z. P. (2005). *The map of China architecture*. Bejing: Guangming Daily Press (in Chinese).

Ji, Z. Y., & Ji, Y. Y. (2003). *Selected essays about the Yangguan and Yumenguan Passes*. Lanzhou: Gansu People's Publishing House (in Chinese).

Jiang, L. Z. (2003). *Yueyang Tower*, a marvelous blossom in exile literature. *Journal of School of Chinese Language and Culture Nanjing Normal University,* (3), 54–59.

Li, B. C. (1999). Another Gudong Sands near the ancient Yangguan Pass. *Dunhuang Research,* (4), 91–94 (in Chinese).

Lin, M. C. (2006). *Fifteen lectures on archaeology of the Silk Roads*. Beijing: Peking University Press (in Chinese).

Liu, Y. (2006). *Ten lessons about classic ancient Chinese architecture*. Beijing: China Three Gorges Publishing House (in Chinese).

Luo, Z. W., & Wang, Z. F. (2001). *A look on the culture of Chinese architecture*. Beijing: Peking University Press (in Chinese).

Lhaba Tseden. (2006). Tracing the origins of Tibetan and Mongolian cairns. *Journal of Tibet University, 21*(1), 65–68 (in Chinese).

Ma, C. Y. (1993). Comparing the symbolism of Tibetan and Mani field. *Heilongjiang National Series,* (3), 106–111 (in Chinese).

Wang, S. Z. (1999). *Chinese vernacular architecture* (Vol. V). Nanjing: Jiangsu Science and Technology Press (in Chinese).

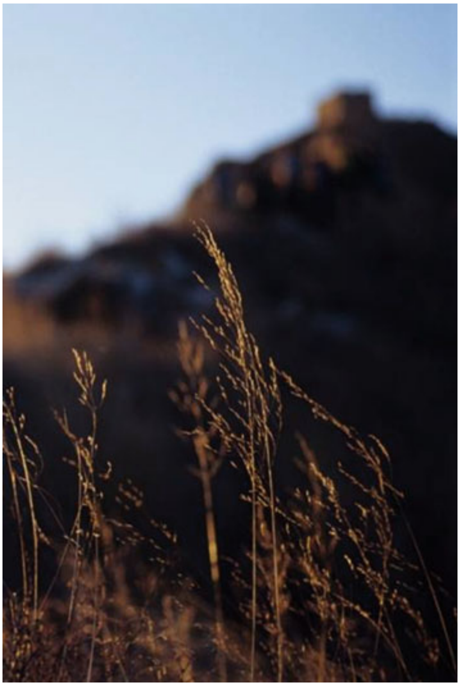
Wu, X. H. (2007). The Silk Road in Serindia: The ancient road breed of civilization. *China Cultural Heritage,* (1), 22–31 (in Chinese).

Yang, S. C. (1993). *Traditional architecture in Hunan*. Changsha: Hunan Educational Publishing House (in Chinese).

Zhang, Y. K., & Yan, J. W. (1995). The vitalization and regeneration of urban historic location: The site plan design of the restoration of Yueyang Tower. *Architectural Journal,* (5), 10–15 (in Chinese).

Zou, L. Z., Wang, F. L., & Li, J. P. (2008). *The famous historical and cultural tower in China: Yueyang Tower*. Beijing: Cultural Relic Publishing House (in Chinese).

Part II
Halting and Advancing



The Great Wall.
Source Photograph by Fan Yin

Chapter 4
Introduction

Architecture occurs in a continuously developing society and culture. People have a need to move about the globe to exchange commodities and information. On the road, travelers temporarily pause their steps to rest or stop to pursue inner refinement by appreciating the scenery in nature. Architecture not only enthusiastically responds to static geography but also reveals the beauty of dynamics. Temporally and spatially, architecture reflects the essence of a dynamic culture. Architecture vividly depicts the halting and advancing that epitomize the traveling experience.

4.1 The Advancing Road

In physical space, people never cease to move ahead; in ideal space, people unceasingly seek to transcend themselves. Along the way, we glimpse architecture, which is elegant and majestic or wonderful and exquisite and tempts us to claim that we have seen the acme of aesthetic perfection. Yet, these sights also remind the traveler that ever greater vistas lie ahead.

4.1.1 Roads of Transportation

Since ancient times, transportation routes have been the most characteristic man-made testaments of mankind's propensity to travel. Linking distant lands together, these routes have carried immeasurable quantities of goods and provided for communication between different ethnic groups. Transportation linkages have allowed economies to develop and cultures to intermingle.

F. Wang, *Geo-Architecture and Landscape in China's Geographic and Historic Context*, DOI 10.1007/978-981-10-0483-4_4

The development of roads in China has a long history. China's first roads were constructed under Yellow Emperor.[1] During the Western Zhou Dynasty (the 11th century–771 BC), the Zhou Road network was already established and radiated outwards from the Capital City of Luoyi (now Louyang City). Political, economic and cultural foci of the Qin (221–207 BC), Han (202 BC–220 AD) and Tang (618–907) Dynasties all laid along various points of the Zhou Road network. The road network served as a primary east-west transportation artery through the Song (960–1279), Yuan (1271–1368), Ming (1368–1644) and Qing (1644–1911) Dynasty periods (Wang 1996).

Road development is related to political change and urbanization. With changing dynasties, road systems have morphed into different layouts and reflections of cultural significance. Established in the Qin Dynasty, China's first national transportation network and postal system primarily catered to military and postal use. In the Han Dynasty, the Silk Road connected China with countries in the Middle East and Europe. Ancient Chinese road development reached a zenith during the Tang Dynasty, whose capital, Chang'an (now Xi'an City), occupied an international traffic crossroad. A poem written by Du Mu (803–852), a leading poet and essayist of the late Tang Dynasty, depicts the efficiency of the Tang Dynasty postal system: "Smile appeared on face of Concubine Yang, when a horse galloped out of full dust; none of the people knew that was because of the litchi." Litchi is a perishable fruit. Riding day and night for thousands of miles, the people sent it from southern China to Chang'an. We can imagine how efficient the road system was! From the 10th to 13th centuries during the Liao (916–1125) and Song (960–1279) Dynasties, inter-urban roads began to be integrated with intra-urban streets. During the Yuan and Ming Dynasties, China's vastly expanded territory was integrated with a Beijing-centric postal system and a comprehensive road network that extended throughout the Eurasian continent. By the Qing Dynasty, road systems were organized and classified into hierarchies.

Throughout history, the creation of regional transportation arteries consistently accompanied regional development and the advance of civilization: the Silk Road, as a commercial road, afforded trade between the Middle East, Southern Europe and North Africa and promoted cultural exchanges between the eastern and western worlds; the Ancient Tea Horse Road afforded commercial and cultural exchanges between the areas of Sichuan, Yunnan and Tibet; the ancient Sichuan Road crossed an area about which Li Bai (701–762), a genius and romantic Chinese poet in the mid-Tang Dynasty, wrote, "the yellow crane cannot fly through and the monkeys cannot climb across," as a representation of the wisdom and courage of the Sichuan people; and the Ancient Tangbo Road[2] is a record of communication between the Han and Tibetan nationalities. Today, climbing to the "Roof of the World," the

[1]**Yellow Emperor** (Mandarin: *huang di*) is one of the ancient Chinese emperors and heroes about 4,000 years ago who is regarded as one of the initiators of Chinese civilization.

[2]**Ancient Tangbo Road** crosses the vast land of Western China and links the southwestern neighboring countries, and is also called the Southern Silk Road.

Qinghai-Tibet Railway stimulates social and economic development in the Tibet and Qinghai regions.

As Li Bai (701–762) once chanted, “Men in our time do not see the ancient moon, but this moon did shine on men of yore.” Currently, we travel on the roads of our ancient forebears, whose exploration and innovation continue to provide benefits. Modern transportation arteries often follow paths that ancient people once used: the Eurasia Land Bridge is built along the ancient Silk Road; the Yunnan-Tibet Highway closely follows the route of the Ancient Tea Horse Road; the Sichuan-Shanxi Road similarly follows the path of the ancient Sichuan Road; and both the Qinghai-Tibet Railway and Highway are constructed on the path of the Ancient Tangbo Road (Wang 2007b).

4.1.2 Roads for Viewing Landscape

In classic Chinese poetry, roads have unique charm as a landscape element: there is a certain calmness in “the stone path leads to the hill, a house hides in the clouds” by Du Mu (803–852) of the Tang Dynasty (618–907); a pleasant surprise in “lost without a path, a gleam of hope, another village appears” by Lu You (1125–1210) of the Song Dynasty (960–1279); and danger and curiosity in the description of the ancient Sichuan Road as “more difficult than ascending to the sky” by Li Bai (701–762).

By successively connecting scenic nodes and diverse open spaces, roads realize an artistic integration of time and space (Han and He 1996). Whether naturally straight or meandering, roads commonly represent the unique linear beauty of brushstrokes in Chinese calligraphy and painting. A road is the thread that leads a traveler from one vista to the next. Travelers only need to progress along a path and they will find pleasantly surprising scenes waiting for them.

There are many types of scenic routes and each has a unique distinguishing quality. The Changkong Trail of Mount Hua, which is a treacherous footway that hugs the cliffs of Mount Hua (Shanxi) and its heart-stopping path of climbing the mountain, is the most dangerous of all of the trails in Mount Hua because it follows the steep slope. The Path of the Eighteen Bends connects scenic points along the ascent of Mount Tai. Along the way, memorial arches mark the vistas, each with its own name, which form a continuous dynamic quality and a lively rhythm.

4.1.3 The Ideal Road

As the quote “the way ahead is long and has no ending; yet high and low I’ll search with my will unbending” by Qu Yuan (340–278 BC) eloquently illustrates, we often associate roads with particular ideals or lifelong goals. We also use roads as metaphors for certain emotions: sorrow of parting, in “Never worry for lack of friends on the path before you; who under the sun don't know this honored gentleman" by Gao Shi (approximately 704–765); grief, as in "Ascending the tall tower alone, seeing all roads under heaven" by Yan Shu (991–1055); hesitation and indecision, as in "Difficult it is to travel, many are the forked roads, where are we today" by Li Bai (701–762); and heroic spirit, as in "Eight hundred leagues: travelling with the moon and clouds" by Yue Fei (1103–1142) (Xiao et al. 2006).

The metaphorical connection between roads and ideas of human life is realized in the spirit of several architectural designs. For example, in the Nanjing Mausoleum of Sun Yat-sen (1866–1925), who was the first president and Father of the Nation of the Republic of China, there is a central axis road that serves as an expression of Sun Yat-sen's ideals that were extracted from his political testament: "The revolution has not yet succeeded; comrades, you must continue to strive."

4.2 Places to Halt One's Footsteps

Any path that can be traveled has, along its way, historical and cultural sites where one can stop. Architectural developments such as pavilions, towers, guild halls and villages along important transportation and scenic routes are the places where local culture is passed down from generation to generation.

4.2.1 Pausing for Rest

Whether forced by the requirements of life, or attracted by the lure of fortune, people have often left their homes to journey abroad. Along the way, travelers needed places to rest and replenish the energy that was required to continue on their respective journeys. For these travelers, courier stations constituted the most common rest stops along their way, while guild halls provided a place and chance for travelers far away from their hometowns to relieve their homesickness.

China's network of postal roads and courier stations formed an important postal system. In addition to postal delivery, this system provided several other important uses until it was replaced by the current postal system. For example, courier stations doubled as inns; they provided travelers a place to rest as they traveled along postal roads. Development often accompanied the constant influx of travelers. This was the case in Cockcrow Postal Town. Originally built as a courier station in the Yuan Dynasty, during the Ming Dynasty, the Cock-crow Station developed from a simple rest place to a town on the postal road.

Guild halls were centers for collecting and preserving traditional regional culture over time. Due to their unique function, Guild halls served as a historical record of societal development and population migration. They were founded upon a mixed basis of ancient China's family and village and community systems as well as the provincialism that was formed by these associations (Wang 2007a) and gradually developed in concert with the imperial examination system, the commodity economy and population migration. The imperial examination system drew a constant stream of intellectuals to Beijing; given this background, guild halls were established to allow candidates to meet with others from the same hometowns. At the same time, with the development of transportation, merchants became more mobile. Although traveling merchants stimulated both commodity and cultural exchanges, language and custom differences between China's different regional cultures hindered the development of trade. To address this issue, merchants of common origin created their own type of guild hall: the industry guild hall.

As a place of rest for travelers from similar origins, the basic functions of the guild hall were "worshiping the spirit, playing music, chivalrous dead and convention." Group worship of ancestors and the deities provided spiritual support and created a spiritual bond between participants. Performances of theatrical dramas from home were entertainment and recreational venues for travelers to gather, relax and socialize. Guild halls also had an internal charity system to help address the hardships of travel for the living and provide the financial support that was necessary to bury those who had passed away. Finally, guild hall members commonly established principles and rules that agreed to uphold the order of the townsmen associations (Wang 1994).

4.2.2 Stopping to View the Landscape

Along scenic routes, pavilions and raised platforms are places for travelers to rest and admire their surroundings. In classical Chinese landscape architecture, pavilions and raised platforms are the focus of all landscape design. As a play on words expressed in the book, *Yuan Ye,*[3] "According to the monograph, *Shi Ming,*[4] pavilion (Mandarin: 亭, pronounced as *ting*) means to stop (Mandarin: 停, also pronounced as *ting*), and it is a place where people pause to gather" (Shen 2007).

Pavilions and raised platforms are often end owed with profound cultural significance. The meaning of a particular pavilion or raised platform changes depending upon an individual person's mood as they ascend the structure.

Pile the soil on two sides to form a raised platforms or terrace, from which an observer can look out. A terrace provides an elevated vantage point from which one can observe the surroundings. Thus, a terrace was an ideal location for ancient Chinese poets to express their inner emotions through landscape. Unsurprisingly, terrace metaphors abound in Chinese poetry: Chen Zi'ang (661–702) sorrowfully wrote when ascending the Youzhou Terrace, "Before me, I cannot see the ancient

[3]***Yuan Ye*** is a monograph on garden design that has been translated as *The Garden Treatise* or *The Craft of Gardens* and was written by Ji Cheng (1582–?) in the late Ming Dynasty (1582–1642).

[4]***Shi ming*** is a monograph on words explanation that translates as the *Study on the Source of Words* and was written by Liu xi in the Eastern Han Dynasty (25–200).

people;behind me, no sight of those who come next." Du Fu (712–770) grieved, "one hundred years of constant illness, lonely I ascend the terrace." Li Bai's (701–762) verse, "the terrace stands vacant and the river flows lonely after phoenix flies away," grasps at the ephemeral. Over the course of history, people have imbued certain terraces with particular significance, specifically the Copper Sparrow Terrace in Yecheng, the Phoenix Terrace in Nanjing and the Spring Terrace in Yangzhou. Innumerable poetic works use these terraces as their subjects.

Towers are often built on high ground for the strategic and aesthetic qualities common to such terrain (He 2001). These features give a tower added prominence in landscape composition (Chen 1999). Majestic alone, towers engender variations in the skyline and create sense of hierarchy. The Tengwang Pavilion—which technically is a tower and not a pavilion—is the most outstanding example of its type. The building occupies a key point along the Ganjiang River, which is close to three rivers and five lakes and adjacent to the Manjing and Ouyue regions, and serves a dual role as a rest stop for both river and overland traffic. The tower is aesthetically impressive both in its magnificent form and brilliant color palette. Visitors who ascend the tower can enjoy a panorama of mountains and plains and be mesmerized by the mighty scene of winding rivers and large lakes. In different times, they can also glimpse lonely ducklings flying away into the rosy sunset as autumn water blends with the sky and listen to the chants from fishing boats in the dusk as the boats approach the coast of Poyang Lake.

Unlike the two previous categories, terraces and towers, pavilions are not necessarily built upon high ground. Pavilions can often be found perched on flat shelves along mountainsides where they offer weary travelers a place to rest their feet. Thus, pavilions often exude an air of tranquility rather than majesty. Li Bai's (701–762) poem, *Lao Lao Ting,*[5] conveys parting sorrow. The Zuiweng Pavilion in Chuzhou emphasizes calming one's mind; the Taoran Pavilion in Beijing emphasizes enjoying the surrounding landscape; and the Love Nightfall Pavilion in Changsha emphasizes a brief pause amidst a journey.

4.3 Summary

Halting and advancing comprise two major topics in geo-architecture. Widely spread across the Chinese mainland, the excellent traditional architecture embodies a particular response to a certain geographic environment and, more importantly, represents many aspects of the development of human civilization throughout history. This includes the infusion and spread of different cultures into different regions, the development of regional trade, fluctuations in sovereign territory, and

[5]***Lao Lao Ting*** is a poem that translates as *Departing from Laolao Pavilion* and was written by Li Bai (701–762) in the Tang Dynasty (618–907).

the development and evolution of societal organizations. Thus, a thorough Geographical Interpretation of architecture within the halting or advancing categories must use a historical, cultural and ethnic perspective.

References

Chen, Z. (1999). Towers and pavilions in the classic gardens in Jiangnan. *Chinese and Overseas Architecture,* (4), 55–56. (in Chinese).

Han, Z. L., & He, Z. Y. (1996). *Architecture·culture·life*. Beijing: Peking University Press. (in Chinese).

He, Z. M. (2001). Towers and pavilions in scenic areas. *Chinese and Overseas Architecture,* (6), 19–20. (in Chinese).

Shen, F. X. (2007). Appreciation on classic Chinese garden architectures: Pavilion & corridor. *Garden,* (3), 10–11. (in Chinese).

Wang, R. G. (1994). The evolution of guild hall in the Ming and Qing Dynasties. *Historical Research,* (4), 47–62. (in Chinese).

Wang, C. H. (1996). *Ancient Chinese transportation*. Beijing: The Commercial Press. (in Chinese).

Wang, R. G. (2007a). *The history of Chinese guild hall*. Shanghai: Orient Publishing Center, China Publishing Group. (in Chinese).

Wang, Y. J. (2007b). Crossing ancient roads. *Transportation Construction & Management,* (6), 102–108. (in Chinese).

Xiao, P., Shi, W., & Shi, Q. X. (2006). Road design in the perspective of aesthetics. *Journal of China & Foreign High Way, 26*(4), 19–21. (in Chinese).

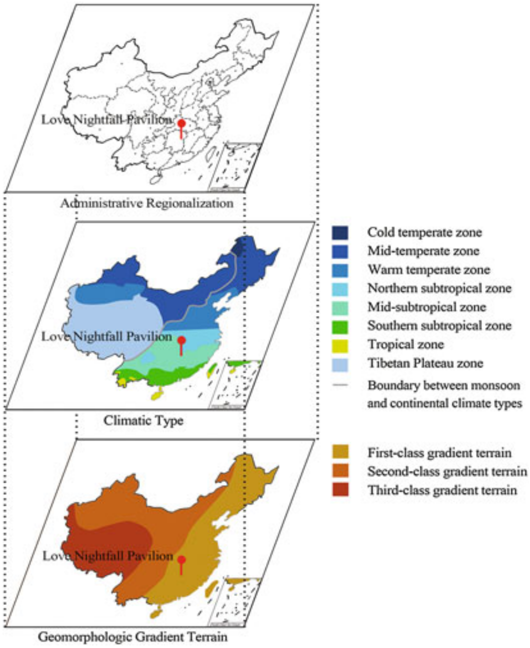
Chapter 5
"Halting" Cases

5.1 Love Nightfall Pavilion: Stopping the Carriage to Sit in the Beloved Maple Wood at Nightfall

Location: Changsha, Hunan Province
Key Geographical Concept: Architecture that is closely related to ancient poetry

The Love Nightfall Pavilion is named after a poetic verse that reads, "Stopping the carriage to sit in the beloved maple wood at nightfall," which was written by Du Mu (803–852), who was a famous poet and essayist in the late Tang Dynasty (836–907). The corners of the Love Nightfall Pavilion's roof fly upwards amidst the autumn maple leaves, which expresses the sunset's atmosphere over the maple woods that are described in the poem.

F. Wang, *Geo-Architecture and Landscape in China's Geographic and Historic Context*, DOI 10.1007/978-981-10-0483-4_5



Geomorphologic Features
The Love Nightfall Pavilion is located at the base of Yuelu Mountain in the Qingfeng Valley in Changsha City, Hunan Province. The landform of the valley is wide and flat, and three sides are surrounded by hills with a pond at the pass. The Love Nightfall Pavilion is located at the end of the pond (Fig. 5.1).

Climatic Features
Changsha is situated in the humid subtropical monsoon climate zone, which features distinct seasons and warm temperatures that often coincide with plentiful precipitation. Changsha experiences a very distinct autumn season. When there is a pronounced drop in temperature and daylight decreases, the chlorophyll in the Changsha's maple trees' leaves breaks down and causes the leaves to turn a brilliant red. The Love Nightfall Pavilion gains renown against the backdrop of these flaming autumn leaves.

Vegetation Features
Due to Changsha's warm climate and plentiful rainfall, Yuelu Mountain is covered in a dense layer of vegetation that includes many ancient maple trees, thus, in autumn "Maple leaves redder than February flowers" appear (Fig. 5.2). The former Chinese Chairman Mao Tse-tung (1893–1976) once wrote in a poem, "I see upon thousands of vermillion mountains; layer upon layer of woods dyed crimson and scarlet"[1]—the hills he referenced were none other than those surrounding Yuelu Mountain.

[1]Translated by Anne Fremantle, who was an American female scholar in the 20th century.

Fig. 5.1 The Love Nightfall Pavilion is located at the base of Yuelu Mountain in the Qingfeng Valley. Secluded by its natural surroundings, the pavilion provides a quiet place to calm the mind. *Source* Photograph by Wanghan Xu

Fig. 5.2 The Love Nightfall Pavilion amidst dense foliage. *Source* Photograph by Fang Wang

Cultural Features

The Love Nightfall Pavilion was built in the Qing Dynasty (1644–1911) at the base of Yuelu Mountain. Combined with the Zuiweng Pavilion in Anhui, the Taoran Pavilion in Beijing and the Lake Center Pavilion in Hangzhou, Love Nightfall Pavilion is one of Ancient China's Four Great Pavilions. Although Yuelu Mountain is not particularly high, it is famous for its rich cultural history. Before the Western Jin Dynasty (265–316), Yuelu Mountain was a center for Taoist activity, which resulted in construction of the Wanshou Palace and several other buildings. In the early 10th century at the end of the Tang Dynasty and the beginning of the Five Dynasties period (907–960), two monks established an academy at the base of the mountain, which was the embryonic form of the Yuelu Academy. The academy was formally established in the ninth Kaibao year (976) of the Song Dynasty (960–1279) as the Yuelu Academy, which became one of four great academies for learning in ancient China. Zhu Xi (1130–1200) was an important Confucian scholar and one of many intellectuals to lecture at the academy, which had approximately 1,000 students at its peak (Figs. 5.3 and 5.4).

Fig. 5.3 A couplet flanks the gate of the Yuelu Academy and reads, “唯楚有才 于斯为盛 (lit. Those who are talented flourish in this place).” The couplet has been a source of inspiration for countless students. *Source* Photograph by Lixin Jian, provided by Xiaobing Zhang

Fig. 5.4 The Love Nightfall Pavilion is an annex building for the Yuelu Academy. The pavilion was established by the former Yuelu Academy Headmaster Luo Dian (1718–1808) and was originally called Red Leaf Pavilion. Students have continually used the pavilion as a place to rest and recite classical texts. Mao Tse-tung came here as a young man to speak with his comrades about China’s future and his ambitions. *Source* Photograph by Shuai Xu

Alternately referred to as the "Red Leaf Pavilion" and the "Beloved Maple Pavilion," the Love Nightfall Pavilion is located in the quiet and peaceful Qingfeng Valley. Hills that are crowned with age-old maple trees surround the pavilion on three sides. The pavilion was originally commissioned by the Yuelu Academy Headmaster Luo Dian and acted as the physical and spiritual core of the culturally renowned mountain. Given the advice of Bi Yuan (1730–1797), the Viceroy of Hu-Guang, the name was changed to Love Nightfall Pavilion based on the poet Du Mu's verse, "Stopping the carriage to sit in the beloved maple wood at nightfall and the maple leaves redder than February flowers" (Yang 1993).

Extended Reading: Stopping the Carriage for the Beloved Maple Woods at Nightfall

Du Mu, a famous poet in the late Tang Dynasty, composed the well-known poem *Shan Xing*[2] when he was traveling near Yuelu Mountain. The poem depicts a moving scene of late fall on the mountain. A verse in the poem, "stopping the carriage to sit in the beloved maple wood at nightfall, maple leaves redder than February flowers," describes the maple trees in autumn. It is from this verse–possibly the most famous segment of the poem–that the pavilion was named Love Nightfall Pavilion. The Chinese character for "red" only appears once in the entire poem. In the preceding lines, the author describes the mountain's stone paths and white clouds with strictly objective language; it is only with "the beloved maple wood," that emotion emerges to conclude the poem. The peaceful mountain path and cotton clouds do not move the author; rather, it is at twilight, amidst the frosted red leaves, that he

Fig. 5.5 The Love Nightfall Pavilion stands among the maple woods. *Source* Photograph by Lixin Jian, provided by Xiaobing Zhang

[2]***Shan xing*** is a poem that translates as *Walking on the Mountain* and was written by Du Mu (803–852), who was a leading poet, government official and essayist in the Tang Dynasty (618–907).

stops his carriage. The autumn evening scenes of the sunset's rays reflecting contrast the maple trees and the evening mist complements the wintry mountain. These proved impossible for the poet to pass by, and, having momentarily forgotten the rush of the journey, he stopped to enjoy the scene (Xiao 1983). The combination of progression and pause that is expressed in Du Mu's poem describes the pavilion at the base of Yuelu Mountain with a uniquely profound sense of quiet and elegant beauty (Fig. 5.5).

Fig. 5.6 The elevation of the Love Nightfall Pavilion. The pavilion is a classic example of ancient pavilion architecture. The structure has a square base that measures 6.23 m on each side and is 12 m tall. The roof is two-layer double-eaved and has upturned eaves. *Source* Yang (1993: 206)

The Love Nightfall Pavilion was initially constructed as a wooden structure, but was later rebuilt with brick during the Qing Dynasty Emperor Tongzhi's reign (1862–1874). The pavilion developed its current appearance after being rebuilt several times (Fig. 5.6). The Love Nightfall Pavilion has a square plan. Eight columns support the structure's roof, which is covered in green glazed tile. The roof is two-layer double-eaved and its corners are upturned in the traditional style, which gives the pavilion a dignified and elegant appearance (Fig. 5.7). The four exterior square columns are fashioned from granite, while the four interior round columns are wood that is coated in red lacquer. Inside, the pavilion has a caisson ceiling with colored drawings (Liu 2006). Adorning the exterior stone columns is a couplet that states, "the mountain path becomes red at sunset, 500 peach trees newly planted in earth; the valley clouds drip with deep emerald, a pair of tame cranes waits for their cage."

Hills surround the Love Nightfall Pavilion, and the only open space is to the east (Fig. 5.8). There is a pond in front of the pavilion. The pavilion is nestled amid maple trees, and in late fall, the entire area is blanketed in red leaves. Although the pavilion is secluded in the hills it is a part of the Yuelu Academy and neighbors a site where students gather and exchange knowledge and ideas. Therefore, the Love Nightfall Pavilion is a place for travelers to rest and for students to escape from the hustle and bustle of life.

Fig. 5.7 The pavilion is covered with green glazed tiles. An outer square of four granite columns and an inner square of four wood columns that are coated in red lacquer support the structure. *Source* Photograph by Lixin Jian, provided by Xiaobing Zhang

Fig. 5.8 Hills surround the Love Nightfall Pavilion, with the only open space to the east. A pond lies in front of the pavilion, which is nestled among maple trees. *Source* Photograph by Lixin Jian, provided by Xiaobing Zhang

Students from the Yuelu Academy are fond of the Love Nightfall Pavilion for its secluded, quiet, and scholastic atmosphere. Due to the academic aura that has conferred upon the pavilion over thousands of years and the atmosphere that is created by its surroundings, the Love Nightfall Pavilion has become an ideal setting for students to escape the complicated affairs of daily life and engage in philosophical discussions. As a teenager, Mao Tse-tung frequently traveled to the Yuelu Academy to discuss politics and philosophy with Cai Hesen (1895–1931), Luo Xuezan (1893–1930) and others at the Love Nightfall Pavilion. Remote and quiet in

Fig. 5.9 The Love Nightfall Pavilion in the white snow. Three Chinese characters “爱晚亭” that represent the pavilion’s name are clearly visible. *Source* Photograph by Lixin Jian, provided by Xiaobing Zhang

the embrace of the maple trees, the pavilion provides intellectuals with a place to rest their feet before they ascend the mountain. Many of those who stopped at the pavilion over the years left behind short verses and poems.

Entirely destroyed in the Second Sino-Japanese War (1937–1945), Love Nightfall Pavilion was rebuilt in 1952 and experienced a complete renovation in 1987. There is currently a tablet that is carved with Mao Tse-tung’s personal calligraphy inside the pavilion. Inscribed are verses from Mao’s poem, *Qin Yuan Chun: Changsha.*[3] At once forceful and unhindered in style, the calligraphy further enhances Love Nightfall Pavilion’s aesthetic appeal. On the eastern and western sides of the pavilion, there are hanging votive tablets that are inscribed with the pavilion’s name. These characters “爱晚亭” were also produced by Mao’s hand (Fig. 5.9).

Geographical Interpretation

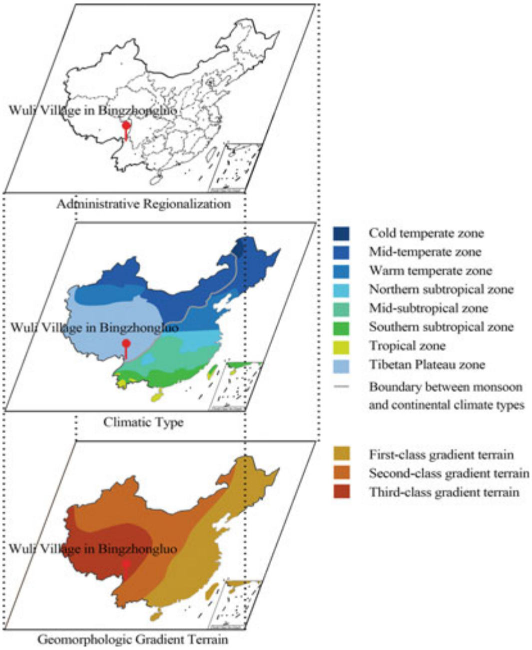
Simple and sublime, the Love Nightfall Pavilion is the quintessential example of a traditional Chinese pavilion. The pavilion’s surroundings, which are comfortable throughout the four seasons, are most inspiring to visitors in the fall, when the red leaves blanket the mountains. Although the mountain is not high and the pavilion is small, the scholastic atmosphere that is created by the Yuelu Academy makes Love Nightfall Pavilion a unique resting stop. Because of Mao Tse-tung’s visits, the pavilion is legendarily renowned in China.

[3]***Qin Yuan Chun: Xue***, a *ci* (a type of lyric poetry), literally *Qinyuan Garden Spring: Snow*, was written in 1936 by Mao Tse-tung (1893–1976), a great Chinese Communist revolutionary leader of the People's Republic of China.

5.2 Wuli Village in Bingzhongluo: A Rest Stop on the Ancient Tea Horse Road[4]

Location: Gongshan, Yunnan Province
Key Geographical Concept: Ancient Tea Horse Road

As a courier station along the Ancient Tea Horse Road, Wuli Village is located on an ancient landslide mass along the Salween River Valley in Bingzhongluo, Gongshan County, Yunnan Province.



Geomorphologic Features
Bingzhongluo is part of Gongshan Autonomous County of Dulong and Nu Nationalities in the Yunnan Province (Fig. 5.10). Nestled in the Hengduan Mountains, the area's geologic makeup is complex, with gigantic folds and faults that reflect a typical landform of high mountains and grand canyons that extend from north to south (Editorial Committee on the Gongshan Autonomous County of Dulong and Nu Nationalities Records 2006). Under these conditions, agriculture is difficult. Commercial activity through the valley along the Ancient Tea Horse Road

[4]The original manuscript for this case was published in *Community Design*, 2009 (6): 73–77 (in Chinese). The version in this book is improved.

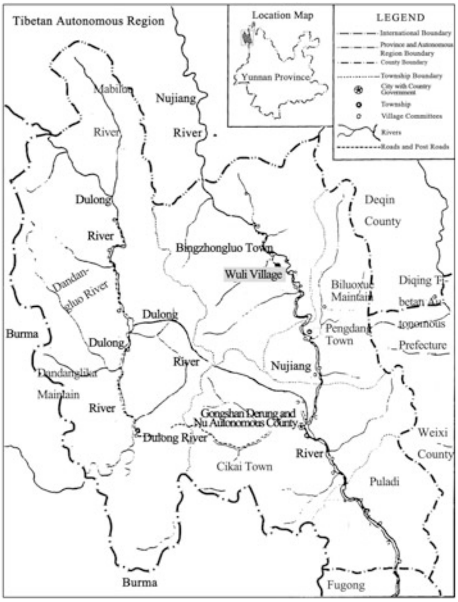


Fig. 5.10 An administrative map of Gongshan Autonomous County of Dulong and Nu Nationalities. Wuli Village is located next to the Salween River in the northeast of Yunnan's Gongshan Autonomous County of Dulong and Nu Nationalities. The area is surrounded by snow-capped mountains. The Salween, Lancang and Jinsha Rivers all flow through the area. *Source* Editorial Committee on the Gongshan Autonomous County of Dulong and Nu Nationalities Records (2006: Illustration page)

Fig. 5.11 The Salween River cuts through the valley in the precipitous mountains. Wuli Village is situated on an ancient landslide mass that has a gentle slope next to the river. *Source* Photograph by Fan Yin

led to the development of a small village–Bingzhonglou's Wuli Village. Given the rugged and uneven terrain, the only suitable location for the village was the ancient landslide mass that has been relatively stable (Fig. 5.11).

Climatic Features

Bingzhongluo is situated in the subtropical and mountain monsoon climate zone that is characterized by abundant precipitation. The microclimates for different parts of the Salween River Valley have distinct characteristics (Figs. 5.12 and 5.13). Wuli Village in Bingzhongluo's climate is relatively torrid.

Fig. 5.12 Wuli Village after a snowfall. Houses are scattered across multiple elevation levels but share a common orientation. Wide-open spaces surround each house. *Source* Photograph by Fan Yin

Fig. 5.13 The valley after a blizzard. The snow quickly melts due to the warm valley breeze from the Salween River. The river is restless and flows south. Snowfall always occurs between November and April. A snowpack forms in December, January and especially in February. *Source* Photograph by Fan Yin

Fig. 5.14 A panoramic view of Wuli Village in Bingzhongluo. Wuli Village is surrounded by Gaoligong Mountain. Dense forests provide an abundant supply of diverse woods for log-cabin style construction in the village. *Source* Photograph by Xinmin Huang

Vegetation Features

Bingzhongluo experiences warm temperatures and abundant rainfall. Dense primeval subtropical evergreen broad-leaf forests provide rich timber for log-cabin style[5] construction in Wuli Village (Fig. 5.14).

Cultural Features

Bingzhongluo is an important transit nexus on the Ancient Tea Horse Road due to its proximity to Burma, India, and Tibetan Autonomous Region. The Ancient Tea Horse Road is located in southwestern China. It was an international commercial corridor in ancient times and a bridge for cultural exchanges between ethnic groups in *Zhongyuan* and the southwest regions. The section of the Ancient Tea Horse Road in Wuli Village was constructed by gouging out an extremely narrow path from the rock face of the cliff. Below the precipice, the Salween River courses at an extremely high speed.

The Ancient Tea Horse Road follows a steep and winding course over high mountains and through narrow valleys (Fig. 5.15). For this reason, goods were primarily transported on horseback (Fig. 5.16). A slight miss-step on the road could prove fatal for both the horse and merchant, but merchants were willing to brave these perils to pursue high profits. The small village, Bingzhongluo Wuli Village, arose in the context of this dangerous, but lucrative, trade.

“Bingzhong” is a Tibetan term for the clan that resided in the bamboo forests in the mountains. Bingzhongluo is an area of tranquil natural scenery and simple, honest customs. A small population of Nu ethnic people, with less than 100 families, reside in Bingzhongluo in Wuli Village. The Nu people have maintained a primitive lifestyle: families live in log-cabin style houses that are scattered across

[5]**Log-cabin style** is a structure that stacks wood layer by layer as walls without using columns and beams.

Fig. 5.15 This trail is part of the Ancient Tea Horse Road. The riffle below the terrifying vertical cliff leads directly to the *rushing* Salween River. In the past, porters traversed this dangerous path on horseback and crossed the snow-capped mountains to arrive at the bank of the Salween River. They often paused to rest in Wuli Village. *Source* Photograph by Fan Yin

Fig. 5.16 The village was not able to manage automobile traffic: the only way to cross the powerful river was on horseback over this cable-stayed bridge. Since then, the bridge has been abandoned and was replaced with a stone bridge that automobiles can cross. *Source* Photograph by Fan Yin

the ancient landslide mass based on the mountain topography. Buildings on the slope share a common orientation, and each has an area of grass in front and in the rear with a broad view.

Most Wuli Village residences are log cabin-style structures (Fig. 5.17). However, unlike similarly styled houses in the neighboring Lugu Lake area,[6] those in Wuli Village are not composed of round logs; rather, they are constructed from pieces of thick, square stacked wood. The primary styles are slate-roofs and flat-foundations. The slate-roof houses have a stone foundation, stacked wood walls and slate roofs. Local shale is used for the slate roof and is very durable. Roof pieces last for one or two generations; are relatively soft, thin and flat; and can be easily cut and nailed. These simple structures are effective at eliminating dampness and rainwater. The flat-foundation stacked wood houses typically have a wooden foundation, which is a

[6]See the case in Volume 3: "11.1 *Muleng* House by Lugu Lake: Local Wooden House of Mosuo People".

Fig. 5.17 Due to transportation difficulties, building materials are often locally sourced. Residential structures have stone foundations, wood frames and slate roofs. This combination adapts to the rainy and humid climate. *Source* Photograph by Fan Yin

raised platform that is supported by short pillars, beams and boards that compensate for the uneven terrain and topographic variation (Li 2005). This architectural form is ideally suited for the uneven hillside topography and is also effective at keeping out moisture. The space underneath can be used to raise poultry.

The Nu people build with wood for two reasons. First, timber is very easy to obtain along the Salween River. Second, wood has a special significance for the Nu people, who believe that wood is a gift bestowed by the deities that is impervious to profanity (Zhang and Liu 2007).

Each room in a village house has a clear function. The central room is relatively large and is where most family activities occur. The most important part of the central room is the hearth, which comprises one quarter of the room (Figs. 5.18 and 5.19). Next to the central room is a bedroom that is approximately 9–12 m^2 in area and has a storage space. Next to these two rooms, there is usually a granary. Reflecting women's social status in traditional Nu culture, only the housewife who manages the granary may enter that space.

Building a house is always an important event for the Nu people. The entire process requires specialized skills: before construction, a divination must be performed and a site is selected. The local people practice several traditional divination methods that use grains, agate or even eggs. Influenced by Tibetan Buddhism, some families chant sutras, divine by the *bagua,*[7, 8] or evaluate *fengshui*,[9] and wait for the day to begin construction. After preparing for three or four months, construction

[7]***Bagua***, also named Eight Trigrams, is a basic philosophical concept of ancient China. It is a *yin* and *yang* system that can be composed of eight different forms and used to symbolize various natural and human phenomena.

[8]**Divine by the *bagua*** is an ancient way to ask for the future of some events. It is thought to originally come from the *I Ching*.

[9]***Fengshui*** (lit. wind and water) is also known as geomantic omen, and is a Chinese philosophy that seeks ways to harmonize humans with the surrounding environment.

Fig. 5.18 The Salween River area is characterized by great variations in altitude, which increases from several hundred meters to 4,000–5,000 m. This variation creates a microclimate near the river that is warm and rainy despite being surrounded by snow-capped mountains. Fallen snow is quick to melt. However, until the snow melts, villagers must endure the year's coldest temperatures; thus, the hearth becomes the heart of the house. The two sisters in this photograph are warming themselves with heat from the stove as they wait for the snow outside to melt. When it melts, they can go out to play. *Source* Photograph by Fan Yin

Fig. 5.19 Tradition, from ethnic minorities in the Salween River area that has been passed on for generations, mandates that the hearth be kept burning at all times. *Source* Photograph by Fan Yin

commences in December or January, which is the slack season on the agricultural calendar. The evening after the house is completed, villagers celebrate in song.

The Nu people have another unique living style known as "seasonal nomadic dual residences", in which one family alternately occupies two different houses. One house is fixed in location and is outfitted to meet all of the family's' needs, while the other can be adjusted as needed to where the family farms. Farmland can be distant from a family's main residence due to Bingzhongluo's uneven topography. After sowing, most family members move to the mobile frontier house and return after autumn (Li 2005).

Residents in Wuli Village have unique religious beliefs and festivals. Tibetan Buddhism spread along the Ancient Tea Horse Road when the road was widely used. Currently, the Wuli villagers subscribe to complicated set of beliefs, most of which are from a primitive religion in which water, trees and wood are believed to have spirits. Villagers celebrate the Peach Blossom Festival on the 8th of the second month of the lunar calendar and the Fairy Festival on the 15th day of the third month of the lunar calendar.

Extended Reading: The Ancient Tea Horse Road and Sichuan-Tibet Route

The Ancient Tea Horse Road has specific historical significance as a transportation connection that was established in the Tang Dynasty (618–907) to exchange supplies between the Han and Tibetan people (Shi 2002). During its tenure from the Tang Dynasty to the Republic Era (1912–1949 in Mainland China), the Ancient Tea Horse Road was a business corridor for the Tea-horse Interchange Trade,[10] which was an international trade that was conducted on horseback. The road originated from the horse trade across China's southwestern border; thrived during the Tang (618–907), Song (960–1279), Ming (1368–1644) and Qing (1636–1911) Dynasties; and reached its peak in the aftermath of World War II. It was the corridor for economic and cultural exchanges between different ethnic groups in China's western region. The road is primarily composed of the Sichuan-Tibet and Yunnan-Tibet Routes. Many secondary branches form an enormous transportation network. The Sichuan-Tibet Route originates from Ya'an in Sichuan Province and passes through Luding, Kangding, Batang, Changdu and Lhasa to Nepal and India. The Yunnan-Tibet Route departs from Xishuangbanna and Simao and passes through Dali, Lijiang, Zhongdian, Deqin and then Bangda, Changdu, Luolong, Linzhi and Lhasa in Tibet, and finally splits to reach Burma, Nepal and India through Jiangzi or Yadong (Fig. 5.20) (Mao 2003). Some scholars view the Qing-Tibet Trade Route, the "Ancient Tangbo Road", as the third

[10]**Tea-horse Interchange Trade** is a type of classic trade between ancient *Zhongyuan* (lit. the Central Plain region in China) and the minority nationalities living in northwest southwest China. It began in the Tang Dynasty (618–907) and flourished in the Ming Dynasty (1368–1644).

branch of the Ancient Tea Horse Road. Of the three, the Sichuan-Tibet Route is the oldest, most intensely used and historically important route. Currently, only porters on horseback who are traveling from Bingzhongluo to south-eastern Tibet use the Ancient Tea Horse Road. They travel the Yunnan-Tibet ancient postal road that stretches 70 km to Zhana in Tibet.

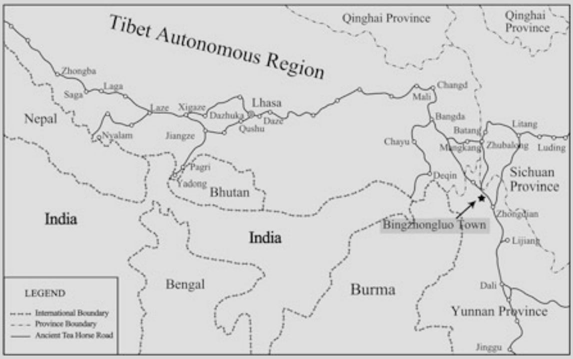


Fig. 5.20 Schematic diagram of the Ancient Tea Horse Road. One route travels from Sichuan to India through Tibet; the other stretches from Yunnan to India through Burma. *Source* Mao (2003: 29)

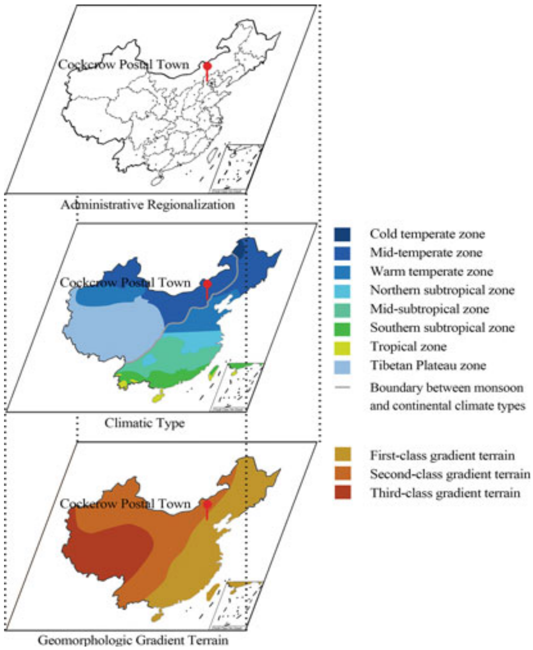
Geographical Interpretation

Located along the Ancient Tea Horse Road with its back to the mountains and fantastic scenery, Wuli Village in Bingzhongluo is known for the simple and honest customs of the villagers who live there. Born along the cultural route, the Ancient Tea Horse Road, Wuli Village embodies open-mindedness: there is a fusion of cultures, including primitive nature worship, Catholicism, Christianity, Tibetan Buddhism and many other diverse religious beliefs. The unique slate roof house was developed for the narrow valley area between the high mountains and satisfies local needs for ventilation, moisture resistance and protection from winter.

5.3 Cockcrow Postal Town: A Rest Station for the Weary Courier

Location: Huailai, Hebei Province
Key Geographical Concept: Ancient courier station

Cockcrow Postal Town used to be a crucial courier station that linked Beijing and the Zhangjiakou region in the Ming Dynasty (1368–1644). During the construction of ancient Chinese cities, the military and postal functions of the courier station system were a primary consideration.



Geomorphologic Features
Located in Huailai County of Zhangjiakou, one of the 2,022 Winter Olympics host cities, Cockcrow Postal Town is situated on the western border of the Huailai Basin, where the Yanghe River, a tributary of the Sanggan River, flows out from Jiming Mountain. This town was, and still is, an important passage that links Beijing and the Zhangjiakou region. The Jingzhang Expressway and National Highway 110 both pass through here (Fig. 5.21).

Climatic Features
Huailai is located in the mid-temperate, semi-arid region of the Eastern Asian continental monsoon climate zone that features four distinct seasons, ample sunshine, rain in the hot seasons and large temperature differences between day and night.

Fig. 5.21 The geographic location of Cockcrow Postal Town. This postal town is located 18 km northwest of Huailai County in Zhangjiakou, one of the 2,022 Winter Olympics host cities. *Source* Meng (1996: 39)

Cultural Features

The courier stations once played a crucial role during China's imperial era, which accommodated traveling officials and merchants, distributed information and post, and served as military fortresses. They equally functioned as modern post offices and military bases. A relatively complete postal system in China first formed during the Qin (221–207 BC) and Han (202 BC–220 AD) Dynasties. By the Yuan Dynasty (1271–1368), courier stations could be found across China. In the Ming (1368–1644) and Qing (1644–1911) Dynasties, the postal systems reached their peak and formed a hierarchical organization that was differentiated by function (Lü 2006). However, as technology developed, the traditional courier stations gradually faded away and were replaced with modern postal systems. As the largest, most complete and best preserved courier station, Cockcrow Postal Town is also known as Jimingshan Postal Town, which stems from the mountain behind this postal town (Fig. 5.22).

Cockcrow Postal Town was built in the Yuan Dynasty (1271–1368) and later experienced several expansions and reconstructions. In 1219, as the army led by Genghis Khan (1162–1227), the first Emperor of the Yuan Dynasty, marched on Serindia, they constructed roads and established a primitive Cockcrow Postal Town. During the 18th year (1420) of the Ming Dynasty Emperor Yongle's reign, the Cockcrow engaged in a large-scale expansion that made it the largest courier

Fig. 5.22 Cockcrow Postal Town has existed for more than seven hundred years and is famous for being used as a set in several feature films. *Source* Photograph by Fan Yin

station between Xuanhua *Fu* in the Hebei Province and Shuntian *Fu* in the Imperial Capital (now Beijing). A short earthen wall surrounding the town was constructed in the eighth Chenghua year (1472) of the Ming Dynasty. Nine years later, Qin Hui, the Censor in chief, ordered a fortress to be built to defend the town. Destroyed by war in 1563, Cockcrow Postal Town was rebuilt in the fourth year (1570) of the Ming Emperor Longqing's reign and was organized by Wang Fan, who was an ancient Chinese garrison defender (Editorial Committee on the Huailai County Records 2001). As a typical traditional postal settlement, Cockcrow Postal Town served as a location for information transmission, traveler accommodations and defense for hundreds of years. This ended in 1913, when the Northern Warlord Government (1912–1928) replaced it with a modern postal system (Fig. 5.23).

As the first station from Xuanhua *Fu* to Shuntian *Fu*, Cockcrow Postal Town was established due to military and postal concerns. Tapering from seven in width at its base to three in width at its top, the city wall measures 11.6 m in height, has a perimeter of 2,330 m and is well preserved (Editorial Committee on the Huailai County Records 2001). This wall consists of earth that is covered with brick and functioned as a highly effective defense in the pre-gunpowder era, as it was easy to

Fig. 5.23 The east gate of Cockcrow Postal Town. The gate is two floors and has its name inscribed above the arch. *Source* Photograph by Fan Yin

Fig. 5.24 The fortress wall of Cockcrow Postal Town, tamped with soil and gravel, is well preserved to this day. *Source* Photograph by Zhi Ou, provided by Ming Jiang

Fig. 5.25 The main body of the city wall was made from tamped earth; critical elements, such as the crenellations, were surfaced with brick. The city wall is crenellated with square corners that extend out over the city wall's four corners and outer edge. *Source* Photograph by Fan Yin

hold but difficult to attack (Fig. 5.24). Crenellations on the upper portion of the city wall allowed archers to fire arrows from a relatively safe place. The square corner that protrudes from the city wall's four corners and the city wall's outer edge made it possible to attack the enemy from either side (Meng 1996) (Fig. 5.25).

As a courier station, Cockcrow Postal Town was distinct for its location along the postal road with its main gate facing the road and a layout that resembled a square. Unlike most Chinese cities, this town was not aligned north to south; instead, it was oriented northwest by southeast, parallel to the South Old Official Road, which was five in width and was a postal road. The entire town had two gates that were located on its eastern and western sides. Three roads that ran east west and two that ran north south divided the town into twelve differently sized sections (Fig. 5.26). There was also a five-meter-wide road along the inside of the city wall, which facilitated the town's transportation (Fig. 5.27).

Built on an uneven embankment, Cockcrow Postal Town conformed to local terrain, which led to its peculiar layout. Because the south area of the western gate was lower in elevation and easily collected water, the town's eastern and western

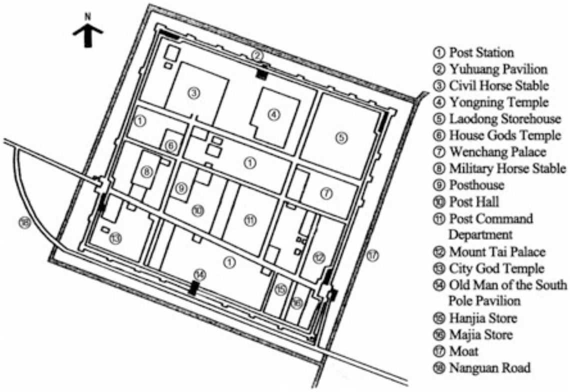


Fig. 5.26 A restored schematic diagram of Cockcrow Postal Town. The plan resembled a square that was oriented toward the southwest, parallel to the South Old Official Road, which was a postal road that extended along the southern border of the town. *Source* Lü (2006: 44)

Fig. 5.27 A five-meter-wide postal road ran along the interior of the city wall. *Source* Photograph by Fan Yin

gates are asymmetric, with the western gate shifted northward. The main street that connected these two gates was nine in width and hosted the ancient official buildings, Guandi Temple, the theater, the stores, and the houses of noble families (Fig. 5.28). Located in the center of the town was the He Family Mansion, which once accommodated Empress Dowager Cixi (1835–1908) and Emperor Guangxu (reign 1875–1908) after they fled from the capital city (now Beijing) in the 26th

Fig. 5.28 The view along the main street, which connected the ancient official buildings, Guandi Temple, the theater, the stores and many mansions. *Source* Photograph by Zhi Ou, provided by Ming Jiang

Fig. 5.29 Located on the main road, the He Family Mansion was the most distinguished building complex in the town. The mansion was a brick-wood structure that had five courtyards, which served local officials and once hosted Emperor Guangxu when he fled westward. *Source* Photograph by Yongjie Xu, provided by Ming Jiang

year (1900) of Qing Dynasty Guangxu's reign (Fig. 5.29). Cockcrow Town is situated in a valley that experiences a powerful west wind. The town's eastern and western gates were specifically designed to be oriented 30° counterclockwise of east and west. In addition, the town's planners ensured that Cockcrow's main street would meet the east-west city wall and the other east-west streets at an acute angle. The above-mentioned design effectively prevented the west wind from blowing directly into the city and slowed winds that blew across the town (Lü 2006).

Fig. 5.30 The ancient town gate at twilight. A dignified silhouette is all that remains of this once prosperous town. *Source* Photograph by Yongjie Xu, provided by Ming Jiang

As the modern postal system developed, Cockcrow Postal Town, which had been prosperous, lost its postal function. The ancient city wall could not defend against the arrival of firearms, such as long-barreled guns and short cannons. Currently, this town has been relieved of its military and postal functions. Only the ancient wall remains and reflects that time period (Fig. 5.30).

Extended Reading: The Postal System in Ancient China
Ancient Chinese governments always established a comprehensive postal system to effectively transmit political, economic and military information. These systems were based on the road network and had strict rules, including the courier stations' level and function and the distance between them. The prosperity and decline of these stations were related to the current status of the economy and national culture and also had political and military importance, which were viewed as a barometer for the rise and fall of the state. The first courier station in Chinese history dates back to the Western Zhou dynasty (the 11th century–771 BC). Feudal states built postal towns along important roads to send government documents, distribute goods and accommodate visiting officials. During the Qin Dynasty (221–207 BC), a national transportation network that was characterized by state highways was built. In the Han Dynasty (202 BC–220 AD), the postal system further developed as the empire improved its relationship with countries in Serindia and Central Asia (Wan 1983). This system became more extensive in the Tang Dynasty (618–907): couriers "covered 5,000 m with one dash on horseback and 2,500 m with a postal flag of the whip," as they traveled between "courier station after courier station; the postal flags like shooting stars." In the Yuan Dynasty (1271–1368), the postal network was large and the courier stations were ubiquitous and transmitted information with great speed (Wang 2009). Transportation methods varied according to local conditions, and a hierarchy of courier stations was established according to

different levels of urgency in delivery. The distance between stations also varied, with stations located 10, 15 or 25 *li* away from each other. According to the book *Yongle Encyclopedia*,[11] the courier stations at that time were located across the country and formed such a well-integrated network that "when sending a command in the morning, it would arrive by sunset," with a sound that indicated one's message had been delivered. From those descriptions, people believed that the post system was significantly developed. The rise and fall of Cockcrow Postal Town clearly reflected the rise and fall of the entire postal system (Fig. 5.31).

Fig. 5.31 The scene outside the gate of Cockcrow Postal Town. This once active courier station was stripped of its primary function when the Northern Warlord Government decommissioned courier stations and established a new postal system. *Source* Photograph by Zhi Ou, provided by Ming Jiang

Geographical Interpretation

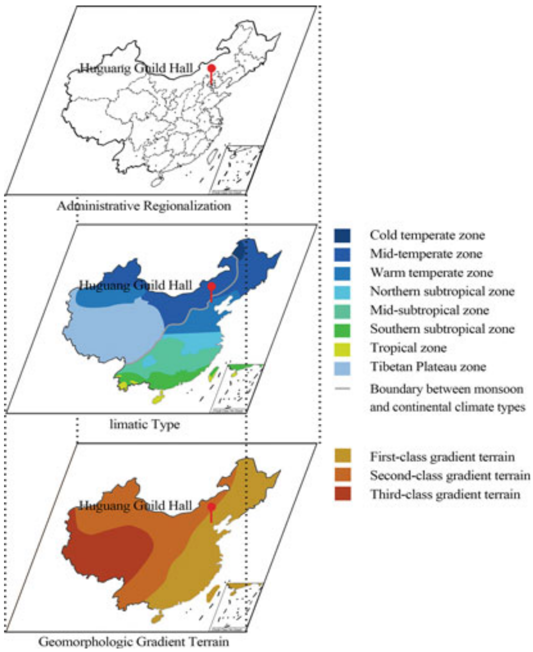
Located in a critical position, Cockcrow Postal Town gradually developed into a town from a small courier station, which simultaneously served military and civilian needs. It was also the largest stand-alone courier station along the route to Russia during the Qing Dynasty (1644–1911). The ancient town's former prosperity and modern decay are both intimately tied to the rise and fall of the imperial postal system.

[11] ***Yongle Encyclopedia*** (Mandarin: *yong le da dian*) is a Chinese compilation of information that was commissioned by the Emperor Yongle (reign 1403–1424) of the Ming Dynasty and completed by 1408.

5.4 Huguang Guild Hall: Fellow Townsmen Gathering in an Alien Land

Location: Beijing
Key Geographical Concept: Geographic relationships

Geographic relationships are the foundation of a guild hall. In the traditional society of China, geographic relationships play a significant role in the interpersonal communication. A shared nostalgia for one's native land unintentionally develops between those of common origin, and this mutual emotion increasingly attracted attention in the society. The guild hall is a place for people from the same hometown to make them feel at home in foreign locations in China.



Climatic Features
Beijing falls within the warm temperate continental monsoon climate zone characterized by four distinct seasons: dry spring, hot and rainy summer, cool autumn and frigid winter. Huguang Guild Hall reflects the typical features of the traditional architecture in northern China, and it adopts wind protection and drainage measures that are suitable for the local climate.

Cultural Features
The guild hall in Beijing could date back to the Ming Dynasty Emperor Jiajing's reign (1522–1566), and it reached its peak during the Qing Dynasty, specifically,

Fig. 5.32 The entrance to Huguang Guild Hall. Located to the southwest of the Hufang Bridge outside the Xuanwu Gate, the hall is adjacent to a street to the north and a canal to the east and south. *Source* Photograph by Fan Yin

the Qianlong and Jiaqing Emperors' reigns (1736–1820). As a public building for citizens from the same town, the guild hall was used to accommodate the businessmen, officials and students who came here to take the Beijing Exam. Lying near the Xuanwu Gate, Huguang Guild Hall is located in the outer city of Beijing rather than the inner city. This is partly because of the Separated Residence Policy between the Bannermen and the Han people in the Qing Dynasty (1644–1911), which meant that Han officials, businessmen and craftsmen were to live in the outer city, whereas only Manchu people were allowed to live in the inner city. In contrast, students who arrived in Beijing to take the exam usually needed to pass through the Guang'an Gate and wait for the Beijing Exam at the Xuanwu Gate, which is another reason for the guild hall's location (Sun 2009) (Fig. 5.32).

Located at the southwest edge of Beijing's ancient city and the intersection of the Luomashi Avenue and the Hufang Road and lying among a great number of other guild halls clustered outside of the Xuanwu Gate, Huguang Guild Hall once catered to travelers from Hunan and Hubei Provinces (Hou and Li 2002). The name "Hu-Guang" originated from the Yuan Dynasty (1271–1368), which was a province at that time and which encompassed the two provinces of Hunan and Guangxi as well as parts of Hubei, Guangdong and Guizhou Provinces. From the Ming Dynasty (1368–1644) on, Hu-Guang began to refer specifically to the two provinces of Hunan and Hubei; at this time however, the nomenclature "Hu-Guang" was still applied.

The guild hall was a civilian organization that was mainly supported by financial donations. Unlike common residential architecture, in addition to the dwelling quarters, the guild hall often also included a main hall, a theater and some pavilions for gatherings and sodalities as well as large dinner parties. As the residence of Zhang Weiyin, a salt commissioner during the Qing Dynasty Emperor Qianlong's reign (1736–1799), Huguang Guild Hall was later inherited by Grand Scholar Wang Jie and finally by senior official Liu Quanzhi, it was donated to the public as a guild hall in 1807. In the 10th year (1830) of the Qing Dynasty under Emperor Daoguang, the dwellings in Huguang Guild Hall were reconstructed, with a hall at the buildings' core rebuilt as a theatre and with the Hometown Elite Temple reestablished as the two-story Wenchang Pavilion (Wang 2004) (Fig. 5.33).

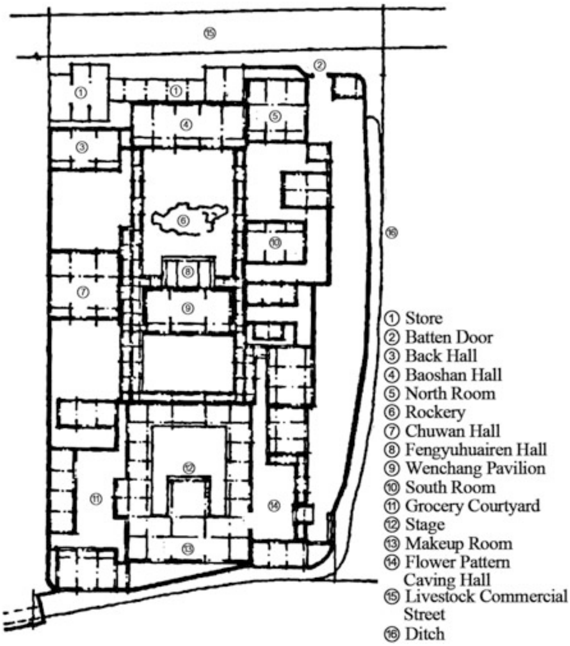


Fig. 5.33 Plan drawing of Huguang Guild Hall in Beijing. The hall includes an east-side yard, a west-side yard and a main courtyard. Along the mid-way lies a theatre, the Wenchang Pavilion, Memorial Hall and Baoshan Hall. Huguang Guild Hall was once a typical triple-courtyard house that took its present scale following transformation. *Source* Hou and Li (2002: 157)

Extended Reading: Guild Halls

The guild halls in China were once organized for the benefit of travelers from the same hometown or province; they were later transformed into trade organizations—guild halls—for craftsmen or businessmen of similar origins or professions. First built in Beijing during the Ming Dynasty (1368–1644), these guild halls gradually sprang up across the country and played the role of catering to the fellow countrymen who came to take the Beijing Exam. At the end of the Qing Dynasty (1636–1911) and the beginning of the Republican period, these guild halls prospered amidst the drastic societal upheaval of that time, ultimately amounting to over 1,000 in China—390 of them in Beijing—as well as several hundred abroad (Tang 2001). Guild halls were founded primarily upon social networks that were engendered by geographic relationships that especially paid attention to the status of gentry and officials from the same place, friendly contact among hometown fellows and the welfare of members and others from the same place. As one type of social organization, the guild halls were led by a board of directors and a designated person who represented the board of directors chaired the organization's daily operations. Except for some special cases, most staff members were recommended by the hometown elites, either community elders or members of the gentry, which reflects the traditional Chinese philosophy of "Fellow townsman, kinsman or not" (He 1990).

Fig. 5.34 Interior of Huguang Guild Hall Theatre. Built in the 10th year (1830) of the Qing Dynasty under Emperor Daoguang, the theatre is divided into two levels, the inside of which has no ceiling and is set with many old-fashioned square dining tables for eight people. Major structural components such as pillars, lintels and ridge poles are painted with colorful pictures. *Source* Photograph by Fan Yin

Fig. 5.35 The north-facing stage is 7.08 m in length and 6.38 m in width. *Source* Photograph by Fan Yin

As “the Great Mansion in the Southern Xuanwu” and one of “the Top Ten Wooden Structure Theatres in the World”, Huguang Guild Hall is particularly famous for its massive theatre (Figs. 5.34 and 5.35). This architecture complex covers an area of 4,000 m^2 and features a symmetrical layout with buildings both tall and majestic, including a main courtyard, an east-side yard and a west-side yard. Located in the main courtyard, the theatre is a two-story building of five *kaijian*

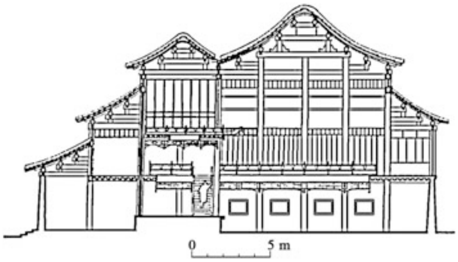


Fig. 5.36 Section drawing of Huguang Guild Hall Theatre. The theatre has a *xuanshan* double-eaved roof with an additional mantle-like eave that shelters the rear portion of the building (*far left of image*). *Source* Sun (2009: 28)

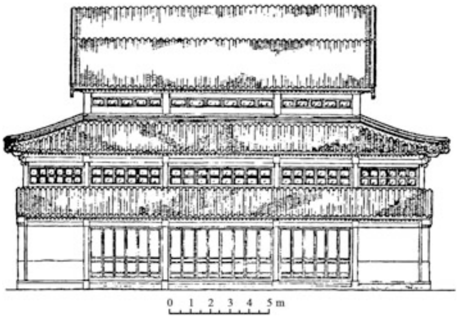


Fig. 5.37 South elevation of Huguang Guild Hall Theatre. *Source* Wang (2004: 377)

wide and seven *jinshen* deep, with seamless polished-brick walls and wooden-beam structure.[12] To the south of the theatre lies the stage, and two-story seating for the audience is spread out along the west, north and east sides of the stage, with wooden stairways to allow guests to move between the two stories. The entire theatre is a patio-type structure, with elegant and detailed decoration inside. To accommodate the height of the stage area, and influenced by its function and structure, the two-story building employs a *xuanshan*[13] double-eaved roof with an additional mantle-like eave[14] that shelters the rear portion of the building (Wang 2004) (Figs. 5.36, 5.37 and 5.38).

As one of the oldest existing indoor theatres in China, Huguang Guild Hall Theater was not only a gathering place for people from Hunan and Hubei but also a place where celebrities from all over the country came together. Traditionally,

[12]**Wooden beam structure** is a structure that uses wooden beams (often also with columns) for load bearing.

[13]***Xuanshan* roof** is a two slopes roof that is one of the most common ancient forms of roof in the history of Chinese architecture.

[14]**Mantle-like eave** is an annex part built under the eaves of a main building.

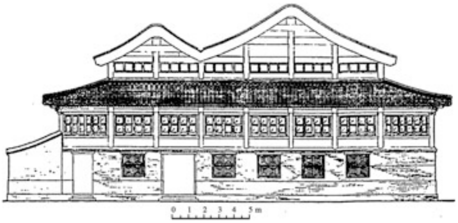


Fig. 5.38 East elevation of Huguang Guild Hall Theatre. *Source* Wang (2004: 378)

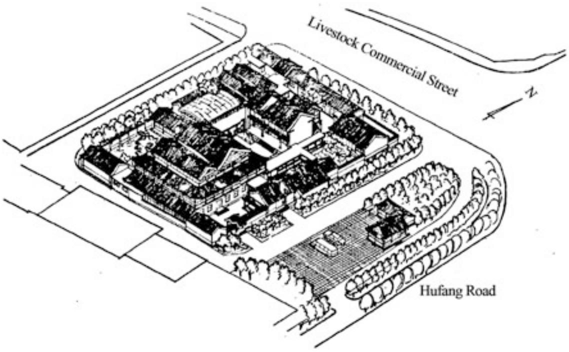


Fig. 5.39 Axonometric drawing of Huguang Guild Hall's restoration plan in 1990. *Source* Wang (2004: 381)

people gathered at this guild hall during the first month of every lunar year to hold public memorial ceremonies and organize general greetings. In addition, famous Beijing Opera actors such as Tan Xinpei (1847–1917) and Chen Delin (1862–1930) were once often invited to perform at the theatre. Chinese revolutionaries in modern times would sometimes hold activities here, the most famous among them being Sun Yat-sen (1866–1925), who delivered speeches in the Guild Hall on five occasions and hosted the inaugural meeting of the Kuomintang Party (KMT) at the hall on August 25, 1912.

Today, Huguang Guild Hall has been renovated to resume the Beijing Opera show and to exhibit traditional crafts (Fig. 5.39). There are also a tea house (Fig. 5.40) and a Beijing Opera museum, which serves to educate visitors about the history of traditional Chinese opera as well as the history of the guild hall itself.

Fig. 5.40 The tea house at Huguang Guild Hall. *Source* Photograph by Fan Yin

Geographical Interpretation

As one of the few existing guild halls built with theatres, Huguang Guild Hall has experienced over 200 years of Chinese history as not only a gathering place for people from Hunan and Hubei but also a physical record of the evolution of modern Chinese history.

References

Association of Beijing Foreign Cultural Exchange, Editorial Committee on the Xuanwu District County Records. (1994). *Huguang Guild Hall in Beijing records*. Beijing: Beijing Yanshan Press (in Chinese).

Editorial Committee on the Changsha Municipal Records. (2004). *Changsha municipal records* (Vol. I). Changsha: Hunan People's Publishing House. (in Chinese).

Editorial Committee on the Gongshan Autonomous County of Dulong and Nu Nationalities Records. (2006). *Gongshan Autonomous County of Dulong and Nu Nationalities records*. Beijing: Nationalities Publishing House (in Chinese).

Editorial Committee on the Huailai County Records, Hebei Province. (2001). *Huailai County records*. Beijing: China Translation and Publishing Corporation (in Chinese).

Editorial Committee on the Vegetation Maps, Chinese Academy of Sciences. (2007a). *Vegetation map of China and its geographic pattern: Illustration of the vegetation map of the People's Republic of China* (*1:1,000,000*) (*Volume I*). Beijing: Geological Publishing House (in Chinese).

Editorial Committee on the Vegetation Maps, Chinese Academy of Sciences. (2007b). *Vegetation map of China and its geographic pattern: Illustration of the vegetation map of the People's Republic of China* (*1:1,000,000*) (*Volume II*). Beijing: Geological Publishing House (in Chinese).

Editorial Committee on the Vegetation Maps, Chinese Academy of Sciences. (2007c). *Vegetation map of the People's Republic of China* (*1:1,000,000)*. Beijing: Geological Publishing House (in Chinese).

Editorial Group on A Brief History of the Nu nationality. (2008). *A brief history of the Nu nationality*. Beijing: The Ethnic Publishing House. (in Chinese).

He, S. Q. (1990). The fellow provincial guild halls in Beijing are purely commercial. *Commercial Research,* (1), 25–27. (in Chinese).

Hou, Y. B., & Li, W. Z. (2002). *A pictorial history of ancient Chinese architecture*. Beijing: China Architecture and Building Press. (in Chinese).

Li, Y. Y. (2005). *Nu families in the three parallel rivers of Yunnan protected areas*. Beijing: The Ethnic Publishing House. (in Chinese).

Liu, Y. (2006). *Ten lectures on classic architecture in ancient China*. Beijing: China Three Gorges Publishing House. (in Chinese).

Lü, X. D. (2006). Discussion on the sustainable development of ancient post village: Taking Cockcrow Postal Town for example. *Planners, 22*(11), 43–46. (in Chinese).

Mao, G. (2003). *Ecological view: Settlement and architecture in high southwest mountain region*. Nanjing: Southeast University Press. (in Chinese).

Meng, F. F. (1996). A brief study on Cockcrow Postal Town. *Stories of Relics, 32*(2), 39–50. (in Chinese).

Ren, X. J. (2008). Historical evolution and modern function of the Ancient Tea Horse Road. *Forum on Chinese Culture,* (12), 53–55. (in Chinese).

Shi, S. (2002). The Ancient Tea Horse Road and its historical and cultural values. *Tibetan Studies,* (4), 49–57. (in Chinese).

Sun, D. Z. (2009). *History of ancient Chinese architecture (Volume V): Architecture in the Qing Dynasty*. Beijing: China Architecture and Building Press. (in Chinese).

Tang, S. C. (2001). The request and trust of fellow guild halls in Beijing during the period of Bei Yang Government. Dissertation for Master. Beijing: Graduate School of Chinese Academy of Social Sciences (in Chinese).

Wan, F. (1983). Chinese postal system. *The Documentation,* (1), 41. (in Chinese).

Wang, X. J. (2009). Post station system in ancient China. *China Cultural Heritage,* (2), 14–18. (in Chinese).

Wang, S. Z. (1999). *Chinese vernacular architecture* (Vol. V). Nanjing: Jiangsu Science and Technology Press. (in Chinese).

Wang, S. R. (2001). *The paper collection of theories in architectural history by Wang Shiren*. Beijing: China Architecture and Building Press. (in Chinese).

Wang, S. R. (2004). *A study of ancient Chinese architecture*. Tianjin: Tianjin Ancient Books Publishing House. (in Chinese).

Xiao, D. F. (1983). *A dictionary of Tang poetry appreciation*. Shanghai: Shanghai Lexicographical Publishing House. (in Chinese).

Xu, Z. W. (2010). Bingzhongluo: The arcadia where deity and humans habit. *Camera,* (4), 47–48. (in Chinese).

Yang, H. C. (1993). *Traditional architecture in Hunan*. Changsha: Hunan Educational Publishing House. (in Chinese).

Zhang, Y., & Liu, X. X. (2007). The cultural meaning of the residential architecture of the Nu people: Fieldwork of the Nu villages of Bingzhongluo Township, Gongshan County and Pihe Town, Fugong County. *Ethno-National Studies,* (3), 54–64. (in Chinese).

Zhao, P. X., & Zhang, B. (2007). *History and culture of Nu people*. Kunming: The Nationalities Publishing House of Yunnan. (in Chinese).

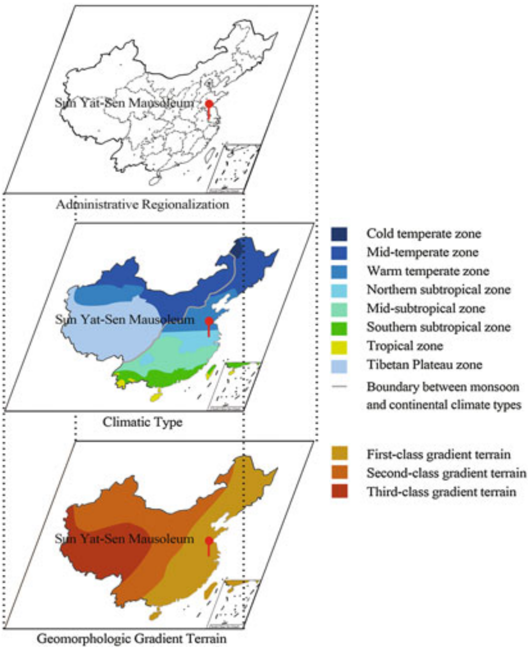
Chapter 6
"Advancing" Cases

6.1 Sun Yat-Sen Mausoleum: Marching Forward Without Hesitation

Location: Nanjing, Jiangsu Province
Key Geographical Concept: Architectural responses to a great man of moral integrity

As a classic work of architecture in China, the Sun Yat-sen Mausoleum seeks to express the great soul and ambitious ideals in physical form of one of the most influential leaders in Chinese history, Sun Yat-sen.

F. Wang, *Geo-Architecture and Landscape in China's Geographic and Historic Context*, DOI 10.1007/978-981-10-0483-4_6



Geomorphologic Features

The Sun Yat-sen Mausoleum is located on Purple Mountain, which was called Jinling Mountain in the Eastern Jin Dynasty (317–420), and is known for its unique purple shale that shines purple-gold in the sun. As one of the "Four Great Mountains in the *Jiangnan* region," Purple Mountain is the highest point in the Nanjing area and has three peaks that are aligned east to west (Editorial Committee on the Xuanwu District Records, Nanjing City 2005). The entire mountain area is 7 km in length from east to west and spans 4 km at its widest point. Located at the southern foot of Purple Mountain's easternmost peak, Maoshan Peak, the Sun Yat-sen Mausoleum conforms to the mountain slope, which ascends from south to north along its central axis (Fig. 6.1).

Climatic Features

Nanjing is located in the humid northern subtropical monsoon climate zone. The temperature distinctly varies with the changing seasons: cold in winter, hot in summer, mild in spring and warm in fall. The upper air is alternatingly influenced by the west wind circulation and the subtropical ridge, while the ground is significantly affected by seasonal winds. Both of these provide plentiful rainfall and abundant water resources for the entire city. Located over 300 km from the ocean, the climate around Purple Mountain is mild. Yet, because there is no barrier between Purple Mountain and the ocean, a cold wave can easily affect this area and cause a large temperature difference. The unique geography, extensive forest coverage and altitude variation create a partial microclimate in the Purple Mountain area.

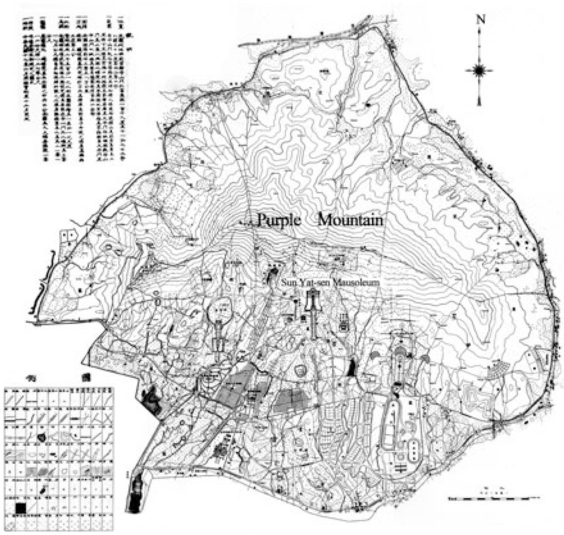


Fig. 6.1 A topographical map of the Sun Yat-sen Mausoleum. Located on the southern slope of Purple Mountain's Maoshan Peak, the Sun Yat-sen Mausoleum is at an elevation of approximately 175 m and is surrounded by evergreen forests. Sacrificial Hall abuts against the hill and is connected to the base of the mountain by a long, tiered stairway. *Source* Management Committee of the Prime Minister's Mausoleum (The Republic Era) (2008: 143)

Vegetation Features

Tree-planting activities on Purple Mountain can be traced back to the Eastern Jin Dynasty (317–420). Over time, the mountain gradually became a popular place for tourism, gardens and temples. After the Second Sino-Japanese War (1937–1945), vegetation renewal occurred in this war-torn place, which had transitioned from a planted forest to a natural forest and had a forest park on the eastern outskirts of Nanjing (Editorial Committee on the Xuanwu District Records, Nanjing City 2005) (Fig. 6.2). Currently, Purple Mountain National Forest Park covers an area of 30,000 *mu* (approximately 20 km^2) and accounts for 15.6 % of Nanjing's total forested area. Many ancient trees have successfully been preserved in this park and it provides scenery in Nanjing.

Fig. 6.2 Surrounded by evergreen forests, the mausoleum conforms to the mountain slope, where there is a broad view. *Source* Photograph by Zhihua Xie

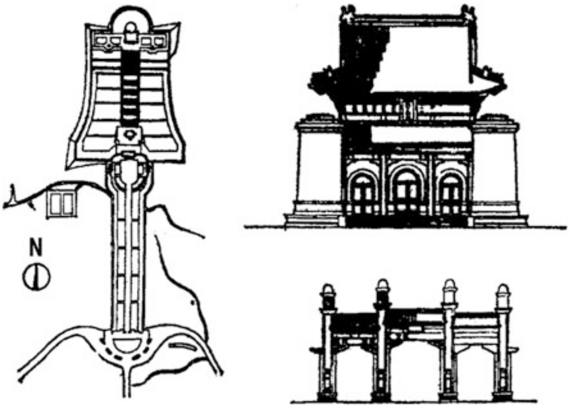


Fig. 6.3 (*left*) The site plan for the Sun Yat-sen Mausoleum; (*upper right*) the elevation of Sacrificial Hall; (*bottom right*) the elevation of the *Paifang* Gate. The design by Lü Yanzhi (1894–1929) was selected in the open solicitation. The plan drawing is bell-shaped, and the *Paifang* Gate lies at the southernmost point of a semicircle square that is connected to Sacrificial Hall with a stairway. The design of this mausoleum cleverly integrates Chinese and western architectural styles. *Source* Pan (2001: 377)

Cultural Features
The Sun Yat-sen Mausoleum is a building complex that includes the mausoleum and several annex buildings that were designed for the great politician Sun Yat-sen (1866–1925), the pioneer and champion of freedom and democracy in modern China. This mausoleum markedly differs from traditional imperial mausoleums in all aspects. The preparatory office solicited the design through an open contest and adopted an open coffin chamber (Fig. 6.3) that embodied the notion of freedom and democracy after the Xinhai Revolution of 1911.

In accordance with Sun's wish to be buried in Purple Mountain, a funeral commission was established that was responsible for conducting the construction of the mausoleum in Nanjing. On May 15, 1925, three months after Sun's death, the commission published an advertisement in the newspaper calling for design submissions, and received more than 40 proposals. After deliberations, first, second and third prizes were announced, and construction was initiated according to Lü Yanzhi's design (Yang and Cai 2004).

The entire construction process of the Sun Yat-sen Mausoleum, including planning process, the call for proposals and the design selection, as well as the actual construction of the complex, was open to the public. Everyone was able to submit a design and to participate in the selection. In contrast, the mausoleums for emperors or other heads of state had always been secret, and the emperor often personally supervised the construction. After completing the mausoleum, craftsmen would be killed to keep it a secret. To represent "all-people participation," the solicitation process for the Sun Yat-sen Mausoleum expressed a new trend toward freedom and democracy from Sun (Fig. 6.4).

Lü Yanzhi's design strove to represent the new ideas that Sun Yat-sen brought to China. Facing south, the Sun Yat-sen Mausoleum conforms to the mountain slope and is organized along a central axis (Fig. 6.5). The general layout is in the shape of a bell and is known as the 'Admonishing Bell' that alerts people to Sun's philosophy of freedom and democracy. Along the central axis, there are several stones that are inscribed with Sun's calligraphy and espouse his beliefs. Built between

Fig. 6.4 The construction of the Sun Yat-sen Mausoleum received widespread attention and many donations. For example, the performance stage, which is situated on the south of Sun Yat-sen Plaza, was entirely funded by overseas Chinese members of the kuomintang party in San Francisco. *Source* Photograph by Jiali Zhou

Fig. 6.5 The procession path to the mausoleum is 375 m in length and 40 m in width and serves as the complex's central axis. When walking up the stairs, people may feel as if they're gradually drawing closer to Sun Yat-sen's soul and spirit. From the Stele Pavilion to Sacrificial Hall, there are eight flights of steps, with a landing platform after each flight. There are 392 steps, which is a metaphor for the nearly three hundred and ninety-two million people in the Chinese population at that time. *Source* Photograph by Mu Yuan, provided by Piyan Jiang

Fig. 6.6 The four-pillar *Paifang* Gate at the entrance of the Sun Yat-sen Mausoleum is engraved with the words “Universal Love” in Sun’s handwriting. *Source* Photograph by Xiaoqiu Chen

1926 and 1929, the Sun Yat-sen Mausoleum covers over 80,000 m^2, and the architectural works include the *Paifang* Gate, the tomb path leading to a grave, the mausoleum gate, the Stele Pavilion, Sacrificial Hall and the coffin chamber.

As the beginning of the route to the mausoleum, the four-pillar *Paifang* Gate stands at the south of the oval square, which is a wood-like granite structure that is characterized by beams and columns rather than arches. Two words—“Universal Love”—are engraved above the gate, which was Sun’s motto and revealed his love and compassion for all people (Fig. 6.6). Behind the *Paifang* Gate is the mausoleum gate, which is carved with “the Whole World as one Community” (Fig. 6.7). Next is Sacrificial Hall, which is the main building of the Sun Yat-sen Mausoleum and measures 29 m tall, 30 m in length and 25 m in width. Three arched doors are located on the south side of this hall and are carved with “the People, the People’s Livelihood, the People’s Rights” and “a Noble and Upright World” (Fig. 6.8). At the center of Sacrificial Hall, there is a statue of a seated Sun Yat-sen (Fig. 6.9) and the surrounding walls are engraved with Sun’s quotes, including the entire text of Sun’s handwritten, *Fundamentals of National Reconstruction*,[1] an afterword by Sun’s wife Soong Ching-ling (1893–1981), excerpts from *Dr. Sun Yat-sen’s Last Testament*[2] written by Chiang Kai-shek and *Dr. Sun Yat-sen’s Last Will*[3] by Hu Hanmin (Management Committee of the Premier’s Mausoleum (The Republic Era) 2008).

[1]***Fundamentals of National Reconstruction*** (Mandarin: *jian guo da gang*) was a political statement that was published in 1923 by Sun Yat-sen (1866–1925), the founding father of the Republic of China.

[2]***Dr. Sun Yat-sen’s Last Testament*** (Mandarin: *zong li yi xun*) was completed and refined by Chiang Kai-shek (1887–1975) according to Sun Yat-sen’s final pithy political testament.

[3]***Dr. Sun Yat-sen’s Last Will*** (Mandarin: *zong li yizhu*) was completed and refined by Hu Hanmin (1879–1936) according to Sun Yat-sen’s will.

Fig. 6.7 The mausoleum gate at the entrance of the Sun Yat-sen Mausoleum is engraved with the words, "天下为公" (lit. the Whole World as one Community) as handwritten by Sun. *Source* Photograph by Changsong Wang

Fig. 6.8 Sacrificial Hall is the main building of the mausoleum complex. This hall has three gates that are carved with the words "the People, the People's Livelihood, the People's Rights." Above the archway another plaque reads, "A Noble and Upright World," as written by Sun Yat-sen. The design of Sacrificial Hall combines elements from both traditional Chinese palaces and western temple architectures. The building features a traditional double-eaved gable-and-hip roof that is surfaced with blue glazed tiles. *Source* Photograph by Zhiyuan Gong, provided by Piyan Jiang

Behind Sacrificial Hall is the coffin chamber, the design of which differs from the traditional imperial mausoleum and expresses the new trend toward freedom and democracy. In contrast to traditional Chinese mausoleums, in which access to

Fig. 6.9 The statue of a seated Sun Yat-sen in Sacrificial Hall was carved by the French sculptor Paul Landowski. Six reliefs are engraved on the pedestal of the statue to depict Sun's revolutionary activities. *Source* Photograph by Zhihua Xie

the coffin chamber was hidden, the Sun Yat-sen Mausoleum features an open design that allows visitors into the core of the building, where a stone likeness of Sun Yat-sen laid to rest guards the leader's remains. Initially, a transparent coffin was designed to provide direct viewing of Sun's body for the tourists but failed due to the coffin's material. The transition of the coffin chamber from closed to open represents the transition of Chinese society from feudalism toward freedom and democracy, which reflects Sun's governing ideals.

Extended Reading: Purple Mountain

As the chief mountain in the Nanjing area (Fig. 6.10), Purple Mountain lies to the east of the urban district and belongs to the middle section of the western stretch of the Ningzhen Mountains, which are also known as the Zhongshan and Jiangshan Mountains. In the Eastern Jin Dynasty (317–420), Purple Mountain gleamed violet under the dawn and sunset light. The Ming Dynasty's first emperor's mausoleum was located here, and gave the mountain another title: Shenlie Mountain. The mountain spans a distance of approximately seven kilometers from east to west and three kilometers from north to south, whose three peaks resemble a penholder. Among the three peaks, the middle peak is the highest, with an elevation of 448.9 m (Yi et al. 2006). Water flows into the Qinghuai River from the mountain's southeastern slope and into Xuanwu Lake from the western slope; water from the northern slope converges into a creek and flows into a local river. The mountain extends into Nanjing City in the form of a series of low hills from east to west that includes Fugui Hill, Mount Jiuhua, Jilong Hill, Gulou Hill, Mount Wutai, and Qingliang Hill, which form an important watershed area for Nanjing. Water on the mountain's southern side belongs to the Qinghuai River basin; water on the northern side belongs to the Jinchuan River basin. Purple Mountain's peaks rise and fall in a meandering manner. As the ancient capital of ten dynasties in Chinese history, there are several temples in Nanjing. Of the 480 monasteries that were constructed during the Southern Dynasties (420–589), more than 70 are located on Purple Mountain. This mountain has attracted famous nobles, politicians and writers in China since ancient times, who left behind countless written and artistic masterpieces. Sun Yat-sen chose this as the site for his mausoleum because he loved the mountain's implied meaning of "Purple Mountain twists and turns like dragon shape", and because his government was temporarily located in Nanjing. With Nanjing still under the control of the Beiyang Government, he wanted to encourage his compatriots to pursue a successful revolution.

Fig. 6.10 Looking down from the entrance of Sacrificial Hall. *Source* Photograph by Zhiyuan Gong, provided by Piyan Jiang

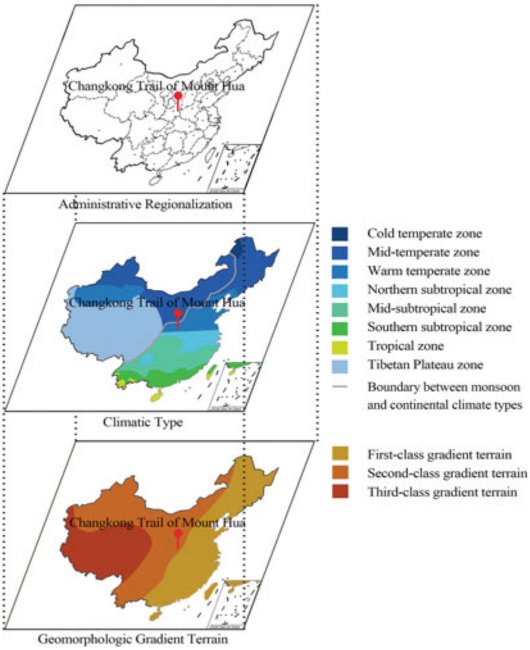
Geographical Interpretation

Through the bell-shaped overall layout, the design solicitation process, as well as the worldwide financial support and design elements on the central axis, including the *Paifang* Gate, the mausoleum gate, the tomb path leading to a grave, Sacrificial Hall and the coffin chamber, Sun's new ideals of freedom and democracy are incarnated in the Sun Yat-sen Mausoleum.

6.2 Changkong Trail of Mount Hua: The Most Dangerous Hiking Trail in Mount Hua

Location: Huayin, Shaanxi Province
Key Geographical Concept: Architectural responses to an extreme terrain

Composed of granite, Mount Hua (Shaanxi), also named West Great Mountain, is a precipitous fault-block mountain. The Changkong Trail of Mount Hua is the path to the summit of this mountain and was built along the face of the cliff.



Geomorphologic Features
Located in Huayin area, Shaanxi Province, Mount Hua covers an area of 327 km^2. Influenced by the fault in piedmont, the mountain rises to a height of 2,483.6 m at its summit, lofty above the plain that lies to the mountain's north, which is only 350–400 m above sea level. This precipitous rise—most of the mountain towers more than 1,000 m above the surrounding area—earned Mount Hua a reputation as China's most dangerous, yet miraculous mountain. This mountain is comprised of granite (Editorial Committee on the Huayin County Records 1995). Along the side of the mountain's granite cliffs runs the Changkong Trail of Mount Hua, which leads to the summit. Of all trails on Mount Hua, the Changkong Trail is by far the most dangerous.

Climatic Features

Huayin area is situated in the warm temperate continental monsoon climate zone, where the climate is cold and dry in winter, hot and humid in summer, warm and windy in spring, and cool and moist in autumn. The temperature decreases as the altitude increases.

Vegetation Features

Because temperature and humidity vary with altitude, vegetation in Mount Hua changes with a vertical distribution and includes a broad-leaved deciduous forest, the forest steppe and the coniferous and broad-leaved mixed forest. The conifers consist of the pinus armandii, the pinus tabulaeformis, the pinus bungeana and the platycladus orientalis. There is little vegetation along the Changkong Trail of Mount Hua, where the granite bedrock is fully exposed. Tourists have to rely on this trail to reach the top of the mountain.

Cultural Features

Known in ancient times as Flower Mountain (a name that was derived from a variant pronunciation of *hua* in Mandarin), Mount Hua is the westernmost of the Five Great Mountains (Fig. 6.11). The Five Great Mountains are five high mountains in the north, south, east, west and center of the *Zhongyuan* region and include Mount Tai (Shandong), Mount Hua (Shannxi), Mount Heng (Hunan), Mount Heng (Shanxi) and Mount Song (Henan). Established as sacred mountains in the Han Dynasty (202 BC–220 AD), they served as important sites for offering worship of heaven and earth and other sacrificial activities. These five mountains were a product of worshipping the mountain deity, the notion of *wuxing*,[4] the imperial tour

Fig. 6.11 Mount Hua consists primarily of granite blocks with sparse vegetation. *Source* Photograph by Changsong Wang

[4]***Wuxing*** means the Five Elements (namely, Fire, Earth, Metal, Water and Wood) that are included in traditional Chinese thought and used in the fields of philosophy, medicine, astrology, *fengshui*, etc.

and hunt, as well as worship of heaven and earth. Records show that Mount Hua was a site for imperial tours and hunting very early in China. For example, the legendary Yellow and Yao[5] Emperors visited Mount Hua; the Wu (reign 1046–1043 BC), Cheng (reign 1042–1021 BC) and Huan (reign 719–697 BC) Emperors of the Zhou Dynasty (1046–256 BC) visited for hunting or sightseeing. Mount Hua is known for its breathtakingly steep peaks and unsurpassed views, and the Changkong Trail is its most famous plank road.

A Chinese proverb says that only one road leads to the summit of Mount Hua. Weaving upwards along a bare, nearly vertical granite precipice, the Changkong Trail is the most dangerous section of this road, which is also one of the most fascinating scenic spots on Mount Hua. Faced with such extreme geological conditions, the ancient Chinese built a plank road into the cliff face to connect the Nantian Gate with the Chaoyuan Cave. Those who take this trail to reach the summit will experience a terrifying, but amazing journey.

The Changkong Trail is divided into three sections, each of which is designed to conform to the mountain slope. The upper section of this trail is 20 m in length and 7 m in width and was hewed out of a vertical mountain to connect the stone archway at the Nantian Gate with the western side of the Chaoyuan Cave (Fig. 6.12). The middle section turns directly downhill. Supported by iron rods that were inserted deep into the cracks of the cliffs, the middle section takes the form of

Fig. 6.12 The upper section of the Changkong Trail is 20 m in length and 7 m in width and was hewed out of a vertical mountain to connect the stone archway at the Nantian Gate with the western side of the Chaoyuan Cave. *Source* Photograph by Xinting Zhou, provided by Chunjiang Wu

[5]**Emperor Yao** (Mandarin: *yao di*) was a legendary Chinese ruler approximately 4,000 years ago.

Fig. 6.13 Supported by iron rods that were inserted deep into the cracks of the cliffs, the middle section of the Changkong Trail is almost vertical, with chains on the left and right to serve as handrails. *Source* Photograph by Xiaofeng Jin

Fig. 6.14 The bottom section of the Changkong Trail consists of pillars horizontally wedged into the cliff, upon which three wooden planks are laid in parallel. Hikers must stay close to the cliff and sidle to pass this section. *Source* Photograph by Changsong Wang

a nearly vertical stairway, with chains on the left and right serving as handrails (Fig. 6.13). The bottom section, which turns to the west, consists of pillars horizontally wedged into the cliff face, upon which three wooden planks are laid in parallel. Hikers must stay close to the cliff and sidle to pass this section (Fig. 6.14).

From ancient times to the present, Mount Hua has been a popular tourist destination, and the Changkong Trail is one of its most famous attractions, with several related documents. In the *Tai Hua Shan Ji*,[6] an important essay in the Ming Dynasty (1368–1644), Li Panlong (1514–1570) once wrote, "…One part of the trail is no more than half a *chi* in width, more than 20 *zhang* from start to finish. Now it turns downwards to fall three *zhang* and then reemerges as a trail again…". Another book, *Shuo Ling*,[7] described, "The trail lies half above the cliff, eight *cun* wide and over 10 *zhang* long. To walk this trail is similar to walk upon air."

[6]***Tai Hua Shan Jì*** is a travel essay called *Travel through Mount Hua* that was written by Li Panlong in the Ming Dynasty (1514–1570).

[7]***Shuo Ling*** is a novel called *Telling Trivial Things in Life* that was written by Wu Zhen in the Qing Dynasty (1644–1911).

Fig. 6.15 The upper section of the Changkong Trail of Mount Hua. The view reflects a Chinese saying, "all mountains look so small when viewed from above." *Source* Drawing by Kun Gao

Rather than just a path leading to the summit, the Changkong Trail provides tourists with unique scenery on their way up the mountain. It is thrilling to walk on this trail, as even one brief glance of the surrounding scenery is exciting and memorable and provides hikers with a unique perspective and hiking experience. Under such extreme conditions, hikers take in the scenery with a special intensity (Fig. 6.15).

Extended Reading: Fault-Block Mountain

Formed by the vertical displacement of the fault blocks, the fault-block mountain, also called the fault mountain, can be divided into the horst fault-block mountain and the tilted-type block mountain. Both sides of the horst fault-block mountain are fault scarps, which makes their slope and slope length similar. In contrast, one side of the tilted type block mountain is fault scarp that is steep, while another is a gentle slope (Zhou 2006). The formation of many famous mountains in China are related to fault activity, including Mount Tai, Mount Hua, Mount Heng (Hunan) and Mount Lu. The force from the fault movement is usually restrictive, which makes the fault-block mountain high, precipitous and full of cliffs and valleys, such as those found at Mount Tai and Mount Hua. In rainy regions, there are spectacular waterfalls, such as those found at Mount Lu (He 2005). For Mount Hua, the granite

Fig. 6.16 Mount Hua is a typical fault-block mountain that is characterized by steep slopes. From the summit, tourists can overlook the northern plain that is akin to looking down from heaven over earth. *Source* Photograph by Changsong Wang

block was formed during activity on the Yanshan Mountain fault, which is 15 km in length and 10 km in width and is the main body of the fantastic, precipitous Mount Hua. Influenced by the interlaced faults during the rising process, Mount Hua was divided into several sections and different parts of the mountain significantly vary in height. Water has further eroded the mountain over time and contributes to the formation of sharp peaks, of which the biggest mover is the summit of Mount Hua (Wang et al. 1994) (Fig. 6.16).

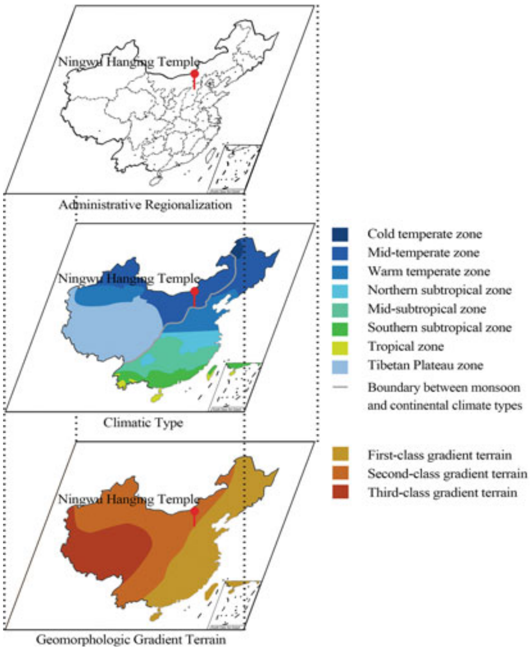
Geographical Interpretation

As a typical fault-block mountain, Mount Hua is known for its steep precipices and towering peaks. The Changkong Trail conforms to the mountain slope and is an excellent example of mankind's brilliant response to the surrounding natural environment.

6.3 Ningwu Hanging Temple: Steps Along the Cliff Face

Location: Ningwu, Shanxi Province
Key Geographical Concept: Architectural response to a special terrain

Built on cliffs and hidden in mountains, the Ningwu Hanging Temple implicitly reflects the monks and disciples' hope of reclusive self-cultivation.



Geomorphologic Features
The Ningwu Hanging Temple is located in the midsection of a cliff among the Guancen Mountains chain, which lies on the west side of the Datong Basin. Here, tectonic movements are intense, and folds and faults are common (Hou 2003), together forming a landscape characterized by numerous steep cliffs (Fig. 6.17).

Climatic Features
The Ningwu region falls within the temperate continental monsoon climate zone. The climate here is usually cold and dry, with four distinct seasons, long winter, short frost-free period, strong wind, good rainfall and large temperature difference between day and night.

Fig. 6.17 Looking up to the Ningwu Hanging Temple on the mountain from below. *Source* Photograph by Fan Yin

Fig. 6.18 Looking around from the mountain where leafy trees abound. There are many caves in the mountain, and this temple is hidden among them. *Source* Photograph by Fan Yin

Vegetation Features

Owing to copious precipitation, Ningwu is particularly verdant and is known as "the Home of Larch Forests in the North China". The Guancen Mountains, where the Ningwu region sits in the center, feature the most flourishing natural secondary forest in North China, and is an important timber forest base in Shanxi Province. Thus, south of the Great Wall and on the edge of the Loess Plateau, many Buddhist temples have been established in this picturesque, densely forested area (Fig. 6.18).

Cultural Features

In the Guancen Mountains where the Ningwu Hanging Temple is located, there exists predominantly the convergence of Buddhist, Taoist and Confucian religious beliefs. In almost every cluster of the Buddhist monasteries, Taoist temples can be found among them. Moreover, there are also Altar temple architectures, which are constructed based on the traditional Confucian principles. The Ningwu Hanging Temple is such an example of this "convergence of the three religions" pattern.

As the only Bodhimanda of Vairocana Buddha in China, the Guancen Mountains have been a place sacred to Buddhism since the Sui (581–618) and Tang (618–907) Dynasties, which is as famous as the Four Great Mountains of Buddhism in China, including Mount Wutai in Shanxi, Mount Putuo in Zhejiang, Mount Emei in Sichuan and Mount Jiuhua in Anhui. The Vairocana Buddha is venerated mainly by the Esoteric Buddhism and Tiantai Buddhist sects. Esoteric Buddhism enjoyed widespread popularity during the Tang Dynasty; thus, Buddhism in the Guancen Mountains flourished during this period as well, which means there once was a string of monasteries that stretched 20 km in length on Qingzhen Mountain. However, a series of disasters over the course of recent history, including fires and wars, severely compromised Buddhist activities on the Guancen Mountains. As a result many temples have either been destroyed or fallen into ruin (Hou 2003); many of these were repaired only in recent years.

Fig. 6.19 Monks practiced in the caves that dotted the cliff face. *Source* Photograph by Fan Yin

Fig. 6.20 The ancient plank road on the mountain. The road is hidden within the face of the cliff. *Source* Photograph by Fan Yin

The Guancen Mountains are primarily famous for the unique natural environment. Buddhist monks and disciples prefer to practice their reclusive self-cultivation in the places of natural beauty and far away from the secular world. Taking advantage of the seclusion afforded by dense forests and towering cliffs, a great number of temples have relocated here. Moreover, practitioners are partial to environments that are distinctive from the secular world (Fig. 6.19), so many ancient monasteries on the Guancen Mountains are built in caves or on peaks, which are connected by a 20 km ancient plank road (Fig. 6.20). This plank road is chiseled into the cliff side, which is extremely narrow and torturously winding (Fig. 6.21).

Fig. 6.21 Interior view of the ancient plank road. Chiseled into the cliff's face, the space is very constricted. *Source* Photograph by Fan Yin

Fig. 6.22 Viewed from afar, the Ningwu Hanging Temple appears to blend in with the mountain. *Source* Photograph by Fan Yin

Located in the middle of the ancient plank road, the Ningwu Hanging Temple is tucked away inside the folds of the mountain; architecture and cliffs are tightly integrated into one entity (Fig. 6.22). The main building of this temple is perched 50 m above the valley bottom, lying in the caves inside of the cliff-face. The front side of the temple hangs over the cliff's outer edge, supported by 10 wooden pillars embedded into the cliff (Figs. 6.23 and 6.24). In this manner, the greater part of the structure hugs closely to the cliff, whereas the temple's double-eave roof leans out.

Fig. 6.23 Looking up to the Hanging Temple from below, the temple is completely hidden in the mountain. *Source* Photograph by Fan Yin

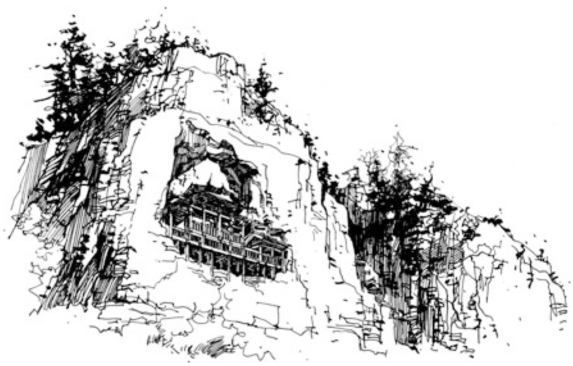


Fig. 6.24 The Ningwu Hanging Temple sits in a cliff-side cave. *Source* Drawing by Wen Zhang, provided by Yaogen Peng

The temple achieves a high level of integration with the surrounding rock and maintains the appearance of floating in the heights.

As a temple for the convergence of the three religions, the Ningwu Hanging Temple respectively houses the idols of Buddhist, Taoist and Confucian religions. The main hall of this temple has two floors, featuring a wooden structure of eight *kaijian* in width and two *jinshen* in depth. The first floor is dedicated to the worship of the Ksitigarbha Buddha, Guardian of the Earth, whereas the second floor is dedicated to the worship of the Jade Emperor, supreme deity of Taoism. The two religions will not interfere with each other. Furthermore, murals on the first floor that depict Buddhist, Taoist and Confucian figures further demonstrate the syncretism of the three religions.

The Ningwu Hanging Temple is connected to hanging coffins with the plank road. It is believed that the coffins hold deceased monks as well as individuals not granted burial in family graves. These hanging coffins were placed mostly in cool and dry locations, inside wallflowers or caves, and they appear in a number of different types, including cave-type, overhanging-type, plank road-type, cliff cave-type, and so on.

The Ningwu Hanging Temple spans thousands of years of Chinese history. Recently, carved pillars dating from the Tang Dynasty were unearthed near the temple, which suggests that the temple was probably used on a large scale under the Tang–the current main hall is only a small part of this temple that existed at that time (Hou 2003). In 2002, the Ningwu Hanging Temple was destroyed in a fire and later was rebuilt on the original site.

Extended Reading: Horst

Produced from the uplifting or bulging of rock that is squeezed between two parallel faults, a horst is a tectonic high terrain that varies in size; a large horst can extend for hundreds of kilometers. Horsts may or may not be apparent in the landform, but they usually give rise to the fault-block mountains or the horst mountains. As terrain is uplifted in the form of a horst, terrain on either

Fig. 6.25 Looking at the mountain from a distance. Here, the horst appears in the form of a fault-block mountain, which is formed through the earth's horizontal tectonic forces. *Source* Photograph by Fan Yin

side of the horst (provided it is flanked by two parallel faults) sinks to form graben. Together, these two landforms form the rising and falling graben-horst landscape, which is a product of horizontal tectonic forces (Zhou and Cheng 1991). One example of this landform is the Lüliang Mountains in northern China, which stem from the Guancen Mountains and near the Fenhe River Graben. Horsts generally have an inclination of 50°–70°, which may be caused by either normal faults or thrust faults. When two or more parallel normal defaults are similarly oriented, they decline and form a step fault. A mountain formed by a horst or ladder fault is called a fault-block mountain (Lü 2003) (Fig. 6.25).

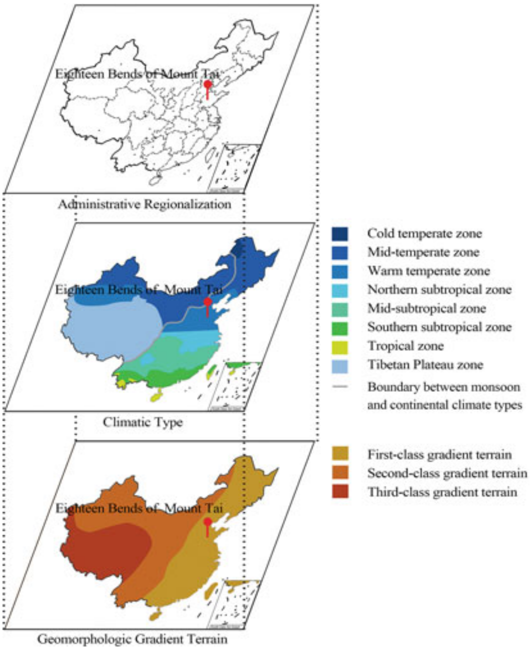
Geographical Interpretation

Located amid a patch of green on the edge of the Loess Plateau, the Ningwu Hanging Temple sits among the fault-block mountain, far away from the hubbub of the secular world. With its back to the mountain, the temple is tucked away within the cliff side, whose posture represents one's wish for reclusive self-cultivation.

6.4 Eighteen Bends of Mount Tai: Rising Straight up to the Sky

Location: Tai'an, Shandong Province
Key Geographical Concept: Following the contours of mountain features

As the last section of the path that ascends Mount Tai (Shandong), also named East Great Mountain, the Eighteen Bends winds its way through precipitous mountains. Climbing the path is just like climbing a ladder to the sky.



Geomorphologic Features
As a part of the Luzhong mountainous area formed by Mount Lu, Mount Tai, Qishan Mountain, Mengshan Mountain, and Culai Mountain, Mount Tai comprises a main peak and its surrounding hills that fall within the borders of the Tai'an area (Xu 1982) (Fig. 6.26). Known as the chief of the Five Great Mountains and consisting primarily of ancient granitic gneiss, Mount Tai rises from an open plain, towering in contrast to its surroundings (Editorial Committee on the Tai'an Municipal Records 1997) (Fig. 6.27). The Eighteen Bends, also called the "Sky Ladder" of Mount Tai, is the last section of the path that leads to the summit.

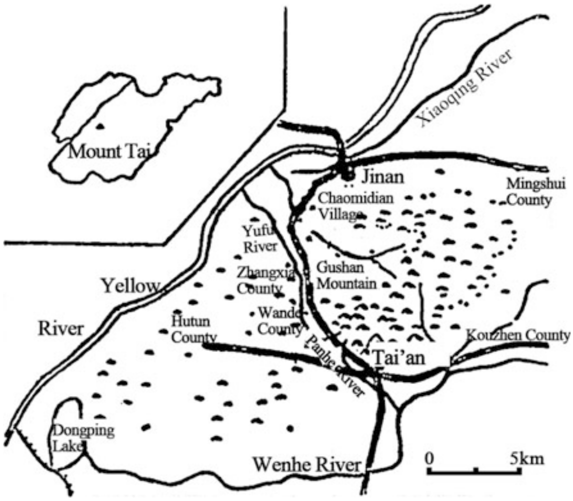


Fig. 6.26 Geographic location map of Mount Tai. The area is bounded by Mount Lu to the east, the Wenhe River Basin to the south, Dongping Lake to the west and the Yellow River to the north. Mount Tai is located in the southern area. *Source* Xu (1982: 4)

Fig. 6.27 Topographic typology of the Mount Tai region. A mountainous landscape mainly appears in the southern Mount Tai area. Low mountains cover a wide portion of this area and connect with the mountains to the south. Hills are located mostly in the north. A small amount of flat land is scattered between the mountains and hills as well as along the boundary of the Mount Tai area. The majority of terraces are found in these disperse, comparatively flat areas. *Source* Xu (1982: 54)

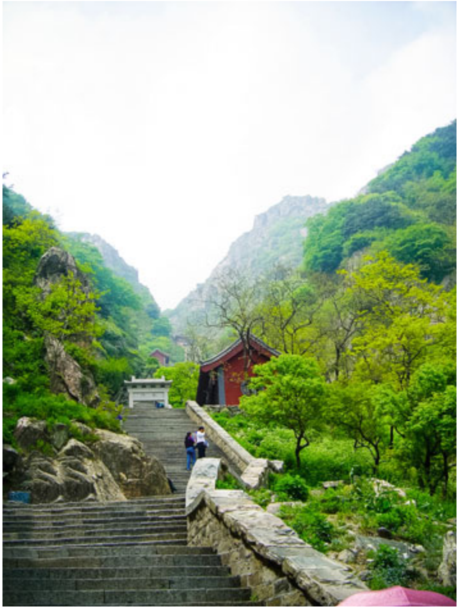


Fig. 6.28 The eighteen bends conforms to the mountain slope. The path snakes up the steep slope between the cliffs, which make it the steepest section of the route to the summit. *Source* Photograph by Qing Yu

Cliffs flank the path; the path snakes up the steep slope between them, which makes it the steepest section of the route to the summit (Fig. 6.28).

Cultural Features

There is a Chinese saying that "the Five Great Mountains[8] are the greatest among all mountains; Mount Tai is the greatest among these five." Because of its location in the eastern *Zhongyuan* region, Mount Tai is referred to as East Great Mountain (Li and Li 2007), which is also a famous cradle for Chinese culture. Traditions and

[8]**Five Great Mountains**, nicknamed as *wu yue*, which include Eastern *Yue* Mount Tai (Shandong), Western *Yue* Mount Hua (Shaanxi), Southern *Yue* Mount Heng (Hunan), Northern *Yue* Mount Heng (Shanxi) and Central *Yue* Mount Song (Henan). The name of *wu yue* has existed for a long time. The mountains are mentioned in China's foremost creation myth, in which the body of a great giant Pangu decomposes into the elements of the universe. The book of *Shu Yi Ji* writes of the Qin (221–207 BC) and Han (202 BC–220 AD) era version of the myth, "Pangu's head became the Eastern *Yue*, his belly the Middle *Yue*, his left arm the Southern *Yue*, his right arm the Northern *Yue*, his foot the Western *Yue*." The name of *wu yue* was first formally defined during the reign of the Han Emperor Wu although the term had previously existed as mentioned above. Over time the Five Great Mountains have developed into sites rich in historical and cultural connotation. Emperors routinely traveled to *wu yue* to worship heaven. Famous Figure s and intellectuals alike have also made a pilgrimage to these mountains. They have left in their wake poems and verses on the topic of *wu yue*, many of which later gained wide renown. The Five Great Mountains have also had a considerable influence on the establishment and evolution of Chinese culture over time. Thus, *wu yue* is known as famous cultural mountains. Reference: Li and Li (2007).

Fig. 6.29 Apart from its spectacular natural beauty, Mount Tai is also a treasure trove of cultural heritage. Numerous works of calligraphy left by prominent individuals over the years adorn the rocks along the path. *Source* Photograph by Qing Yu

relics of the *Longshan* culture[9] and the *Dawenkou* culture[10] originated to the north and south, respectively, of Mount Tai (Xu 1982). Contributing to the deification of the mountain, the First Emperor of China Qin Shi Huang (reign 246–210 BC) in the Qin Dynasty and the Han Dynasty Emperor Wu (reign 140–87 BC), who was the most powerful Han emperor, as well as many other rulers over the course of Chinese history all visited Mount Tai to perform sacred ceremonies and offer sacrifices to heaven and earth. At the Dai Temple, rulers worshipped the Deity of Mount Tai. Numerous famous individuals and intellectuals have left their marks on this place in the form of verses and poems (Fig. 6.29).

Known as Daishan Mountain in ancient times, Mount Tai now is considered the chief of the Five Great Mountains. On a visit to Mount Tai, Du Fu (712–770), a prominent poet of the Tang Dynasty (618–907), composed the famous verse, "How great is Mount Tai? It is green spans across the former nations of Qi and Lu… Someday I will climb up to the top and overlook the short mountains all around." Its summit, Yuhuang Peak, has an altitude of 1,545 m, while other peaks are also quite tall, all approximately 1,000 m in elevation, significantly higher than many of China's other mountains. Many peculiar landforms result from Mount Tai's unique

[9]***Longshan* culture** refers to the cultural relics in the region of the middle and lower reaches of the Yellow River in China in the late Neolithic dated from approximately 3000 to 2000 BC and is characterized by black pottery.

[10]***Dawenkou* culture** is a Neolithic culture dated from 4100 to 2600 BC in China, primarily centered in Shandong Province, but it was also found in Anhui, Henan, and Jiangsu Provinces. A large number of valuable turquoise, pottery, jade and ivory artifacts were found at the relics.

geology and evolutionary process. As the representative of mountain worship culture in China, Mount Tai was quite important to the development of the Chinese cultural landscape. Furthermore, human activity there could date back several thousand years. Many historical relics date back to primitive religions and the worship of heaven and earth from the Qin (227 BC) and Han (202 BC–220 AD) Dynasties.

Extended Reading: Famous Mountains Offering Sacrifice to Heaven and Earth

Offering sacrifice to heaven and earth was a worship ceremony which occurred at Mount Song (Henan) and Mount Tai (Shandong) among the Five Great Mountains by the ancient emperors. This ceremony was a sacrificial ritual on a large scale that outranked any other ceremony, including imperial coronation (Tang 2003). It dated back to the time of Qin Shi Huang, the First Emperor of China, and then it was practiced by nearly every emperor who followed him. Although the ceremony was also performed on Mount Song, it was primarily performed on Mount Tai, which had more influence for the following reasons. In the ancient Chinese legend, as East Great Mountain, Mount Tai was said to have come from the head of the great giant Pangu[11] as the protection for eastern China; also, this mountain greeted dawn earliest and thus is called "the chief of the Five Great Mountains." (Tang 2003). When the Tang Dynasty Emperor Xuanzong (reign 712–756) held this ceremony in the 13th Kaiyuan year (725), he proclaimed the Deity of Mount Tai to be Tianqi King. In the first Dazhongxiangfu year (1008) of the Song Dynasty, Emperor Zhenzong (reign 997–1022) added the title of Ren Tianqi King to the mountains, and in the fifth Dazhongxiangfu year (1012) it was proclaimed the Ren Tianqi Emperor. The development of this sacrifice ceremony represented the prosperity of worship activities atop famous mountains and indirectly promoted the construction of paths and sacrifice temples on such mountains.

The Eighteen Bends is the most difficult and dangerous section of the path on Mount Tai (Fig. 6.30). Actually, there are three parts of path called the "Eighteen Bends" on Mount Tai. An ancient saying goes, "Hurry Eighteen Bends, slow Eighteen Bends, neither-hurry-nor-slow Eighteen Bends," which highlights the distinct characteristics of the three routes. As the steepest one among them, "the Hurry Eighteen Bends" is always simplified as "Eighteen Bends," which is also known as the "the Sky Ladder" of Mount Tai and is located between the Shengxian *Paifang* and the Nantian Gate (Fig. 6.31). Among the over 7,000 steps that lead up Mount Tai, there are 1,600 in the Eighteen Bends alone, with an inclination

[11]**Pangu**, the person who separated heaven from earth according to Chinese legend.

Fig. 6.30 The Eighteen Bends spanning a valley and leading to the Nantian Gate. *Source* Drawing by Wen Zhang, provided by Yaogen Peng

Fig. 6.31 Each section of the path that leads to the summit of Mount Tai has its own distinctive feature. Along the meandering pathway, the Eighteen Bends brings the tourists an ever-changing view of the mountain’s majestic scenery. *Source* Photograph by Qing Yu

of 70°–80°. Over less than one kilometer, there is an increase of 400 m in altitude (Fig. 6.32).

The Eighteen Bends is hundreds of years old. A bridge and a winding mountain path were once built here during the reign of Emperor Wanli (1573–1620) of the Ming Dynasty, which led to the South Deity Gate of the Bixia Ancestral Temple and formed a shortcut to the summit of Mount Tai. However, the bridge and original path were destroyed during the reign of the Qing Dynasty Emperor Qianlong (1736–1795), which resulted in the building of the Eighteen Bends. The Eighteen Bends snakes up the steep valley and connects the base of Mount Tai to its summit (Fig. 6.33).

Fig. 6.32 The path becomes increasingly steep as it approaches the Nantian Gate, standing nearly erect. *Source* Photograph by Hongjie Zhao

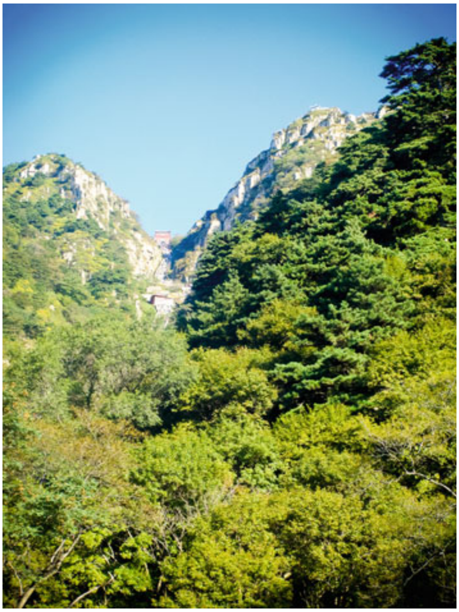


Fig. 6.33 The Eighteen Bends is located in a sharp, nearly v-shaped valley, and its design cleverly conforms to the mountain slope. *Source* Photograph by Yu Pei

The Eighteen Bends is the last section of the path to the summit of Mount Tai. Tourists can reach the Nantian Gate and the summit through the Gate of the Mount Tai Deity, Wangmu Pond, the Hongmen Palace, the Wanxian House, and the Doumu Palace from the Dai Temple (Xu 1982). The Nantian Gate, which sits at the apex of the valley, marks the end of the Eighteen Bends (Figs. 6.34 and 6.35). Looking up at the Nantian Gate, the Eighteen Bends appears to hang as if suspended from the gate in the manner of a rope ladder. Throughout the course of the ascent, Nantian Gate constantly appears up ahead, providing hikers with the illusion that this gate is near at hand (Fig. 6.36).

Fig. 6.34 A landmark of Mount Tai, the Nantian Gate was originally built during the Yuan Dynasty (1271–1368). *Source* Photograph by Hongjie Zhao

Fig. 6.35 The Sky Street Stone *Paifang* at the Nantian Gate. Sky street between the Nantian Gate and the West Deity Gate of the Bixia Ancestral Temple began to prosper in the Qing Dynasty (1644–1911). In the past, pilgrims who offered incense to the Buddha stayed here, and now there are many shops. *Source* Photograph by Hongjie Zhao

Fig. 6.36 As the most difficult section to the summit of Mount Tai, The Eighteen Bends wind upwards the steep valley and ends with the Nantian Gate at the mouth of the valley. *Source* Photograph by Xing Wang and Chenchen Wang

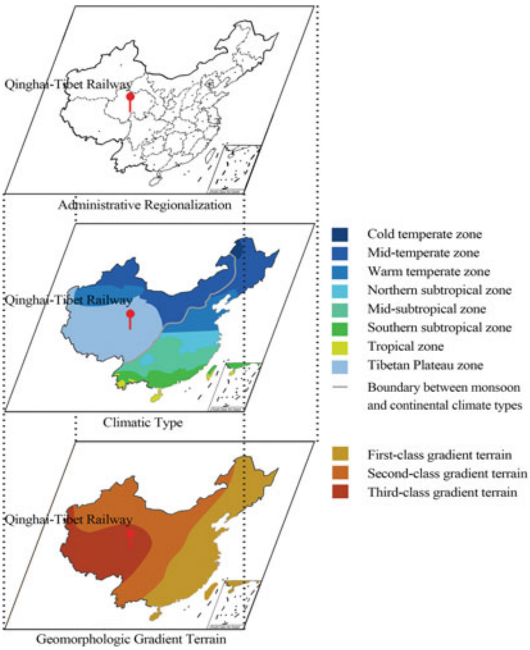
Geographical Interpretation

The Eighteen Bends of Mount Tai conforms to the mountain slope, cleverly inserted in the crevice of a steep valley. Thousands of stone steps on the way create a mysterious and spiritual atmosphere and give the climbers a sense that these stairways lead to the sky. As the last section of the path to the summit, the Eighteen Bends reflects the culture of mountain worship that was once prevalent in China.

6.5 Qinghai-Tibet Railway: Miraculous Pathway to Heaven

Location: Qinghai Province and Tibet Autonomous Region
Key Geographical Concept: Extreme plateau environment

The geographic features of the plateau brought many challenges for the construction of the Qinghai-Tibet Railway, among which the greatest difficulty was the permafrost. The permafrost here caused thaw collapsing, frost heaving and other damage to the track bed during the course of the construction. The builders of this railway overcame the climate and topographic challenges and accomplished this great project.



Geomorphologic Features

Located in southwestern China, the Tibetan Plateau covers an area of some 1,220,000 km^2 and stands approximately 4,000 m above sea level, which is also known as the Roof of the World.[12] The Qinghai-Tibet Railway departs from Xining

[12]Website of the People's Government of Tibet Autonomous Region: http://www.xizang.gov.cn/getCommonContent.do?contentId=342222.

Fig. 6.37 The Qinghai-Tibet railway at from the Xining railway station. *Source* Photograph by Ye Shen

Fig. 6.38 The Lhasa railway station, the terminus of the Qinghai-Tibet railway. *Source* Photograph by Yabin Song, provided by Xiufeng Yu

(Fig. 6.37) through various geomorphologic types—the inclined fluvial plain near the southern mountains of the Qaidam Basin, the river valleys in the Kunlun Mountains, and the Northern Tibetan Plateau and valleys (Ma et al. 2007)—and finally arriving at Lhasa (Fig. 6.38). Except for one section, which runs from Golmud to the Nanshankou Railway Station along the border of the Qaidam Basin, the other sections of the railway sit entirely on the Tibetan Plateau, with an average altitude of 4,500 m. The plateau environment brought many challenges to constructing the Qinghai-Tibet Railway, among which the greatest difficulty was the permafrost.

Climatic Features

Located primarily within the plateau hinterland, which has a unique periglacial cold climate, the Qinghai-Tibet Railway also passes through the oceanic climate zone south of the Tanggula Mountains and the inland arid climate zone north of the

Qaidam Basin. With the increasing altitude, there is an obvious vertical differentiation in climate (Ran 2002). On the Tibetan Plateau, the air becomes thinner, humidity declines and sandstorms increase in size. These climate conditions readily give rise to permafrost and underground ice (Cheng and He 2001). This fragile ecological environment made constructing the Qinghai-Tibet Railway extremely difficult.

Vegetation Features

The railway passes through multiple ecosystems, including alpine meadow, grassland, desert, brush and alpine vegetation (Figs. 6.39, 6.40 and 6.41), and the railway negatively affects these ecosystems. The most obvious environmental impact is making the surrounding ecosystems more fragmented. Furthermore, vegetation within a 50-m buffer along the railroad is prone to damage (Chen et al. 2003). To reduce its influence, the engineers designed the wildlife corridors across the railroad at certain points to protect local animals (Fig. 6.42). Other efforts were

Fig. 6.39 The Qinghai-Tibet railway goes via a desert, which was one of the obstacles to its construction. *Source* Photograph by Ye Shen

Fig. 6.40 Alpine vegetation by the side of the railroad becomes thinner as altitude increases. *Source* Photograph by Ye Shen

Fig. 6.41 Adiesel locomotive train passing through the Qinghai-Tibet railway route. Vegetation along the rail is sparse and short, and the ecosystem is quite fragile. *Source* Photograph by Zhiguo Zheng, provided by Jiali Zhou

Fig. 6.42 Wildlife corridors flank the railroad tracks, an effort to prevent local animals from crossing the tracks. *Source* Photograph by Ye Shen

Fig. 6.43 The railroad extends to the horizon, which serves as a transportation artery for the area and increases the speed of freight transportation between Qinghai and Tibet. *Source* Photograph by Zhiguo Zheng, provided by Jiali Zhou

made as well to restore the damaged ecosystems through vegetation regeneration and ecological water use (Liu et al. 2007).

Cultural Features

The Qinghai-Tibet region has unique religious culture and ethnic characteristics. As a strategic policy to develop western China (Fig. 6.43), the construction of the Qinghai-Tibet Railway greatly increased the efficiency of transporting goods and

Fig. 6.44 Mani field along the Qinghai-Tibet railway. Stones are engraved with the six-syllable Mantra, the all-seeing eye and the images of Buddha as well as other auspicious patterns. *Source* Photograph by Ye Shen

materials and has promoted local tourism as well as cultural exchange with other regions (Fig. 6.44). Thus, this railroad plays a quite important role in the railway network of Tibet Autonomous Region.

The Qinghai-Tibet Railway is higher in altitude than any other in the world. Along its 1,956-km route, the railroad crosses the Kunlun, Hoh Xil, Fenghuo, Tanggula, Nyainqentanglha Mountains and the Kunlun, Chumaer, Tuotuo, Buqu, Tongtian, Salween and Yarlung Zangbo Rivers (Figs. 6.45 and 6.46). Because of these extreme topographical conditions, a tremendous amount of engineering was required to construct this railroad. The section between Xining and Golmud, 814 km in length, was already open for use in the 1980s. The section between Golmud and Lhasa, however, was a project of greater difficulty that began on June 29, 2001 and was completed on July 1, 2006. A full 960 km of the railway lie above the altitude of 4,000 m, among which the highest section is near Mount Tanggula Puerto, with an altitude of 5,072 m (Fig. 6.47).

Fig. 6.45 The Hoh Xil national natural reserve. A statue signifying the protection of the Tibetan antelope stands with a sutra streamer to the left. *Source* Photograph by Ye Shen

Fig. 6.46 A section of the railroad in the territory of Dangxiong, Lhasa, Tibet. This photograph was taken in August 2005, before the completion of the railroad, with Mount Nyainqentanglha in the background. *Source* Photograph by Wangmu

Fig. 6.47 The bridge at the Kunlun Mountains has an altitude of 4,767 m. *Source* Photograph by Zhiguo Zheng, provided by Jiali Zhou

To build such a railway leading to the Roof of the World, engineers had prepared the upfront work of survey and design for many years. The earliest survey was undertaken in 1955, but serious consideration of the railway construction did not begin until the 1970s. In 1984, the first phase of the project connecting Xining to Golmud was completed, and the whole railway was entirely completed in 2006, which achieved the dream of extending a railroad to the Tibetan Plateau—the Roof of the World (Fig. 6.48).

The plateau environment raised many challenges for the construction. Apart from the impact of oxygen deficiency on the construction workers, the plateau's permafrost and the fragile ecosystem (Fig. 6.49) were the other two greatest impediments to the construction process.

As a geomorphologic phenomenon unique to the high attitude areas, permafrost occurs when water in the soil freezes due to low temperatures. Railroad tracks need support from the track bed. If a track bed is constructed on the top of permafrost, there is a considerable risk that the permafrost will thaw as the temperature rises,

Fig. 6.48 This section of the Qinghai-Tibet railway crosses a large valley by way of the Sancha River Bridge. There are a number of diverse geological environments along the railway. One bridge, over 690 m in length and 54 m above the bottom of the valley, was a massive construction project of the tallest railroad bridge along the Qinghai-Tibet Railway. *Source* Photograph by Zhiguo Zheng, provided by Jiali Zhou

Fig. 6.49 Contiguous sand dunes and sandy desertification land were two more difficulties in the railway construction. Walls were built along the line to prevent wind-blown sand from burying the railway. *Source* Photograph by Ye Shen

leading to the possibility that the track bed will not be able to support the railroad tracks anymore. As the temperature falls again, the soil may expand and form frost heaves that can significantly damage the railway. Other geomorphologic features also threaten the construction, such as the ice cones, frost heave hills, landslides and thermo karst lakes (Ran 2001). The Qinghai-Tibet Railway transverses 550 km of the permafrost area, 82 km of which is made up of discontinuous permafrost islands. Thus, the greatest challenge to engineers was how to ensure the stability of the permafrost and avoid the potentially harmful impact of its freezing and melting. Many efforts were made to solve these problems. For some areas, engineers elevated the track bed, allowing the topsoil to act as a natural insulating layer.

In others, engineers buried a layer of artificial thermal insulation under the track bed. Air ducts were inserted into the ground to lower the soil temperature, and gravel track beds provided the permafrost with additional insulation (Fig. 6.50). The track bed and revetment primarily consist of ripraps. Spaces between the broken stones allow air in so that convection occurs, which in turn maintains the stability of the permafrost beneath the track bed and blocks the influx of external heat (Ma 2003) (Fig. 6.51). Another method of avoiding this issue was to build bridges, which were able to avoid laying the track bed directly on the unstable permafrost and thus ensure the safety of the railroad (Fig. 6.52).

Fig. 6.50 The elevated gravel track bed is intended to preserve the stability of the ground temperature. *Source* Photograph by Yabin Song, provided by Xiufeng Yu

Fig. 6.51 The structural use of riprap for revetment and track beds can be seen over 80 % of the railway, which protects the railway from the potential damage due to the sinking and swelling of the permafrost below. *Source* Photograph by Ye Shen

Fig. 6.52 In the unstable permafrost zone, the railroad runs above the ground on a viaduct that isolates the tracks from the volatile surface below. *Source* Photograph by Zhiguo Zheng, provided by Jiali Zhou

Extended Reading: Permafrost

Soil that contains ice at the temperature near or below freezing is called frozen soil or permafrost; according to the length of freezing time, it can be divided into seasonal frozen soil and permafrost. Seasonal frozen soil refers to a type of soil that freezes in winter and melts in summer, whereas permafrost does not melt for many, even thousands of years. The biennial frozen soil is the transitional type between the above two types, which freezes in winter and does not thaw for one or two years. The permafrost has two layers, the upper of which alternately freezes and melts in different seasons, whereas the bottom layer remains frozen for years. In the plateau and mountain regions, if the climate falls within the continental climate zone with little precipitation, and the ground here usually remains at freezing or near-freezing temperatures, it is quite possible that permafrost will form (Departments of Geography in Peking University et al. 1978). This type of soil is very sensitive to temperature, and its temperature variation tends to be more intense over shorter time scales, which brings to the railway a significant risk of frost heave and thaw collapsing (Fig. 6.53). The permafrost is mainly distributed in China's northeast and western mountainous areas.

Among the permafrost zones, the soil layer in the Tibetan Plateau is the widest, thickest and highest in altitude, with an average elevation of more than 4,000 m. It extends north to the Kunlun Mountains, south to the Himalayas, and west to China's borders, adjacent to the Hengduan

Fig. 6.53 A large number of railway bridges were constructed to avoid the negative impacts of the permafrost upon the railroad. *Source* Drawing by Liu Zhang, provided by Yaogen Peng

Mountains, Mount Bayankala and Mount Anemaqen in the east. Moreover, due to the topographic changes in the Tibetan Plateau, the distribution of the permafrost decreases progressively from north-northwest to south-southeast.

Environmental issues were also made a priority in the project, and various measures were taken to avoid the negative impact on the fragile existing plateau environment. The vegetation on the Tibetan Plateau grows slowly, and once destroyed, it is extremely difficult to restore (Fig. 6.54), and damage to the vegetation was unavoidable during the construction. In an effort to mitigate that damage, vegetation along the railroad was transplanted to nearby areas, and paths were built across the railroad to facilitate local wildlife migration. In this project, over two billion RMB of project funding was allotted for the environmental protection measures at that time, and an environmental management system was introduced that was the first time for a Chinese engineering construction project.

Fig. 6.54 Looking at the Qinghai-Tibet highway from the Qinghai-Tibet railway. The main vegetation type along the railway is alpine meadow, which is quite short and difficult to restore after being destroyed. *Source* Photograph by Yabin Song, provided by Xiufeng Yu

Despite these challenges, the Qinghai-Tibet Railway was not only completed relatively quickly but also captured a number of world records: it is the highest and the longest railway in the world; the Fenghuo Mountain Tunnel is the highest alpine frozen soil tunnel in the world; the Kunlun Mountains Tunnel is the world's longest rail tunnel; and the Tanggula Mountain Station is the world's highest train station. Serving as a transportation artery for the Tibet region, the Qinghai-Tibet Railway carries the hopes of promoting local economic development and displays the wisdom of human beings.

Geographical Interpretation

The Qinghai-Tibet Railway passes through many types of landforms, including plains, river valleys and plateaus. During its construction, the railroad faced a number of obstacles arising from the periglacial cold climate characterized by vertical variation, the fragile surrounding ecosystem and, most significantly, the permafrost. Faced with all of the difficulties, the engineers used a series of innovative techniques and successfully extended the rail to the Roof of the World.

References

Archives of Nanjing, Bureau of Sun Yat-Sen Mausoleum. (1996). *The collection of historical relics pictures of Sun Yat-Sen Mausoleum*. Nanjing: Jiangsu Ancient Books Publishing House (in Chinese).

Archives of Nanjing, Management of Sun Yat-Sen Mausoleum. (1986). *Selected archives of Sun Yat-Sen Mausoleum*. Nanjing: Jiangsu Ancient Books Publishing House (in Chinese).

Chen, H., Li, S. C., & Zheng, D. (2003). Features of ecosystems alongside the Qinghai-Xizang highway and railway and the impacts of road construction upon these ecosystems. *Journal of Mountain Science, 21*(5), 559–567 (in Chinese).

Cheng, G. D., & He, P. (2001). Linearity engineering in permafrost areas. *Journal of Glaciology and Geocryology, 23*(5), 213–217 (in Chinese).

Departments of Geography in Peking University, Nanjing University, Shanghai University, Lanzhou University, Hangzhou University, Northwest University and Sun Yat-sen University. (1978). *Geomorphology*. Beijing: People's Education Press (in Chinese).

Editorial Committee on the Huayin County Records. (1995). *Huayin county records*. Beijing: China Writers Publishing House (in Chinese).

Editorial Committee on the Ningwu County Records. (2001). *Ningwu county records*. Beijing: Red Flag Press (in Chinese).

Editorial Committee on the Tai'an Municipal Records, Shandong Province. (1997). *Tai'an municipal records*. Jinan: Qilu Press (in Chinese).

Editorial Committee on the Vegetation Maps, Chinese Academy of Sciences. (2007a). *Vegetation map of China* and *its geographic pattern: Illustration of the vegetation map of the People's Republic of China* (*1: 1,000,000*) (Vol. I). Beijing: Geological Publishing House (in Chinese).

Editorial Committee on the Vegetation Maps, Chinese Academy of Sciences. (2007b). *Vegetation map of China* and *its geographic pattern: Illustration of the vegetation map of the People's Republic of China* (*1: 1,000,000*) (Vol. II). Beijing: Geological Publishing House (in Chinese).

Editorial Committee on the Vegetation Maps, Chinese Academy of Sciences. (2007c). *Vegetation map of the People's Republic of China* (*1: 1,000,000*). Beijing: Geological Publishing House (in Chinese).

Editorial Committee on the Xuanwu District Records, Nanjing City. (2005). *Xuanwu district records*. Beijing: Chorography Publishing House (Fangzhi Publishing House) (in Chinese).

Fan, F. Z. (2004). *A history of Sun Yat-sen Mausoleum*. Nanjing: Nanjing Publishing House (in Chinese).

He, Y. N. (2005). The steepest of the five mountains: Huashan mountain. *Modern Sciences,* (4), 52–53 (in Chinese).

Hou, W. Z. (2003). *The Guancen mountains records*. Taiyuan: Shangxi People's Publishing House (in Chinese).

Lai, D. L. (2007). *Studies in modern Chinese architectural history*. Beijing: Tsinghua University Press (in Chinese).

Li, Z. H., & Li, N. J. (2007). *Discovering wu yue*. Jinan: Shandong Pictorial Publishing House (in Chinese).

Liu, H. J. (2007). *The manner and application for "pilgrim's process" thought in Chinese famous* mountain*s*: (Dissertation for Master). Xi'an: Xi'an University of Architecture and Technology (in Chinese).

Liu, L. H., Li, Y. Z., & Kang, F. F. (2007). Preliminary study of ecological-recovery technology used in railway construction in a plateau region: Taking Geermu-Tanggulashan part of the Qinghai-Tibet Railway as a case study. *Research Soil and Water Conservation, 14*(1), 310–312 (in Chinese).

Lu, S. (2007). *The study of ancient Chinese architecture*. Beijing: Intellectual Property Publishing House (in Chinese).

Lü, H. J. (2003). *Geology and geomorphology*. Beijing: Science Press (in Chinese).

Ma, W. (2003). Executive vice-director of the national key laboratory for permafrost engineering, Chinese academy of sciences. Xinhua Net. http://news.xinhuanet.com/newscenter/2003–11/15/content_1180235.htm. Accessed November 15, 2003.

Ma, T., Zhou, J. X., Zhang, X. D., Batur, B., & Li, D. X. (2007). Preliminary studies on characteristic of vegetations distribution along the line of the Qinghai-Tibet railway. *Soil and Water Conservation Research, 14*(3), 150–154 (in Chinese).

Management Committee of the Premier Minister's Mausoleum (The Republic Era). (2008). *Report of the management committee of the Premier Minister's Mausoleum*. Nanjing: Nanjing Publishing House (in Chinese).

Pan, G. X. (2001). *History of Chinese architecture* (4th ed.). Beijing: China Architecture & Building Press (in Chinese).

Quan, W. (2007). *Interactive relations studies on locations of mountains and waters with Nanjing City construction in early ming dynasty* (Dissertation for Master). Xi'an: Shaanxi Normal University (in Chinese).

Ran, L. (2001). Design and research of the railway on the Qinghai-Tibet Plateau. *China Railway Science, 22*(1), 16–22 (in Chinese).

Ran, L. (2002). The Qinghai-Tibet Railway and environmental protection. *Chinese Railways,* (12), 47–49 (in Chinese).

Tang, G. R. (2003). *The Fengshan ceremony and sacrifice on Mount Tai*. Jinan: Qilu Press (in Chinese).

Wang, Y. M., Zhou, N. F., & Li, J. H. (1994). Rock constitution feathers and their geological genesis of scenery mountains in China. *Journal of Teachers College of Shanxi University,* (3), 306–312 (in Chinese).

Wang, B. S., Yang, R., & Zheng, G. Z. (2001). The protection and use for the landscape resources in Mount Tai. *City Planning Review, 25*(4), 76–78 (in Chinese).

Xu, B. J. (1982). *Mount Tai*. Beijing: Science Press (in Chinese).

Yang, B. D., & Cai, M. (2004). *A concise history of modern Chinese architecture (1840–1949)*. Beijing: China Machine Press (in Chinese).

Yi, J. S., Mao, X. L., & Zhang, L. (2006). *The city of mountains and rivers: A trip through Nanjing's history and culture*. Beijing: Zhonghua Book Company (in Chinese).

Zhou, C. H. (2006). *A dictionary of geomorphology*. Beijing: China Water & Power Press (in Chinese).

Zhou, C. Z., & Cheng, S. (1991). *Dictionary of earthquake*. Shanghai: Shanghai Lexicographical Publishing House (in Chinese).

Part III
Integration and Isolation

Turpan Karez System.
Source Photograph by Bin Huang

Chapter 7
Introduction

Natural environments and cultures vary considerably across different regions and different eras. They interact with each other and have a profound influence on human activity. There are incredibly diverse natural environments in the world, and human activity produces similar diversity in the form of multi-tiered groups of culture. These different cultural activities, religious beliefs and even societal forms intermingle, spread and overlap in space. When different cultures collide, some integrate harmoniously, but others experience conflict and mutual rejection.

In the face of such wildly different natural and human environments, building activity has always been an important way for human beings to remold geography to meet their needs for integration and isolation. At times, it may be necessary to isolate connected spaces and, at other times, to connect isolated spaces.

7.1 Cultural Geographic Origins of Integration and Isolation

In naturally formed valleys, man-made structures have altered the isolation and integration of natural patterns. These structures were built to overcome inconvenience or to separate different groups from one another.

F. Wang, *Geo-Architecture and Landscape in China's Geographic and Historic Context*, DOI 10.1007/978-981-10-0483-4_7

7.1.1 Overcoming Disadvantageous Natural Conditions

Man's first impulse to remake his natural surroundings stemmed from the need to overcome natural inconvenience, such as transportation barriers and extreme weather. From fables such as "the Foolish Old Man Removes the Mountains,[1]" we can understand the desire and determination of people to reshape the natural surroundings in low-productivity societies.

(1) Introducing Resource

In mountain areas, transportation difficulties are a primary consideration. The natural environment limits local production activities. To acquire life's basic necessities, these people living in such areas must maintain contact with the outside world. Roads that connect to surrounding areas and water routes that afford the direct import of resources are both very important types of engineering projects for these areas. Roads may provide closed mountain areas with access to resources, thereby improving the local standard of living. In ancient times, however, waterways were more important because they had a much higher transportation capacity for goods than roads.

In the Sui (581–618) and Tang (618–907) Dynasties, workers rebuilt two massive canals as backbones of the water transport system built in the Qin (221–207 BC), and Han (202 BC–220 AD) Dynasties. With the capital cities of Chang'an (now Xi'an) and Luoyang as central nodes, the canals were extended, breaking through the Qin Mountains and Taihang Mountains to connect the capitals with prosperous eastern regions, supplying the cities with resources and wealth brought in from the regions of Jiangsu and Anhui. Similarly, during the Ming (1368–1644) and Qing (1644–1911) Dynasties, the Beijing-Hangzhou Grand Canal was dredged anew to allow the lumber shipments for the Beijing construction and the products transported from the rich and prosperous *Jiangnan* region to northern China later on. In addition, projects for connecting also helped the development of the regions lacking resources. For example, the Turpan Karez System brings drinking water from snow mountain areas to parts of the Gobi desert in Sinkiang Uygur Autonomous Region. It also supplies water for production, enabling civilization to prosper in the desert area throughout the ages.

(2) Information Communication

There is another type of connective structure that is not only used to obtain resources from the outside world but is intended for outbound transportation as well. For the purpose of maintaining broader contact with the outside and a yearning to relinquish the isolation of a closed state, there are many types of constructions, such as a straight, unadorned road such as the Dong Minority Wind

[1]**Foolish Old Man Removes the Mountains** is a famous fable from Chinese mythology about a man nicknamed the Foolish Old Man who wanted to remove the mountains; he impressed the celestial beings in heaven with his perseverance and willpower, and at last, the celestial beings helped in separating the mountains.

and Rain Bridge, which shelters travelers from the rain, be they traveling visitors or returning hosts.

The Silk Road is another example of a man-made structure that connects China both internally and externally. For a long period of history, the Silk Road served as a bridge between eastern and western markets, a testament to peaceful trade between the two worlds. This trade, no matter the export of silk or the (import of western equipment, leaves behind interaction traces between far-flung groups of people. The road also helped to open a window for interchange between cultures separated by great distance.

7.1.2 Isolation: In Pursuit of Homogeneity

In contrast to the desire to remold due to inconvenience, people have the self-isolation instinct for the purpose of self-defense in the face of strange or uncomfortable surroundings. It is this instinct that drives people, once again through remolding their natural surroundings, to isolate themselves from the outside world to preserve the peace of internal balance.

The notion of intentional self-isolation is not a new one in Chinese culture and philosophy. Intellectuals in ancient times, especially since the Eastern Jin Dynasty (317–420), considered the idea of living in seclusion or hiding in the forest as quite attractive. When the idea of "Reaching Success while maintaining Concern for the World" proves difficult, intellectuals suffice themselves with a lifestyle of self-discipline despite adversity, which often involves secluding themselves from society at large. The concept of "Peach Blossom Land[2] Utopia" also arose from this philosophy of self-isolation.

When the desire for isolation is reflected in architecture, some unique forms and functions are produced. Gradually stripped of their original context, these works appear curious to the modern eye. Their existence is testament to a cultural group's external isolation and self-protection. Today, although the force that wished to resist isolation has disappeared, the architectural forms and cultural symbols have been preserved.

(1) Cultural Exclusivity

Geographic isolation and diversity give rise to cultural heterogeneity, so different geographical areas become home to different cultural spheres that differ in customs or belief systems. They often exert influence on each other when they come into contact, especially when the predominant cultures overlap (Wang 1989). This

[2]**Peach Blossom Land** (Mandarin: *shi wai tao yuan*), a fictitious land of peace off the beaten path, first appeared in a well-known ancient Chinese essay, *Peach-Blossom Spring*, written by Tao Yuanming (approximately 365–427) during the Eastern Jin Dynasty (317–420). The name is often used to describe an unspoiled wilderness of great beauty away from the turmoil of the world.

process of mutual influence may be tempered and peaceful or an ember that sparks violent conflict.

When conflict does occur, the cultural group in a weaker position will seek to protect itself by establishing a place of residence isolated from the outside world. This need for self-defense is shown by closed architectural forms, such as the Hakka earthen buildings and the city wall of the Great Wall. These types of windowless, high walls are imposing–they seem to announce an explicit rejection of the outside world. In this sense, the posture of China's Great Wall was suppressive to the ethnic minority in eastern and northern regions. Forts may be the same size as small villages. They are located in dangerous areas and built to be impregnable with the singular purpose of providing protection through isolation (Wang 2003). In effect, the massing, materials and form of the architecture are able to create a kind of geographic isolation that protects an internal culture from outside influence.

The Hakka earthen buildings are possibly the most typical examples of architecture of isolation, their enclosed tall, thick walls creating insulation between the Hakka people and the world beyond. Culturally speaking, using architecture to create isolation in a multi-cultural environment stems from the mind of fear of the other on one hand and cultural elitism on the other. Fear engenders an instinctive desire for self-enclosure and self-protection, while cultural elitism, in the form of scorn for other neighboring cultures, leads to intensified self-isolation for the sake of preserving an uninterrupted bubble within which a culture can flourish uninterrupted. When the ancestors of the Hakka originally migrated southward from *Zhongyuan* to the subtropical mountain region, they were not accustomed to the climate and entered into the midst of a socio-political conflict among the peoples who already inhabited the area at that time (Liang 2003). In the face of foreign, hostile and unstable surroundings, the Hakka opted to live clustered together and attempted isolation from the rest. This self-enforced seclusion was both a type of self-protection from outside harm as well as a kind of preservation of the Hakka's prided internal culture. Thus, many earthen buildings with thick walls and high windows appeared, and they were intensely introverted: they formed a residential area that allowed the Hakka to live as isolated as possible from the world beyond.

(2) Frozen in Time

Another form of isolation moves beyond geographic separation. This special case of cultural isolation is, in essence, a dislocation in time and a temporal detachment from the outside world caused by extended physical seclusion. In addition, cultural customs are always lasting; after the architectural environment changes considerably, these customs and habits still persist for a period of time, appearing indomitable. This has been regarded as the persistence of vision phenomenon in the field of psychological aesthetics (Sun 2004). Examples of this phenomenon are found mostly in mountain villages that are isolated by their natural environments as well as their residential cultures. One example is the Tunpu villages, located in Anshun, Guizhou Province. They are made of stone, which is readily available in the Tunpu area and resistant to attack. However, the shapes and structures of buildings can also be found as mimics in the *Zhongyuan* region, becoming living fossils of

Zhongyuan architectural forms. Originally, the Tunpu villages were frontier military barracks with soldiers who had traveled from *Zhongyuan* to guard the border against barbarian invasion in the Ming Dynasty (1368–1644). Tunpu therefore possessed a pronounced defensive character and an isolated stature on the border. These features helped to uniquely preserve the Ming customs, village layouts and architectural forms.

7.2 To Integrate and to Isolate

People reshape their natural and human environments primarily through activities that involve the establishment of new things. Humans build on existing geography to achieve integration or isolation, whether physical or cultural. From these activities, integration or isolation of different social forms arises.

7.2.1 Physical Integration and Isolation

For material exchange, people build physical architecture forms for transportation to create integrations on land or water.

(1) Water Conservation Projects

The Yangtze and Yellow River areas are historical incubators of Chinese culture. Water provided an indispensable resource for Chinese agricultural society, while the waterway was also an important transportation medium. However, these benefits were accompanied by the danger of flooding. Some of mankind's earliest large-scale engineering projects involved the construction of water management infrastructure intended to ensure agricultural productivity and human safety.

Efforts to reengineer waterways in China date from the period of Yu the Great,[3] founder of the Xia Dynasty (2100–1600 BC). These projects aimed to redirect floodwater and regulate water level changes to allow water to be used in a reliable manner for irrigation. The Dujiangyan Irrigation System was attributed to two men in the Warring States period (475–221 BC), Li Bing (approximately 302–235 BC), a famous expert on water conservancy engineering in Chinese history, and his son, and served exactly this purpose. The Irrigation System tames the fierce river and produces a flow of water that proceeds calmly to the Chengdu Plain; it also brings water toward conduits in sufficient amounts to provide irrigation for the entire region (Editorial Committee on the Dujiangyan Irrigation Records 1983). In the past, when overland transportation was less convenient than now, waterway

[3]**Yu the Great** (Mandarin: *da yu*), a legendary ruler in ancient China famed for his introduction of flood control, inaugurated dynastic rule in China by founding the Xia Dynasty in the 21st century BC.

transportation was an important means to connect two locations. The Lingqu Canal, which bridges a gap between the Zhujiang and Yangtze Rivers, has served as an important conduit for goods exchange for over 2,000 years.

(2) Overland Transportation

The establishment of overland transportation is the process of providing routes for human travel and the transportation of commodities. Roads are also an important social connection means. The construction of a road network determines the connection extent with the outside world and thus forms its regional status. The ancient Chinese realized early on the importance of good roads to regional development, image and influence. As the first power to unify China under a single feudal governmental authority, the Qin Dynasty was responsible for China's first nationwide road network, which ensured the swift transmission of information and materials between the central government and provincial areas. The improvement of roads, courier stations and other such infrastructure would remain an important issue to the central government of each of the dynasties that followed after Qin. Today, the quality of a region's transportation network still remains a major determinant of regional development.

In different climate areas, travelers may have different demands for the roads, which are an important medium for exchange with the outside world. In southern China's rainy mountainous region, a small number of paths that lead out of the mountains are the only routes connecting villages to one another. The paths, which usually cross innumerable irrigation channels, ditches and valleys, are difficult to traverse as they are often muddy or flooded due to the wet climate. Over the years, people have created smart solutions, with the Wind and Rain Bridge of the Dong People as a representative example. The covered bridge connects the inner and outer part of the mountains and further develops the marketplace and stage for festival theatrical performances. As such, the bridge serves as a physical link that helps to foster and maintain relationships among villagers.

7.2.2 Spirituality Integration and Isolation

Cross-cultural interaction can be a beginning of mutual affinity or a source of friction and a cause of conflict. It can lead communities of people to pursue further cultural integration and connection with the other on one hand or absolute cultural seclusion on the other. To meet this need, people erect structures that prevent outside intrusion or facilitate connection with the outside world, both physically and psychologically. These two goals are not mutually exclusive, however. Located in the Taihang Mountains area where craggy limestone becomes steep canyons by numerous rivers, the Niangziguan and Guguan Passes, two of the Great Wall's key gateways, worked as critical transportation nodes in ancient commercial roads and old official roads in the Taihang Mountains and were also part of ancient China's national defense network. In this case, integration and isolation were afforded by the same entity.

The extreme forces of divinity and worship inherent to religious culture push religious architecture to be located in dangerous geography that is isolated and unique. Religion is often presented to man through mysterious, exalted or indecipherable imagery, and thus religious buildings must express these qualities. The pursuit of perfection that a building embodies can make visitors feel amazed and touched. Religious architecture in China characteristically seeks to achieve a spiritual atmosphere through harmony between architecture and environment (Yang and Yao 2008). One of the most characteristic examples of this practice is Bridge-Tower Hall, located on Mount Cangyan. It spans a terrifying gap between two cliffs, and the man-made structure expresses a sense of religious sanctity and an aspiration to connect with heaven.

7.2.3 Society Integration and Isolation

To understand the integration and isolation in architecture on physical and spiritual levels, we must add one further perspective, that of societal change. A number of events can contribute to societal change, including border fluctuation, dynastic change, population migration and more. These events can cause far-flung ethnic groups to make contact with one another and even result in the formation of new, cross-cultural settlements. Alternatively, a preexisting cultural pattern can also be preserved. The Tunpu villages, originally military fortresses in Anshun, Guizhou Province, owe their existence to two government policies in the Ming Dynasty (1368–1644) that aimed to settle frontier regions and strengthen national defense. They eventually became semi-closed villages over time and kept the Han culture in the Ming Dynasty for hundreds of years (Wang 2008).

7.3 Summary

The forms of geographic integration and isolation expressed through architecture reflect their historical and cultural contexts. The contexts may be the regional centrifugal expansion, the human thought evolution or the societal change. The history of architecture is one of alternatively cooperating with and fighting against nature. The Chinese people have maintained a complicated attitude toward the natural environment in which they live—fearing nature, utilizing nature, and often reshaping nature to meet certain life needs. In particular, faced with widely diverse natural conditions, through capitalizing upon elements of accessibility and obstruction, the people with high wisdom have realized physical, cultural and societal integration and isolation.

References

Editorial Committee on the Dujiangyan Irrigation Records, Guanxian County. (1983). *Dujiangyan irrigation records*. Guanxian County: Editorial Committee on the Dujiangyan Irrigation Records, (in Chinese).

Liang, J. M. (2003). My humble opinion to the relationship in the formation and dissemination of Hakka culture and the geographic environment. *Lingnan Culture and History,* (2), 3–6. (in Chinese).

Sun, D. Z. (2004). *A study on Chinese residential architecture*. Beijing: China Architecture and Building Press. (in Chinese).

Wang, E. Y. (1989). *An introduction to cultural geography*. Beijing: Higher Education Press. (in Chinese).

Wang, H. N. (2008). Inheriting and evolution: Study on settlement of the Tunpu villages in Guizhou Province. *City Planning Review,* (1), 89–92. (in Chinese).

Wang, X. (2003). An approach to defensive space in traditional settlement of the Tunpu villages. *Architect,* (4), 64–70. (in Chinese).

Yang, L. Y., & Yao, D. X. (2008). Reflections of nature-views in China and West on traditional religious architectures. *Architecture and Culture,* (9), 74–75. (in Chinese).

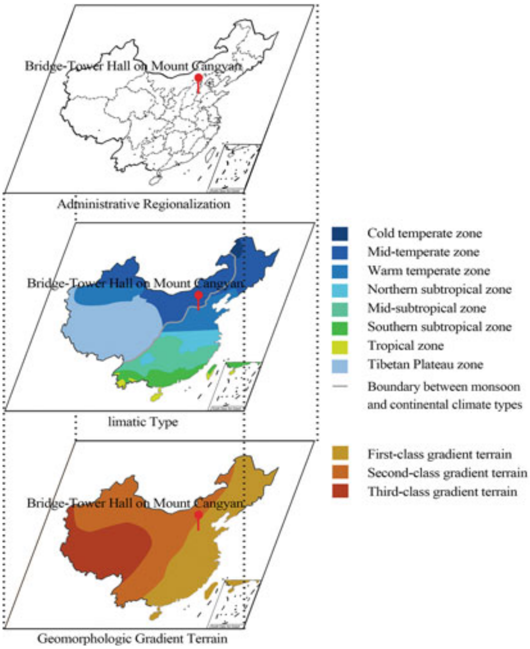
Chapter 8
"Integration" Cases

8.1 Bridge-Tower Hall on Mount Cangyan: A Temple on an Amazing Stone Arch Bridge Across Towering Cliffs

Location: Jingxing, Hebei Province
Key Geographical Concept: Peak-forest landform

Composed primarily of quartz sandstone, Mount Cangyan is an example of a peak-forest landform. Cleverly integrated into this landscape, Bridge-Tower Hall bestrides the gap between two cliffs.

F. Wang, *Geo-Architecture and Landscape in China's Geographic and Historic Context*, DOI 10.1007/978-981-10-0483-4_8



Geomorphologic Features
Bridge-Tower Hall is located in Jingxing County, Hebei Province, on Mount Cangyan. Mount Cangyan is an example of a peak-forest landform and is made primarily of quartz sandstone. The surface of the quartz sandstone is populated with a large number of fissures that readily admit water, leading to erosion of the stone. This process gave rise to Mount Cangyan's numerous cliffs. Bridge-Tower Hall sits upon a bridge that spans the distance between two of Mount Cangyan's peaks at a height of approximately 70 m above the ground (Figs. 8.1 and 8.2).

Climatic Features
Mount Cangyan is located in Jingxing County, the surrounding area of which falls within eastern China's mid-latitude and sub-humid warm temperate continental monsoon climate zone. Winters are dry and cold, summers warm and moist. Located up in the mountain, Bridge-Tower Hall generally experiences lower temperatures than the surrounding plain area.

Vegetation Features
Mount Cangyan and its environs are a unique home to summer-green deciduous forests (sometimes called temperate deciduous forests) and large swathes of *Pteroceltis*, a member of the Cannabaceae family (Editorial Committee on the Jingxing County Records 1986). From the relatively barren surroundings,

Fig. 8.1 Bridge-Tower Hall hangs in the chasm between two cliffs on Mount Cangyan, a mountain in Jingxing County, Hebei Province. The Pteroceltis that grows on the stone causes the mountain to appear as if composed of dark green stone. *Source* Photograph by Xiangnan Zhang, provided by Ming Jiang

Fig. 8.2 Looking up at Bridge-Tower Hall. The hall is draped between two peaks like a narrow thread. Three single-arch stone bridges stretch across the gap between the two peaks. *Source* Photograph by Fan Yin

Mount Cangyan stands out as lush and verdant; intensely green, the mountain appears as if comprised of green stones. Indeed, the name “Mount Cangyan” means “dark green stone” in Chinese.

Cultural Features

Bridge-Tower Hall is one of the main buildings that make up the Buddhist monastery, the Fuqing Temple. Vegetation flourishes, so the environment is quiet and peaceful, and it is an ideal location for reclusive self-cultivation. Suspended precariously between two cliffs, Bridge-Tower Hall has earned renown as one of China's Three Hanging Temples,[1] the others being the Hanging Monastery of Mount Heng in Shanxi and the Xishan Hanging Temple in Yunnan.

Within the continental monsoon climate zone, where Mount Cangyan is located, precipitation is insufficient to support the growth of arbor vegetation. However, a summer-green deciduous forest flourishes on Mount Cangyan, related to the mountain's unique geology. The area around the mountain is made up mostly of purple shale and marl. Because purple shale and marl are both soft, the area is highly susceptible to erosion and landslide activity. In the meager topsoil produced by these conditions, arbors and shrubs are hard to grow, and the area is mostly covered with grass. On the mountain, however, rainwater seeps easily into fissures in quartz sandstone, flowing along fault lines to eventually gush forth and form mountain springs. These springs give rise to the type of environment necessary for dense vegetation to grow. It is thanks to this unique geological process that Mount Cangyan is so verdant in contrast to its environs. The location choice of the Fuqing Temple was partly motivated by the pleasant quality of the natural environment. Far from the hubbub of the secular world, the environment of Mount Cangyan is fresh, beautiful and natural, offering Buddhist monks and disciples an ideal location where they can practice self-refinement in seclusion.

Extended Reading: Quartz Sandstone Peak-forest Landform

Clusters of lofty carbonate peaks make up what is known as a peak-forest landform (Zhou 2006). These formations rising from soluble limestone underwent an extended period of surface-underground-surface karst circulation under the ancient tropical climate during a period when the Earth's crust was relatively stable. In the initial phase, surface water activity carved out surface karst landforms, such as clints, melting grooves, funnels and caves. In the intermediate phase, surface water then penetrated to form rivers, horizontal caves and dissolution depressions underground, as well as dry and blind valleys on the surface. When these underground rivers and caves reached a certain scale, roofs of the underground caves began to collapse, allowing the surface water to appear once more and develop karst polje, karst peak cluster and peak-forest landforms. They are all unique landforms created in the horizontal flowing zone after the

[1]**Three Hanging Temples** here refer to the Hanging Monastery of Mount Heng, Shanxi, Bridge-Tower Hall on Mount Cangyan in Jingxing, Hebei, and the Xishan Hanging Temple in Kunming, Yunnan. Alternately, there are those who hold the number of hanging temples at six, seven and ten in China.

carbonate stone underwent extensive influence from the Karst effect in the tropical climate of the Tertiary period (Zhou 1994). Mount Cangyan is an example of a peak-forest landform composed of quartz sandstone (Fig. 8.3).

Fig. 8.3 Mount Cangyan is composed of quartz sandstone and has a relatively hard substance. The rock surface features numerous fissures and faults, and this accelerates the process of erosion, which has etched Mount Cangyan's many precipitous cliffs, giving rise to the quartz sandstone peak-forest landform. *Source* Photograph by Fan Yin

As the main building of the Fuqing Temple complex, Bridge-Tower Hall is cleverly integrated into the landscape of the mountain. This complex is composed of three parts of upper, middle and lower levels in height. Bridge-Tower Hall belongs to the middle level and appears mysterious and unique with the backdrop of the dangerous, remote, quiet mountains. The hall rests on a single-arch stone bridge of 15 m in length and 9 m in width (Fig. 8.4). Approximately seventy meters above the ground, the structure bridges the gap between two adjacent cliffs. This lends to the overall sense that the building soars in the air above the valley floor and intensifies the temple's religious atmosphere.

Bridge-Tower Hall is built in a two-story, nine-ridge pavilion style that is five *kaijian* wide and three *jinshen* deep (Fig. 8.5). The entire building appears to be a creation of nature. The hall soars aloft over the cliffs as if it descended from heaven to the mortal world, symbolizing the supernatural power and majesty of Buddhist doctrine (Editorial Committee on the Jingxing County Records 1986). It occupies the space between two cliffs and complements the natural landscapes. Viewed from the valley floor, the hall stands in contrast with its lush surroundings, outlined by a bolt of clear blue sky and flanked by cliffs that reach to heaven. This scene inspires

Fig. 8.4 Bridge-Tower Hall rests upon a single-arch stone bridge that spans the distance between two cliff faces. *Source* Photograph by Junting Guo, provided by Ming Jiang

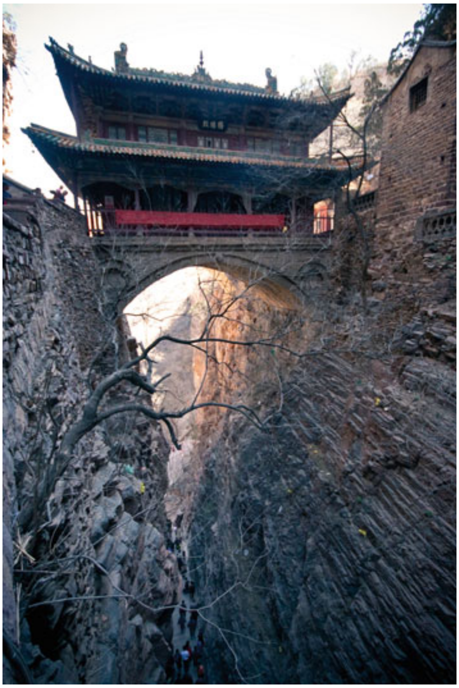


Fig. 8.5 Within the surrounding steep and quiet mountain, this cleverly chosen site between two cliffs highlights the mysterious atmosphere of Bridge-Tower Hall. *Source* Photograph by Fan Yin

admiration and reverence (Fig. 8.6). Looking out from the hall, there are steep cliffs, strange rocks and ancient trees, and you can see the valley bottom, which adds to the sense of depth and hierarchy (Fig. 8.7). Bridge-Tower Hall realizes a unification of ravine, bridge, tower and hall. The structure blends into the valley and forms a perfect mixture of natural appeal and human art (Zhang 1997).

"Soaring above the deep valley; leaning against the dangerous cliff," this quote encapsulates the features elevating Bridge-Tower Hall and the other hanging temples

Fig. 8.6 Viewed from below, with a lush backdrop of Pteroceltis, the hall appears to meld with its natural surroundings. *Source* Photograph by Junting Guo, provided by Ming Jiang

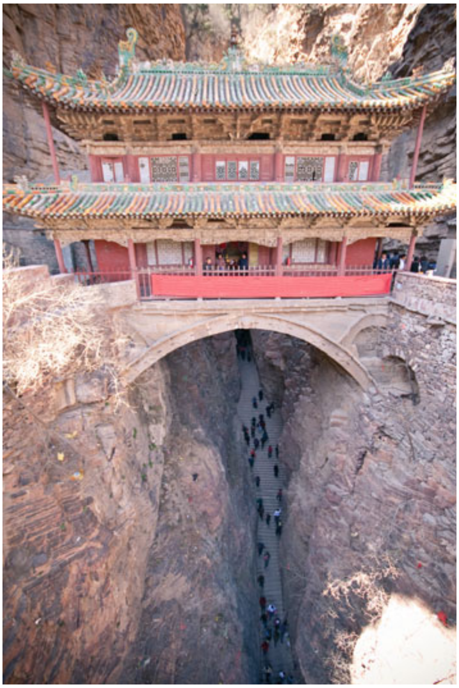


Fig. 8.7 Looking down on Bridge-Tower Hall. The hall soars 70 m above the ground. People at the bottom appear as small black dots. The view illustrates the cleverness with which the hall was structured and placed within the mountain topography. *Source* Photograph by Fan Yin

above the forest of other impressive architectural works. Hanging temples are all located among complex and dangerous landforms that provide ingenious natural settings: the Hanging Monastery of Mount Heng (Shanxi), for example, is built along the face of a cliff, and the Beichan Temple of Xining (Qinghai), which is located at Danxia landform, is integrated into the area's many caves. Bridge-Tower Hall finds its place between two peaks, where it is said that the temple "appears naturally formed, though in reality it is man-made." In each case, geological features give rise to a distinctive architectural style. The Hanging (Mandarin: *xuan kong*)

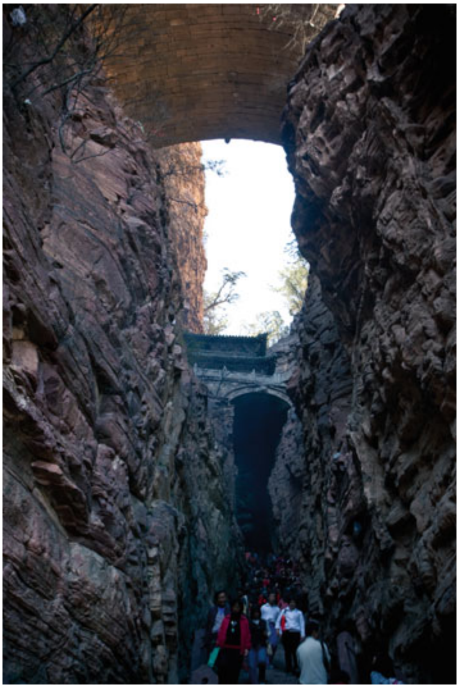


Fig. 8.8 A narrow footway follows the mountain terrain. Along the climb, visitors enjoy an awe-inspiring view of Bridge-Tower Hall. This vista is a perfect example of the brilliance of integrating architecture with its topographical surroundings. *Source* Photograph by Fan Yin

temples are places where both Buddhist and Taoist worship take place. These monasteries are also called the *Xuan Kong* Monasteries, a combination of *xuan,*[2] a Taoist term, and *Kong,*[3] a Buddhist term (Zhang 2010). All hanging temples reflect the Buddhist and Taoist notion that temples ideally should be sited in places of high altitude and commanding view, on mountains and near to water, that are dangerous and inspiring. Skyward wooden footways, hanging ladders, religious statuary and thrilling architectural forms all help to create a powerful supernatural environment and express the sincerity of believers as well as the holiness and majesty of the immortal and Buddha, who are worshipped there (Fig. 8.8).

Geographical Interpretation

Quartz sandstone in Mount Cangyan forms the peak-forest landform. This landscape is home to Bridge-Tower Hall, which spans the precarious chasm between two cliff faces. The hall's appearance takes advantage of the landform, and the structure is propped up between cliffs, integrated with its natural surroundings. Bridge-Tower Hall gives rise to a religious and mysterious atmosphere and a dangerous, spectacular and meaningful landscape.

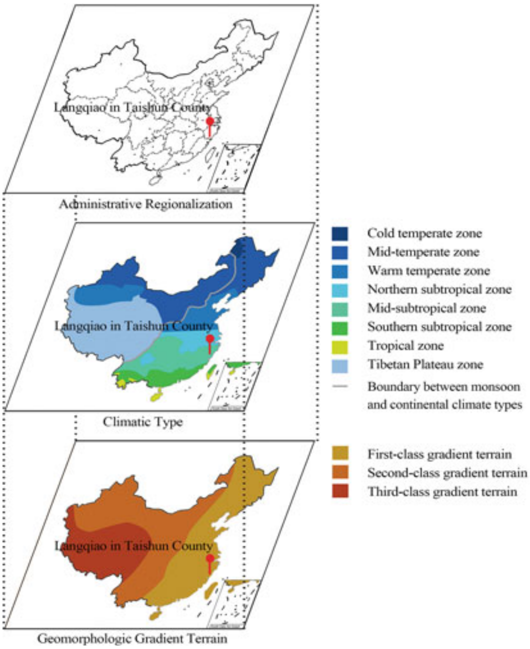
[2]***Xuan*** (lit. mysterious or abstruse), a Taoist term.

[3]***Kong*** (lit. empty or vacant), a Buddhist term.

8.2 *Langqiao* in Taishun County: Resembling a Rainbow Spanning the Sky

Location: Taishun, Zhejiang Province
Key Geographical Concept: *Langqiao* culture

Langqiao is a type of covered bridge. *Langqiao* in Taishun County is an adaptation to a rainy climate and a mountainous landscape crossed by a large number of streams. With numerous and varied forms, *langqiao* provides travelers with a convenient way of crossing bodies of moving water.



Geomorphologic Features
Taishun County in Zhejiang Province is located on a first-class uplift belt of a Neocathaysian Tectonic System with fault features, and there are more than one hundred streams. The riverbeds of these streams, formed primarily with bedrock, are narrow and precipitous because of the significant erosion effect, and so the Taishun people have constructed a vast number of *langqiao* to provide travelers with a convenient means to cross these bodies of water and to pause for a rest (Fig. 8.9).

Climatic Features
Taishun County belongs to the mid-subtropical maritime monsoon climate region, with moderate climate and four distinctive seasons. Its average annual rainfall is approximately 2,000 ml (Editorial Committee on the Taishun County Records 1998).

Fig. 8.9 The Santiao Bridge is the oldest existing wooden-arch-style *langqiao* in Taishun County. The bridge was first built during the Song Dynasty Shaoxing period (1131–1162) and later rebuilt during the Qing Dynasty Emperor Daoguang's reign (1821–1850). Stretching across the Hengxi Creek, the bridge measures 32 m in length, 3.96 m in width and 9.55 m in height. *Source* Photograph by Xianjun Zhou, provided by Wenzhou Tourism Bureau

Fig. 8.10 Looking up at the Beijian Bridge, one can clearly see the underlying arch structure. *Source* Photograph by Xinmin Huang

To provide shelter from sun and rain, bridges in Taishun are built with roofs and called *langqiao*. This has the dual effects of making crossing the bridge more convenient for travelers and protecting bridge structures from erosion. In addition, to protect against flooding, *langqiao* usually employs arch bridge structures (Fig. 8.10).

Vegetation Features

Taishun County sits on the borderline between the southern and northern subzone of the mid-subtropical evergreen broad-leaf forest zone, and it belongs to the Castanopsis eyrei-schima superba forest of the Zhejiang-Fujian Hills and Castanopsis-Altingia forest of the Southern Zhejiang-Central Fujian Hills. Thus,

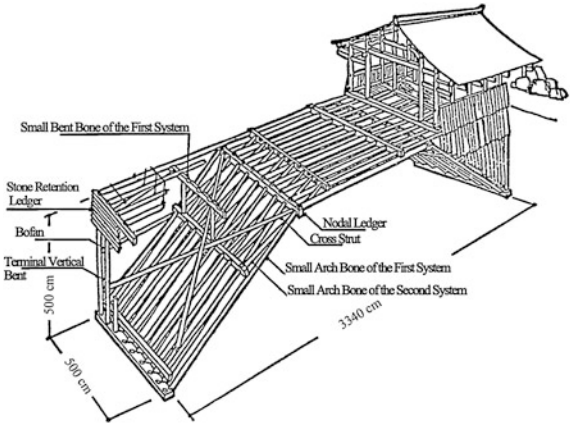


Fig. 8.11 Structural view of the Yunhemeichong Bridge. This bridge uses wooden beams as the major structural components. *Source* Mao (1986: 107)

there is abundant vegetation. Because of the long-term influences of human activities, the native plant species of the area have suffered repeated damages and are almost extinct. At present, the main vegetation types in this county are: planted forests, partially planted forests, secondary growth from virgin forests and crop vegetation (Editorial Committee on the Taishun County Records 1998). From these forests, local people can obtain abundant timbers, so most of the bridges are constructed from wood, though some are constructed of stone (Fig. 8.11).

Cultural Features

The culture of *langqiao* in Taishun County originates from its ethnic migration. Located in southern Zhejiang Province, it is described as "nine parts mountain, half a part water and half a part farmland." In the past, Taishun was the destination of many refugees of war. There were two large waves of ethnic migrations in Taishun. One was eighteen clans (including the Xia, Wu and Bao Families) moving to Taishun from Fujian and Zhejiang Provinces during the end of the Tang Dynasty around the second half of the ninth century to the early 10th century, and the other was a massive migration of Han Chinese relocating to Taishun around the year 1126–1127 at the end of the Northern Song Dynasty (Feng 2003). Despite the challenge of a complicated landform, the hard-working Taishun people cut into the hills to create space for farmland and roads and also built *langqiao* over local watercourses, employing this unique architectural form as an adaptation to the hot, rainy climate. In this manner, the region came to be known in China as the "Home of the *Langqiao*."

To understand the prevalence of *langqiao* in Taishun County, we must examine Taishun's geomorphologic environment. Taishun County is home to a confluence of numerous winding, branching streams of many sizes. Due to tectonic movement, gullies are narrow and riverbanks are steep; streams flow rapidly, and their waters rise and fall with little warning (Editorial Committee on the Taishun County Records 1998). To make crossing these watercourses more convenient, the Taishun people constructed approximately a thousand *langqiao* with various structures. Many of these *langqiao* still remain, including over 30 that date from the Ming (1368–1644) and Qing (1644–1911) Dynasties.

Extended Reading: *Langqiao*

Langqiao is known as a roofed bridge, pavilion bridge or tile bridge because there is a roof on this type of bridge (Dai 2005). In some areas, *langqiao* is also called a wind and rain bridge, flower bridge, *Fengshui* Bridge[4] or Fortune Bridge. *Langqiao* first appeared during the Tang (618–907) and Song (960–1279) Dynasties. It can be divided into different types, such as wooden-arch-style, stone-arch-style and wooden outstretched-arm-style (Tang and Hu 2005). *Langqiao* is not only used for river-crossing and protection from the rain but also serves many other political, economic, and cultural functions, such as social contact, village symbolism, and a role in offering a place for worship activities as well. *Langqiao* at important transportation routes is often used spontaneously as places to set up small stalls for selling goods; at times, one can even become an entire village market. The one near villages often becomes a bustling gathering place. *Langqiao* is a creative combinations of bridge, corridor and pavilion (Fig. 8.12). With its distinctive appearance, it is an important landmark of Taishun County (Dai 2005).

Fig. 8.12 The interior structure of the Xuezhai Bridge. *Source* Photograph by Xinmin Huang

[4]***Fengshui Bridge*** is a type of bridge that integrates the concept of *fengshui* as "avoiding wind and accessing water."

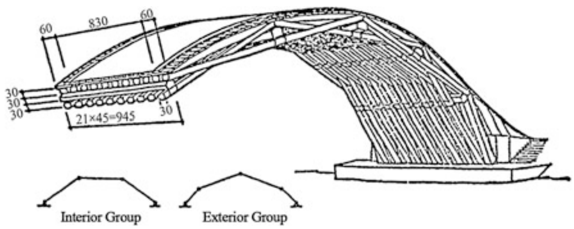


Fig. 8.13 Structure section diagram of the Hongqiao Bridge from Zhang Zeduan's drawing, *Along the River during the Qingming Festival.* Twenty-one groups of round logs with 40-centimeter diameters form the arch skeleton. They can be divided into two systems: the exterior group is comprised of two long arch skeletons and two short arch skeletons, and the interior group consists of three arch skeletons of the same length. At the intersection of the two arch skeleton groups, horizontal beams are added for structural strength and stability. The structure of *langqiao* in Taishun County is very similar to this. *Source* Mao (1986: 105)

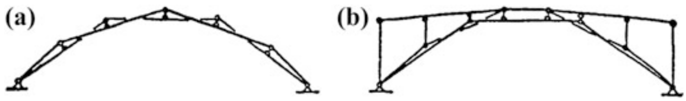


Fig. 8.14 Calculation model diagram of the wooden-arch structure. Wooden-arch-style Bridge in the Zhejiang-Fujian region (*right*) evolved from the earlier type exemplified by the Hongqiao Bridge (*left*). *Source* Mao (1986: 107)

Wooden-arch-style *langqiao* is one traditional type. Known to the Taishun people as "centipede bridges," this type of bridge has a similar structure to that of the Hongqiao Bridge depicted in Zhang Zeduan (1085–1145)'s drawing, *Along the River During the Qingming Festival*[5] (Mao 1986) (Fig. 8.13), and it uses the round log as the arch skeleton by virtue of the interaction between the beams to strengthen the stability of the structure (Fig. 8.14).

Many of Taishun's ancient *langqiao* are wooden-arch structures. Taishun was once home to China's oldest wooden-arch-style *langqiao*, the Yeshuyang Bridge, which was built in the fifth year (1454) of the Ming Dynasty Emperor Jingtai's reign but later destroyed, as was China's longest wooden-arch-style *langqiao* at 42 m, the Santan Bridge (destroyed by flooding in 1950). Existing wooden-arch-style *langqiao* include the Xuezhai Bridge in Sankui Town (Fig. 8.15), the Wenxing Bridge in Xiaocun Town (Fig. 8.16), the Jiemei and Beijian Bridges in Sixi Town,

[5]***Along the River During the Qingming Festival*** (Mandarin: *qing ming shang he tu*), one of top 10 most famous ancient Chinese paintings, was painted by Zhang Zeduan (1085–1145) in the Northern Song Dynasty (960–1127).

Fig. 8.15 The Xuezhai Bridge in Xuezhai Village, Sankui Town. It was first built in 1497; the bridge in the photograph was rebuilt in 1855. The bridge style is unique and simple. It forms a picturesque scene with the old trees and dwellings. *Source* Photograph by Xinmin Huang

Fig. 8.16 The Wenxing Bridge in Xiaocun Town. The Wenxing Bridge is the only bridge that is guarded by villagers. A crude earthen dwelling stands beside the bridge. *Source* Photograph by Xianjun Zhou, provided by Wenzhou Tourism Bureau

and so on. Among these bridges, the Jiemei Bridge (Fig. 8.17) and the Beijian Bridge (Fig. 8.18) have the most elegant shapes of all. These two bridges are located along the same stream, separated only by a single kilometer, so they are known as the "Upper Bridge" and "Lower Bridge," respectively. They both have the same form with the upturned eaves, while the Beijian Bridge is slightly larger than the Xidong Bridge.

Langqiao in Taishun County is a fitting adaptation to Taishun's rainy climate and numerous streams; of course, it is exactly this environment that incubated the development of *langqiao*. Dense forests in the Taishun mountainous area provide the ample timber; the area's streams with rapid flow are quite narrow, making the wooden arch a suitable choice for bridge construction. At the same time, the special

Fig. 8.17 The Jiemei Bridge in Xidong Village, Sixi Town. The Bridge is the most famous among all *langqiao* in the four counties known as "Jing-Tai-Shou-Qing." *Source* Photograph by Xianjun Zhou, provided by Wenzhou Tourism Bureau. *Note* The four counties of "Jing-Tai-Shou-Qing" refer to the Jingning, Taishun and Qingyuan counties in Zhejiang Province and Shouning County in Fujian Province.

Fig. 8.18 The Beijian Bridge in Xiaqiao Village, Sixi Town. The bridge is topped with upturned eaves, and a pavilion rises in the center of it. Red siding boards protect the arch skeleton and beam-column. *Source* Photograph by Xinmin Huang

structure used for *langqiao* enables this type of bridge to support a sizable amount of weight. However, it easily becomes unstable with upward-oriented counter elastic forces. Thus, the addition of a roof to the *langqiao* not only protects it from weather damage but also contributes to improved structural stability as well by adding weight (Feng 2003).

Fig. 8.19 The Yongqing Bridge in Sankui Town. The bridge was constructed in the second year (1797) of the Qing Dynasty Emperor Jiaqing's reign, and it is a wooden outstretched-arm-style *langqiao*. It measures 33 m in length and 4.5 m in width and is at a height of eight meters above the water. With a total of twelve rooms, the bridge provides villagers with activity spaces. *Source* Photograph by Xianjun Zhou, provided by Wenzhou Tourism Bureau

Langqiao provides shelter and a place to rest for those crossing Taishun's streams. Larger bridges also have shrines where passersby can offer sacrifices to their ancestors or their deities. They are also centers for trade and cultural events (Fig. 8.19). The Beijian Bridge, for example, often hosts puppet shows and has evenly distributed stalls for vendors to market their wares.

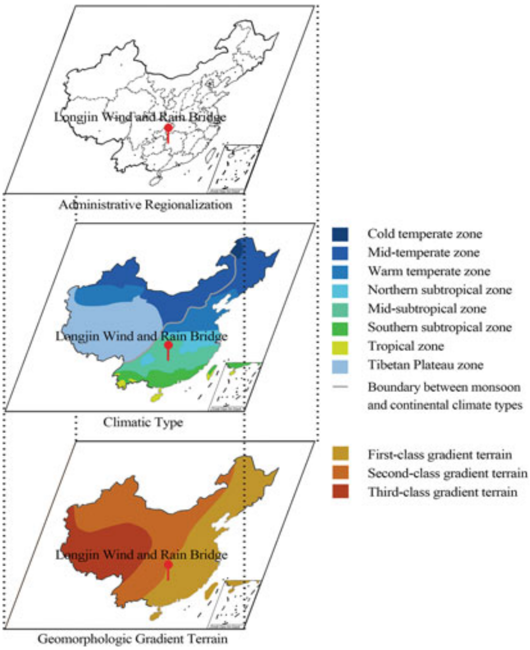
Geographical Interpretation

Located on the Southern Zhejiang Ridge, Taishun County is an area with numerous mountains and countless streams. *Langqiao* in Taishun County is an excellent example of adaptation to the local unique natural environment. These bridges provide convenience and shelter for those who cross the streams. Due to their clever construction and elegant appearance, *langqiao* in Taishun County—especially the wooden-arch-style type–has become a Chinese architectural treasure.

8.3 Longjin Wind and Rain Bridge: Pressing on Through Wind and Rain

Location: Zhijiang, Hunan Province
Key Geographical Concept: Dong ethnic culture

The Wind and Rain Bridge is a unique architectural form of China's Dong people. This ethnic group typically dwells by the banks of rivers. This type of bridge was constructed to meet the needs of the traditional way of life of the Dong people. It facilitates transportation, provides shelter from the rain and serves as important community space for commercial and social activity.



Geomorphologic Features
The Longjin Wind and Rain Bridge is located in Zhijiang Autonomous County of Dong Nationality, Hunan Province. The bridge spans the Wushui River, a branch of the Xiang River. The Wushui River is 150 m in width with an average runoff rate of 156 cubic meters per second. It also has a relatively consistent flow: the multi-annual average water level is 244.67 m, with a peak height of 249.12 m and low of 244.2 m (Editorial Committee on the Zhijiang Autonomous County of Dong Nationality 1993). The bridge provides safe and convenient passage from one bank to another (Fig. 8.20).

Fig. 8.20 The Longjin Wind and Rain Bridge is located in Zhijiang County, Hunan Province. It spans the 150-meter-wide Wushui River. It holds a Guinness World Record as the longest Wind and Rain Bridge. *Source* Photograph by Heng Yang, provided by Yi Liu

Climatic Features

Zhijiang County falls within the mid-subtropical moist climate zone, which is characterized by warm temperature and distinct seasonal weather: the overall precipitation is abundant, while different times of year experience different amounts. The bridge not only provides a connection between the two banks of the Wushui River but also serves as a shelter from sun, wind and rain. It is thus an ideal adaptation to the local climate.

Cultural Features

The Wind and Rain Bridge is occupied exclusively by the Dong people. It is built from wood and reflects a great number of features of the Dong cultural tradition. Due to the pavilions constructed on the bridge as shelter from the wind and rain, the bridge is called the Wind and Rain Bridge (Luo et al. 2009).

The Dong people are the descendants of ancient China's Baiyue ethnic group. Historically, they have resided in the adjacent areas of Guizhou, Hunan, Guangxi and Hubei Provinces. The Dong established themselves as an independent ethnic group during the Tang (618–907) and Song (960–1279) Dynasties (Liao 2007). They predominantly grow rice, so most of them settle near the banks of rivers. Their traditional lifestyle involving activity on riversides makes bridge-building a necessity.

The Wind and Rain Bridge is a unique architecture of the Dong people. Together with the Drum Tower and Grand Choir, they are called the "Three Treasures of the Dong people." The ancestral Baiyue people also lived by water, and their totem was the dragon. The Wind and Rain Bridge is an extension of these traditions and an important component of the riverside way of life. Viewed from a distance, the bridge resembles a dragon at play in the torrential water. Dragon motifs are the most commonly appearing decorations on Wind and Rain Bridges (Luo et al. 2009).

Extended Reading: Wind and Rain Bridge

The Wind and Rain Bridge is a special example of the covered bridge. This long-corridor wooden bridge is famous for the function of protecting those who cross the river from climate changes and for its remarkable decoration. As an important civic architecture, the bridge features elements of Dong culture in addition to traditional covered bridge characteristics, creatively combining pavilions and galleries together into one entity. Widely renowned for its compact structure and unique architectural form, the bridge is a crystallization of the Dong people's prowess in the art of bridge construction (Dai 2005) (Fig. 8.21).

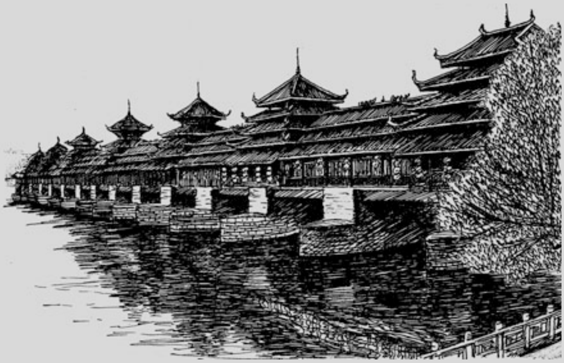


Fig. 8.21 A three-story corridor with a multi-eaved roof runs the length of the Longjin Wind and Rain Bridge. Along the corridor are seven five-story pavilions. The bridge structure reaches 17.99 m in height. *Source* Drawing by Kun Gao

The Longjin Wind and Rain Bridge, which dates back to the 19th year (1591) of the Ming Dynasty Emperor Wanli's reign, owes its existence to one famous monk Kuanyun, who led the effort to raise funds and eventually built the structure. The bridge was destroyed and rebuilt several times throughout history; it served as a fortress along the route connecting the Hunan and Guizhou Provinces, and it is also a gathering place for traveling merchants, bringing prosperity to surrounding areas. For this reason, it has been titled "the First among the Bridges of the Southwest." The Bridge remains today and was renovated in 1999 by donations from local residents, and it is the largest Dong-style wind and rain bridge in China.

The bridge as renovated in 1999 is very large. The total length is 246.7 m, and the width is 12.2 m, spanning the 150-meter-wide Wushui River. This bridge permits exclusively pedestrian transportation and has a 5.8-meter-wide walkway, flanking 94 small stores and seven pavilions (Fig. 8.22). Like many other Wind and Rain Bridges, this bridge has the stone pier surfaced with wood. It is the combination of bridge, corridor, hall and pavilion, and the structure can be divided into bridge pier, bridge floor and upper-corridor pavilion. Bridge piers are made of bluestone. To attenuate the potential impact of rising floodwaters, the piers are hexagonally shaped and angled at 68 degrees to the surface of the water below (Fig. 8.23). The middle section of the bridge has a wooden floor with a cantilever structure and strut-beam. On the floor, there is a corridor-pavilion structure system

Fig. 8.22 The Longjin Wind and Rain Bridge preserves the original trading function. There is a 5.8-meter-wide pedestrian walkway in the middle and 94 shops on both sides. The walkway market forms an excellent space for local residents to interact socially and commercially. *Source* Photograph by Heng Yang, provided by Yi Liu

Fig. 8.23 The Longjin Wind and Rain Bridge has a stone pier and a wooden deck. It features the traditional architecture style of China's Dong people. Pavilions alternate with sections of corridor. Bridge piers meet flowing water at a sharp angle to reduce potential impact from floodwaters. *Source* Photograph by Heng Yang, provided by Yi Liu

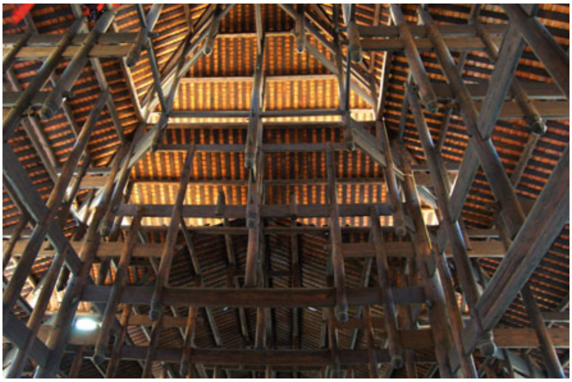


Fig. 8.24 No nails were used in the construction of the bridge. Its entire wooden structure is assembled using mortise and tenon joints. *Source* Photograph by Heng Yang, provided by Yi Liu

that has double-eaved roofs with flying corners, and this integrated superstructure is supported by wooden columns and rafters with mortise and tenon joints (Zhu et al. 2005) (Fig. 8.24).

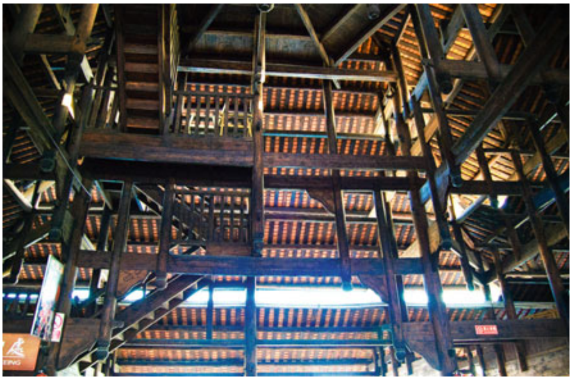


Fig. 8.25 The Longjin Wind and Rain Bridge is delicately structured. Inside the structure, stairways lead to the upper floors, which afford a view of the Wushui River and its two banks. *Source* Photograph by Heng Yang, provided by Yi Liu

As it stands today, the Longjin Wind and Rain Bridge is not only a transportation connection between two banks of the Wushui river but also the continuation of an architectural style—the bridge's double-eaved roof forms an unbroken continuum of buildings from one side of the river to the other. At the same time, the bridge also serves as a gathering space in which to engage in social and commercial activity. The pavilions on the bridge offer views of the Wushui River (Fig. 8.25). In the corridor, the walkway and many shops form space for pedestrian social interaction. Last but not least, there are many variations in the design of pavilion ceilings. Each of them has its own unique style, which reflects the architect's heartfelt dedication to the structure (Figs. 8.26, 8.27 and 8.28).

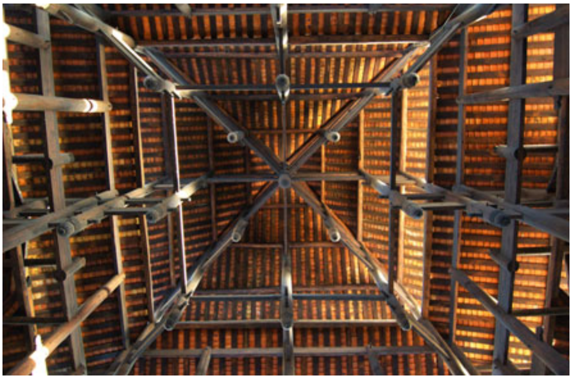


Fig. 8.26 Upon the bridge, pavilions assume different geometric shapes. This pavilion has a rectangular ceiling structure. *Source* Photograph by Heng Yang, provided by Yi Liu

Fig. 8.27 Another pavilion on the bridge has a hexagonal ceiling structure. *Source* Photograph by Heng Yang, provided by Yi Liu

Fig. 8.28 Yet another pavilion exhibits an octagonal ceiling structure. *Source* Photograph by Heng Yang, provided by Yi Liu

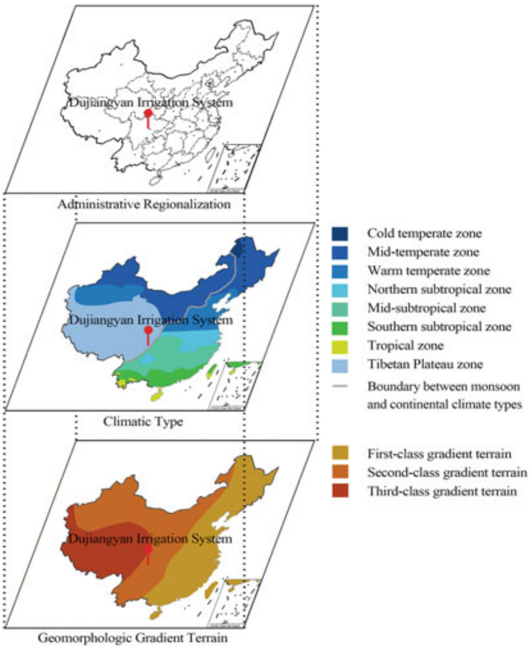
Geographical Interpretation

The waterside lifestyle of China's Dong people gave rise to the construction of a large number of bridges in areas where the Dong people lived. The most representative ones are the Wind and Rain Bridges. The Longjin Wind and Rain Bridge serves to provide convenient and comfortable passage across the Wushui River and is also an ideal space for social interaction, communication and trade.

8.4 Dujiangyan Irrigation System: Irrigating the Min River to Raise the Country of Heaven

Location: Dujiangyan, Sichuan Province
Key Geographical Concept: Hydrology and landforms

Built in 256 BC, the Dujiangyan Irrigation System represents a full utilization of hydrological and landform features in transforming liabilities of nature into benefits. The weir's irrigation, flood control and sediment drainage functions—which it has performed for over 2,200 years—are made possible by its scientific positioning and clever construction.



Geomorphologic Features

The Dujiangyan region Irrigation System is situated along the Min River, which flows out from the mountains onto the northwestern section of the Chengdu Plain, which is otherwise known as "the Country of Heaven." The irrigation system surrounds a fan-shaped alluvial plain, which serves as a transitional area between the plain and mountains to the west. Thus, the Dujiangyan Irrigation System is vividly described as "the handle of a fan." Altitudes drop abruptly from 3,000 m in the mountainous area to between 600 and 1,000 m in the alluvial plain, as the Min River flows into the Chengdu Plain with great force, leaving the plain at high risk of river flooding. Depending on local topographical features, the Dujiangyan Irrigation System splits, redirects and regulates water flows of the Min River. In doing so, the

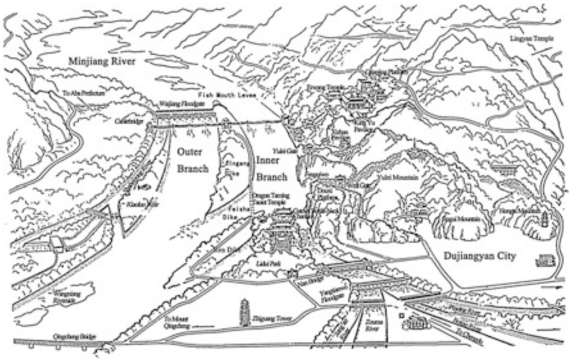


Fig. 8.29 Irrigation area map from the Republic Era (1912–1949 in Mainland China) drawn from the *Engineering Association Inspection Report.* The map shows the Min River, which is divided into inner and outer branches by the Fish Mouth Levee one end of the Jingang Dike. A sluice on the outer branch is used for drainage purposes during flooding. Water from the inner river branch flows through the Bottle-neck Channel to the irrigation area. Extra water returns to the outer branch through the Flying Sand Weir. *Source* Feng (2007: Fig. 31)

weir plays a crucial role in assuring the safety and livelihood of residents of the Chengdu Plain (Fig. 8.29).

Climatic Features

Dujiangyan Municipality falls within the moist mid-subtropical climatic zone of the eastern monsoon region. The area is subject to a humid and seasonal climate, though it experiences hot summers with abundant rainfall, which often cause flooding and regional rainstorms and low temperature and humidity levels in the winter. The Dujiangyan Irrigation System water conservancy project was initiated to control flooding levels and to ensure the reliable availability of water resources.

Vegetation Features

The Dujiangyan Irrigation System is located in a subtropical evergreen broad-leaf forest area. Water vapor from the Pacific Ocean is collected in the area, as it is blocked by the Longmen and Qionglai Mountains to the west. This in turn results ample precipitation, nourishing vegetation in the region and rice crops in particular, which render the Chengdu Plain one of China's most important granaries.

Cultural Features

The Dujiangyan Irrigation System was first built during the Qin Dynasty (221–207 BC) for flood prevention and irrigation purposes. The weir still supplies domestic and industrial water to the Chengdu Plain. The irrigation system has greatly reduced flooding risks in the Chengdu Plain area.

Sichuan is one of China's most important agricultural provinces with plentiful water resources. However, volatile rainfall conditions result in frequent droughts and floods. Waterworks that divert and split water flows are thus essential to ensuring agricultural production in Sichuan. The Dujiangyan Irrigation System is a large-scale water conservancy project that continues to function today. It is the oldest structure of its kind in the world. The success of the Dujiangyan Irrigation System is attributed to the weir's scientific site selection, to the ingenious application of river landform theories and to careful construction strategies.

During the Warring States period (475–221 BC), in the 51st year (256 BC) of the reign of the Qin State King Zhaoxiang's reign, Provincial Officer Li Bing (302–235 BC, also an engineer) of the Shu State together with his son initiated the construction of the Dujiangyan water conservancy project. The infrastructure project was based on hydrological theories on whirlpool effects of curved waterways and on balanced riverbed sections of river force equilibrium. Last, an irrigation system capable of splitting, diverting and regulating upstream water for agricultural use was created. Once the irrigation system was built, the Chengdu Plain was soon known throughout China as "*tian fu* (lit. self-sufficient and strategically positioned region)" for its perpetually fertile soils despite the presence of volatile weather conditions. The Chengdu Plain then became the hinterland of the Qin Kingdom, which employed its resources and armies for military purposes and which eventually unified the six kingdoms into one empire. According to records, the weir played a fundamental role in agricultural systems, supporting military campaigns during the Three Kingdoms period (220–280) (Han 1994). The Dujiangyan Irrigation System continues to play an important role in protecting the Chengdu Plain from flooding and drought, rendering Sichuan one of China's major granary regions (Fig. 8.30).

The Dujiangyan Irrigation System's powerful influence and continued functioning is largely attributed to its ideal location. The Chengdu Plain is a fan-shaped

Fig. 8.30 Map of waterways in the Chengdu area during the Qing Dynasty, collected from the book *Gu Jin Tu Shu Ji Cheng*. The Dujiangyan Irrigation System, which irrigates the entire plain, divides the Min River into several smaller branches. *Source* Feng (2007: Fig. 24). *Note* ***Gu Jin Tu Shu Ji Cheng***, also known as *The Imperial Encyclopedia* or literally as the *Complete Collection of Illustrations and Writings from Early to Present Times*, was first created in 1700 and was completed in 1725

Fig. 8.31 The Fish Mouth Levee constitutes the first step along the water passage, wherein the Min River flows through the Dujiangyan Irrigation System. *Source* Photograph by Xiaofeng Jin

Fig. 8.32 The inner branch of the now split Min River passes through Bottle-neck Channel and enters the irrigation area. The channel was named based on its resemblance to a bottleneck. Workers under the direction of Li Bing carved the intake section out of Yulei Mountain. *Source* Photograph by Xiaofeng Jin

plain that inclines towards the southeast. The Irrigation System was built at the top of the fan on a Min River estuary, where the river flows out from the mountains. The weir sits 300 m above the plain. This elevated and slightly inclined topography serves as an ideal site for a water conservancy project. Owing to this topography, it was possible to construct a profitable and provident water conservancy project by building a dike rather than a dam (Guo 1998).

The Dujiangyan Irrigation System consists of three major components, namely the Fish Mouth Levee (Fig. 8.31), the Flying Sand Weir Spillway and the Bottle-neck Channel Intake (Fig. 8.32) and other auxiliary structures such as the Baizhang Dike and an inverse V-shaped dike. Via effective hydrological systems, the Dujiangyan Irrigation System helps prevent flooding, ensuring a constant supply of irrigated water while draining river sediment.

Extended Reading: River Island

An island of sediment in the middle of a river is called a river island. It is formed by sediments, which come from a riverbed at the base of a river and from flood plains at the top of a river (Zhou 2006). A branched riverbed develops in three stages (rudimental underwater sandbar development, underwater sandbar development and finally river island development), causing a river to take a lotus root formation with both narrow and wide intertwining segments. When the narrow upstream section of a river begins to widen, the decrease in water flow rates generates sediment in the form of gravel, sand and clay, which is deposited and which can gradually accumulate to form an underwater sandbar. As an underwater sandbar grows larger, silt flowing downstream during flooding seasons may settle on a sandbar, creating a surface layer of loam. Over time, the sandbar may gradually grow large enough to protrude from the water surface, at which point it becomes a river island. River islands are only submerged during flooding, adding additional clay and mud to the surface layer of the river island; generally speaking, as a river island develops over time, the clay-based surface layer becomes increasingly stable. Typically, flowing water slowly erodes the alluvium head and deposits sediment at the alluvium tail, causing the entire island to gradually move downstream. As river islands move, several small river islands can combine into larger river islands; river islands can also become attached to a riverbank, forming part of a flood plain (Departments of Geography in Peking University, etc., 1978). River islands in the Min River (where the Dujiangyan Irrigation System in located) are well established and stable. Several large river islands that form the foundation of the Fish Mouth Levee, an essential component of the Dujiangyan irrigation system, divert the river into both inner and outer branches.

The most significant threat to a water conservancy project is waterway clogging as a result of sediment. This issue was creatively solved in the construction of the Dujiangyan Irrigation System, which utilizes whirlpool currents in curved waterways. The Fish Mouth Levee divides the Min River into inner and outer branches. The inner branch flows along a concave riverbank, which guides the water toward the Chengdu Plain where it is used to irrigate a large area of over 6,000 square kilometers. The outer branch of the river flows along a convex bank, which serves as a flood prevention feature. When the Min River flows into the irrigation system, sediment from the concave bank is pushed towards the convex bank of the outer branch and is flushed past the *lidui* (Mandarin, lit. separated mound, see Fig. 8.33)

Fig. 8.33 *Lidui*. Li Bing carved the Bottle-neck Channel from Yulei Mountain. The resulting detached portion of the mountain is referred to as the *lidui*. *Source* Photograph by Xiaofeng Jin

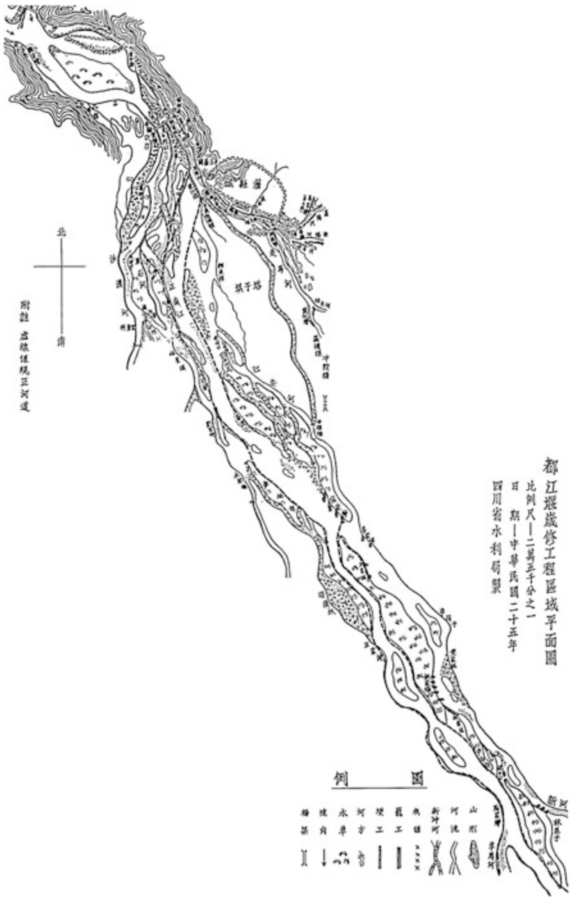


Fig. 8.34 Engineering map from the 25th year (1936) of the Republic Era used for annual Dujiangyan Irrigation System maintenance. The Dujiangyan Irrigation System undergoes annual maintenance to ensure its continued functioning. *Source* Feng (2007: Fig. 28)

into the mouth of the Bottle-neck Channel, where it is spun to the water surface and then dumped into the outer branch of the river by way of the Flying Sand Weir. Sediment that remains in the *lidui* is removed manually, ensuring the free flow of water through the Dujiangyan Irrigation System for over 2,200 years (Fig. 8.34).

Extended Reading: River Landforms and Concave and Convex Banks
Rivers erode land that they flow through and in turn create various gullies and valleys. Eroded materials are carried downstream, where they deposit into flood plains, alluvial fans and deltas. Topographical formations created by rivers are called river landforms (Yang and Li 2001). The following three geological processes typically shape river landforms: erosion, sediment displacement and sediment deposition. When a river bends, an inner (concave) bank and an outer (convex) bank are formed. As a result of inertial and centrifugal forces, the main body of the river tends toward the concave bank; water

closer to the concave bank flows faster, eroding the bank and leaving it a steep slope. On the other hand, water flows slowly past the convex bank, which is farther from the main body of the river, and sediment here deposits to form beaches (Zhou 2006). Surface flows, or water current flows from the convex bank towards the concave bank, and underflow, or water current flows from the concave bank towards the convex bank, form horizontal river spiral flows (Yang and Li 2001). Processes of erosion, sediment displacement and sediment deposition occur simultaneously in the same river. Concave bank are typically eroded while convex banks are enlarged (Fig. 8.35). The Dujiangyan Irrigation System's continued operation for over more than 2,000 years is partly attributed to the way in which its weir capitalizes on cyclical processes of erosion in concave banks and on processes of sediment deposition in convex banks.

Fig. 8.35 The Dujiangyan Irrigation System from the Qinyan Tower. In this image, water flows downstream toward the Fish Mouth Levee, which divides the river into two branches. On the left is the inner branch and concave bank; on the right is the outer branch and convex bank. *Source* Photograph by Lu Fan

In applying theories of spiral river bend circulation, the builders of the Dujiangyan Irrigation System were able to guarantee sufficient supplies of irrigation water downstream. As part of the weir's construction, the riverbed of the outer branch was built up higher than that of the inner branch river so that during the dry season, water can flow from the outer branch into the inner branch. During flooding seasons, the Min River rises and a horizontal spiral forms at the Fish Mouth Levee, and in turn the main body of floodwater enters the outer branch of the river. At the end of the inner branch lies the Bottle-neck Channel, a waterway chiseled out from Yulei Mountain. Water flows through this intake area into the irrigation network. The Dujiangyan Irrigation System thus draws water for irrigation purposes as needed through the inner branch and diverts excess water into the outer branch (Fig. 8.36).

Each of the primary components of the Dujiangyan Irrigation System embodies the wisdom of the ancient Chinese people. In the first stage of constructing the Fish Mouth

Fig. 8.36 View of the Dujiangyan Irrigation System from the Qinyan Tower. The Fish Mouth Levee divides the Min River into inner and outer branches. As shown in the photograph, the waterway in the foreground is the outer branch, and the waterway in the background is the inner branch. *Source* Photograph by Mu Yuan, provided by Piyan Jiang

Fig. 8.37 Water flows downstream away from the Jingang Dike. In line with the principles of fluid dynamics, the dike, which is constructed of simple wooden frames and of bamboo baskets of pebbles, has remained for several thousands of years. *Source* Photograph by Yu Zhou, provided by Ming Jiang

Levee, Li Bing placed a triangular frame in the center of the river. Workers then placed bamboo baskets filled with pebbles into the frame to complete the structures, ultimately creating the existing Jingang Dike (Fig. 8.37). The same method is used annually to maintain the weir, as workers block water with bamboo cages filled with pebbles.

The Dujiangyan Irrigation System's continued functioning since its initial construction over 2,200 years ago is largely attributable to the scientific nature of the weir's site positioning and construction. When the 2008 Sichuan Earthquake struck, several structures, including the Two Kings Temple that commemorated Li Bing and his son, were largely destroyed (Fig. 8.38). However, the Dujiangyan Irrigation System suffered on minor damage (Fig. 8.39). While cracks appeared along sections of the Fish Mouth Levee, repairs sufficiently recovered the weir and no blockage occurred.

Geographical Interpretation

Located at the outlet where the powerful Min River pours out from the mountains with a dramatic drop in elevation, the Dujiangyan Irrigation System has played a crucial role in agricultural production in Sichuan, one of China's largest breadbasket regions, for over 2,200 years. The irrigation system is the oldest functioning water

Fig. 8.38 As a result of the 2008 Sichuan Earthquake, the Two Kings Temple was severely damaged and was covered in debris. *Source* Photograph by Fang Wang

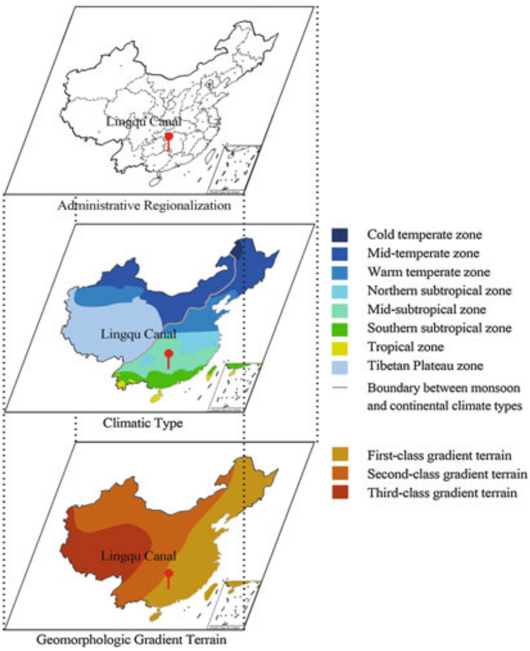
Fig. 8.39 The Bottle-neck Channel was not significantly damaged as a result of the earthquake. *Source* Photograph by Fang Wang

conservancy project in China and is a masterpiece that was completed by ancient Chinese engineers. The weir ingeniously employs hydrological and topographical principles to control flooding and to drain sediment and effectively provides a stable supply of irrigation water to areas relying on agriculture downstream. It has supported the Chengdu Plain as "the Country of Heaven."

8.5 Lingqu Canal: A Canal Joins Two Rivers

Location: Xing'an, Guangxi Province
Key Geographical Concept: Water conservation project construction and Cultural communication

The Lingqu Canal connects the Xiang River with the Li River, and its successful construction involved the intelligent use of hydrological principles as in the local watershed area. The canal enhanced communication between the Han nationality in the *Zhongyuan* region and the Baiyue people in the *Lingnan* region and thus played a significant role in increasing cultural exchange and ethnic integration between the two areas.



Geomorphologic Features
Xing'an County, where the Lingqu Canal is located, has a long military historyand sits on the ancient boundary of two historically important countries during the Warring States period (475–221 BC), namely Chu and Yue. Xing'an County is near the western stretch of the Nanling Mountains, within which sits the watershed area of the Li and Xiang Rivers, Taishimiao Mountain (Fig. 8.40). By cutting through Taishimiao Mountain, builders of the Lingqu Canal connected the Xiang River with the Li River. These two rivers are parts of the Yangtze River and Zhujiang River

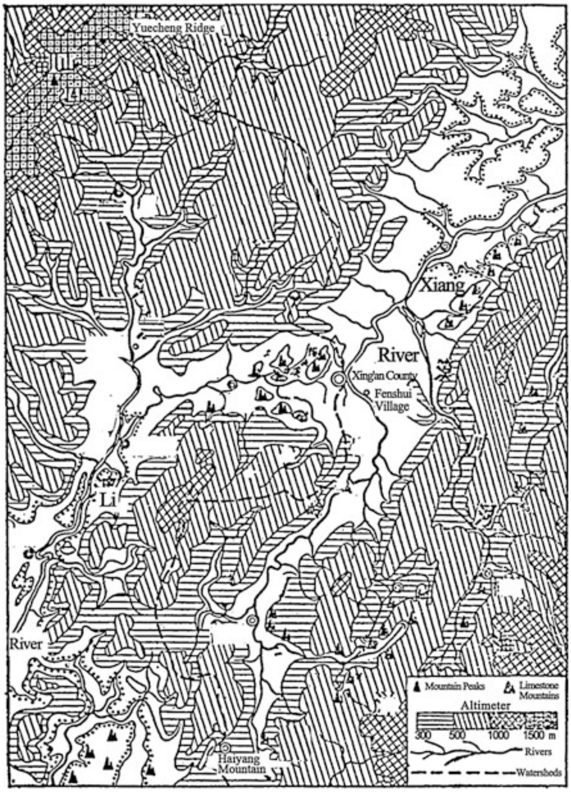


Fig. 8.40 Diagram of the Li and Xiang Rivers. Though the parts of the Li and Xiang Rivers in Xing'an County are located not far from each other, they do not intersect. Xing'an County presents generally north-south high and intermediate low. The southeast is higher than the northeast, while the northwest is higher than the southwest. To the north of Xing'an lies Yuecheng Hill, and to the south lies Haiyang Mountain. *Source* Editorial Committee on the Lingqu Canal in Xing'an, Guangxi Institute of Education 1974: 11

systems, respectively, and thus the Lingqu canal effectively joined two of China's important waterway systems into one enormous network, by waterworks blocking water from a tributary located between the Xiang and Li Rivers, to maintain the balance of water levels between the two rivers (Editorial Committee on the Guangxi Zhuang Autonomous Region Records 1998) (Fig. 8.41).

Climatic Features

Xing'an County falls within the mid-subtropical monsoon climate zone, which features a warm climate and seasonal weather. Abundant rainfall in the region ensures the Li and Xiang Rivers' water supply, guaranteeing the conditions necessary for building the Lingqu Canal.

Cultural Features

The Lingqu Canal was originally constructed for military use in the Qin Dynasty (221–207 BC). However, the significance of the canal extends beyond its integration of the Li and Xiang Rivers, as it also promoted communication between the Baiyue people in the *Lingnan* region of Southern China and the Han groups in the *Zhongyuan* region, the core part of China. In doing so, the Lingqu Canal facilitated significant cultural exchange and ethnic integration between the two groups.

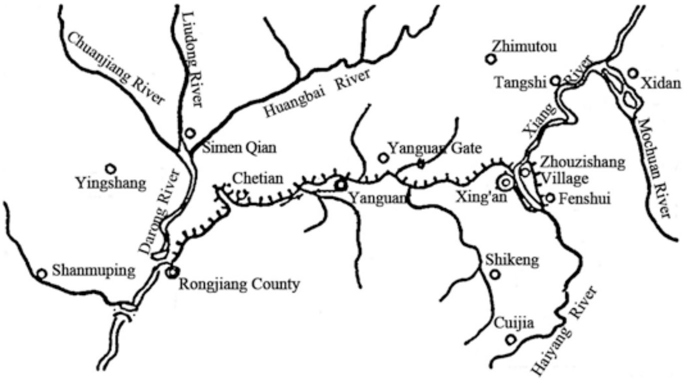


Fig. 8.41 Diagram of the Lingqu Canal. The Lingqu Canal is located in Xing'an County in northern Guangxi Province. The county sits along the Hunan-Guangxi Corridor, which runs from northeast to southwest. The canal, which connects the Xiang and Li Rivers, is 34 km in length. *Source* Editorial Committee on the Lingqu Canal in Xing'an, Guangxi Institute of Education 1974: 2

The Lingqu Canal was originally dredged to allow Qin Shi Huang (reign 246–210 BC), the First Emperor, after having successfully subjugated the six kingdoms of the Warring States period in approximately 221 BC, to engage in a large-scale military campaign against the southern Baiyue people. According to the book *Records of the Grand Historian*[6]*: Basic Annals of Qin Shi Huang,*[7] the Emperor made the decision to build the canal when he sent troops into the *Lingnan* region. The canal facilitated the transportation of rations delivered to the battlefield, and he later sent a large number of prisoners to the *Lingnan* region for the sake of protecting and expanding the country's border. Thus, many *Zhongyuan* Han ethnic groups commingled with the local Baiyue people and eventually developed into the Han people of the *Lingnan* region.

Extended Reading: Qin Southern Expedition

After the Qin Kingdom subjugated its six neighboring nations (in approximately 221 BC), the newly throned Qin Shi Huang dispatched General Tu Sui (?–214 BC) with 500,000 soldiers to attack the Dongyue region (now southern Zhejiang Province and the Oujiang River Valley), Minyue (now the

[6]***Records of the Grand Historian*** (Mandarin: *shi ji*), literally *Historical Records*, was written by Sima Qian, a Chinese historian in approximately the second century BC during the Western Han Dynasty (202 BC–8 AD).

[7]***Basic Annals of Qin Shi Huang*** (Mandarin: *Qin Shi Huang ben ji*) was the 6th Volume of *Records of the Grand Historian*.

Fuzhou region), Nanyue and Xi'ou (now Guangdong and Guangxi Provinces). According to the book *Huai Nan Zi: Ren Jian Xun,*[8] the offensive troops were divided into five parts, sent in various directions: one troop attacked Xi'ou and *Minyue*, all of the way to the eastern part of what is Jiangxi Province today; another two attacked Nanyue, one of which set out from what is Nanchang today to attack northern Guangdong, while the other attacked Fanyu from Changsha; the last two troops attacked Guilin. In 214 BC, Qin Shi Huang succeeded in conquering the entire region south of the Five Ranges, extending his border to the ocean in the east and to Beixianghu in the south (Lin 2009). The Qin Southern Expedition was very difficult; one troop met severe resistance while attacking Guangxi, such that it was wrote in *Huai Nan Zi*, "three years passed without the soldiers setting down their armor and weapons." The difficulties faced by the expeditionary troop were due in part to the rugged ghat and the over-extended supply line in the *Lingnan* region, and the front-line troops were unable to receive much-needed supplies. To remit rations, Qin Shi Huang sent his Minister Shi Lu to cut a canal that would integrate the Yangtze and Zhujiang River networks and

Fig. 8.42 The Lingqu Canal, which connects the Xiang and Li Rivers, has become an important transportation corridor between the *Zhongyuan* and *Lingnan* regions. Thus, it enjoys the title, "Lingqu Canal of the millennia, A Wonder of the Entire World." *Source* Photograph by Junya Wei, provided by Yiwen Xu

[8]***Huai Nan Zi: Ren Jian Xun***, a Chinese philosophical classic including theories from Taoist, Confucianist and Legalist concepts, literally *The Philosophers of Huainan: In the Man's World*, was written in the second century BC.

facilitate the transportation of food supplies (Editorial Committee on the Guangxi Zhuang Autonomous Region Records 1998). Therefore, the first man-made canal in the world came into being, the Lingqu Canal (Fig. 8.42).

One important reason that the Lingqu Canal connects the Xiang and Li Rivers successfully is its appropriate location and excellent use of local hydrological features. The watershed of the Li and Xiang Rivers is located within Xing'an County, and the average elevation of the latter is 204 m, only six meters lower than that of the former. The relative height of Taishimiao Mountain, which forms the watershed area of the two rivers, is only 20–30 m (Editorial Committee on the Lingqu Canal in Xing'an, Guangxi Institute of Education 1974). The shortest straight-line distance between the two rivers is only two kilometers, which provides favorable conditions for connecting the two waterways. In addition, an abundance of smaller tributaries in the area between the two rivers provides the necessary water to supplement the water flow through the canal. Considering that Xing'an County had historically served as the conduit for transportation from Hunan to Guangxi Province, it was natural to choose to locate the canal here (Fig. 8.43).

Fig. 8.43 Topography and Hydrology Map of Xing'an County. The Xiang and Li Rivers run quite close to each other. One tributary of the Xiang River is the Linghe River, which emanates from a valley in the north of Xing'an between Diandeng Hill and Fugui Ridge, called the Shi'an River. Another tributary of the Xiang River is Shuangnvjing Creek, which flows from Zheyuan Village in the south of Xing'an, through the Xiashui Cave, and finally enters the Xiang River in the northeast. *Source* Editorial Committee on the Lingqu Canal in Xing'an, Guangxi Institute of Education 1974: 14

Extended Reading: Watershed Areas and the Water Conservation Projects

A ridge or highland that marks the boundary of two different river basins is called a watershed and can constitute a significant obstacle to the construction of an inter-basin water diversion project due to its relatively elevated and separated topography. For instance, several ancient engineers in China attempting to connect the Yellow and Wei Rivers to the Hanjiang River failed to pass the hurdle, which is known as the Baoxie and Danba routes. The two routes were unable to function as canals, though both projects are relatively short in length, because of the overly high and step watershed, causing waterflow velocity or direction problems.[9] For this reason, the ancient Chinese engineers generally sought to avoid elevated watershed areas, choosing to dig canals in lowland areas instead, which is called the puerto. The Xianghan Canal project,[10] which took place during the Northern Song Dynasty (960–1127), took advantage of a puerto in the Nanyang section of the Qin Mountains to extend a canal to the Huai River. Although the project was, due to an insufficient supply of water, ultimately unsuccessful, modern literature generally praises that the project was sited correctly (Huang 1962). The success of the South-North Water Transfer Project during the period of the People's Republic of China, whose middle route passes through a puerto, also proves the convenience of this type of topography. These examples of canal projects throughout Chinese history reflect the peculiarity of the Li and Xiang Rivers watershed from a unique angle and also highlight human wisdom in the utilization of natural landscapes.

Dikes line up along the two riverbanks of the Lingqu Canal (Fig. 8.44). In addition to the North Canal and the South Canal, constituting the canal's main components, there are a number of dams (including large balances and small balances), a discharge balance, a fish-mouth-type dividing dike, gates in the steep canal (including a south gate and a north gate) and many other attached structures (Fig. 8.45) (Editorial Committee on the Guangxi Zhuang Autonomous Region Records 1998). The South Canal and North Canal together connect the Xiang and Li Rivers, while the large and small balances, discharge balances, fish-mouth-type dividing dike, steep canal gates and other structures work together to balance the difference between the water levels of the two rivers.

---

[9]Specifically, the distance between the origins of the tributaries of the two rivers on either side of the watershed area is small. The rivers mentioned here refer to the Baoshui-Xieshui and Danshui-*Bashu*i Rivers, which together flank the Qingling Ridge.

[10]This famous Northern Song Dynasty water conservation project was intended to extend the Baihe River north to Beijing but was unsuccessful due to water level issues and the limited nature of available engineering techniques.

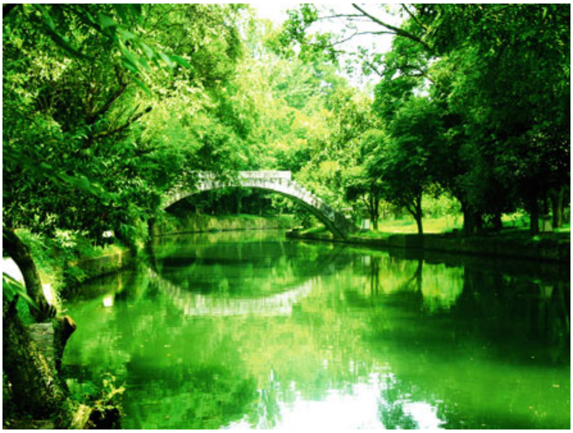


Fig. 8.44 This section of the Lingqu Canal was built with an embankment, where trees grow densely along the riverbanks. *Source* Photograph by Lida Fu, provided by Ming Jiang

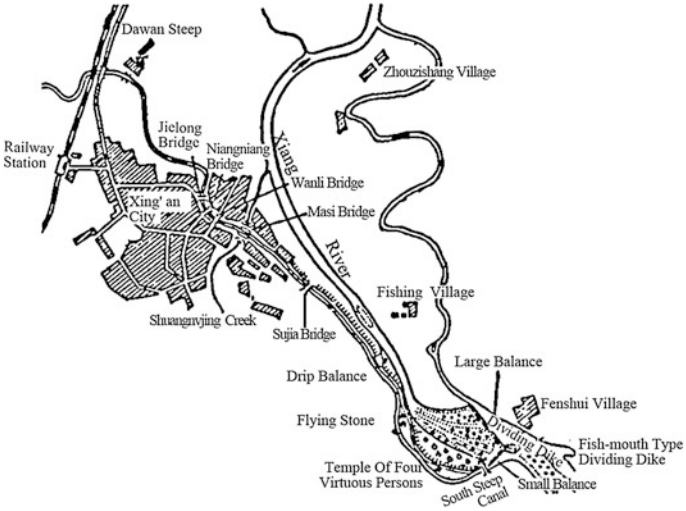


Fig. 8.45 Schematic diagram of the Lingqu Canal in Xing'an. The Lingqu Canal is primarily made up of the large and small balances, the fish-mouth-type dividing dike, the South Canal and North Canal, steep canal gates and the discharge balance. As the diagram illustrates, the North Canal curves form an S-shape, where water flows rapidly because the riverbed is steeply sloped. To prevent the river from cutting the bed of the North Canal progressively deeper, the north canal was given a winding shape to extend the distance that water must flow, thereby alleviating the slope and slowing the rate of flow, which creates an easier journey for ships. *Source* Editorial Committee on the Lingqu Canal in Xing'an, Guangxi Institute of Education (1974: 17)

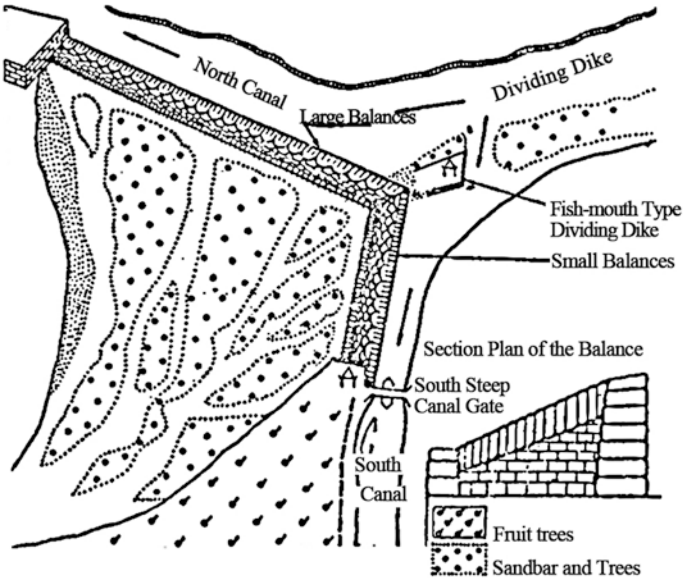


Fig. 8.46 Schematic diagram of the fish-mouth-type dividing dike and the large and small balances. The dike and balances together form a "人" font pattern. The overall structure plays the critical role of dividing the Haiyang River and introducing the Xiang to the Li River. *Source* Editorial Committee on the Lingqu Canal in Xing'an, Guangxi Institute of Education (1974: 19)

The Lingqu Canal connects to the Xiang River on one end by way of the North Canal, with the Li River on its other end by way of the South Canal. These two canal segments are connected by a series of waterworks built in the watershed area. The North and South Canals are directly connected by a dam, which consists of large and small balances joined together by the fish-mouth-type dividing dike at an obtuse angle of 108 degrees, blocking the downstream course of the Haiyang River and thus forcing the river to split into two parts that flow into the North and the South Canals (Fig. 8.46). At the end of the southern portion of the dam (the small balance) sits the southern steep canal gate, which allows water from the Li River to enter the South Canal. At the end of the northern portion of the dam (the large balance) sits the northern steep canal gate, which allows water from the Xiang River to enter the North Canal (Editorial Committee on the Guangxi Zhuang Autonomous Region Records 1998). In this manner, a channel connecting the two rivers is formed.

The systems of mechanisms that make up the Lingqu Canal Water Conservancy Project play the roles of alleviating slope, raising water levels, storing water and permitting navigation. Using the techniques at that time, the canal's engineers built

Fig. 8.47 One section of the stone dike of the Lingqu Canal, composed of the large and small balances. In total, the dike measures 500 m in length. *Source* Photograph by Yingruo Jin, provided by Yaogen Peng

a structure out of simple but firmly placed stones that functioned similarly to a modern ship lock (Editorial Committee on the Lingqu Canal in Xing'an, Guangxi Institute of Education 1974). The dike keeps the water level at a constant height of 1.7 m. During the flood season, the Haiyang River swells, and excess water flows over the dike, while in the dry season the dike fully blocks the river, guiding the river to flow entirely into the North and South canals. In total, the dike measures 500 m in length, of which the large balance, connected to the North Canal, is approximately 380 m in length, making up 70 % of the entire length of the dike. The small balance, which connects to the South Canal, is approximately 120 m in length, making up the remaining 30 % of the overall length (Fig. 8.47). In this manner, the water flow from the Haiyang River is balanced such that 30 % enters the Li River and 70 % enters the Xiang River. In addition, there are a number of gaps in the dikes that line the North and South canals. These so-called discharge balances ensure the discharge of excess water from the North and South Canals during flooding. To ensure that canals maintain a sufficient water level during the dry season, several sloped channels were built, equipped with steep canal gates, for the purpose of storing water to be released into the canal when needed. The steep canal gates were built with very large stones to form pairs of opposing, semicircle embankments that protrude from the sides of the reserve channels, functioning much as modern ship locks do today (Fig. 8.48).

There is a Chinese saying that proclaims, "Where in the north, there is the Great Wall, while in the south, there is the Lingqu Canal." The Great Wall and the Lingqu Canal are known together as the two greatest man-made engineering projects of the Qin Dynasty. Both were built for military purposes; although the Great Wall enjoys

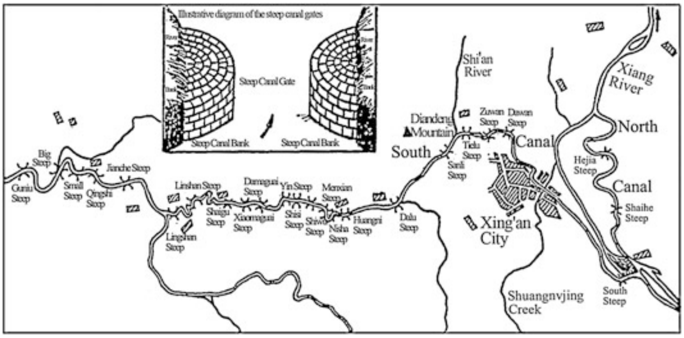


Fig. 8.48 Schematic diagram of the steep canal gates used in the Lingqu Canal. The gates are positioned in relatively shallow and rapid sections. The semicircular gates, made of very large stones, stick out into the canal to collectively alleviate the slope and raise the water level of the canal. *Source* Editorial Committee on the Lingqu Canal in Xing'an, Guangxi Institute of Education (1974: 24)

Fig. 8.49 There are many ancient bridges over the Lingqu Canal, linking both sides of the canal. *Source* Photograph by Lida Fu, provided by Ming Jiang

much greater fame for keeping other ethnic groups outside the border, in its own way the Lingqu Canal was a project of equal significance for facilitating the transportation of goods between the *Zhongyuan* and *Lingnan* regions (Fig. 8.49). After completion, the canal also played a role in political, economic and cultural exchange between the two regions that was difficult to overestimate. Today, although the canal is no longer open to navigation, it is well preserved and remains an important local channel for irrigation (Fig. 8.50).

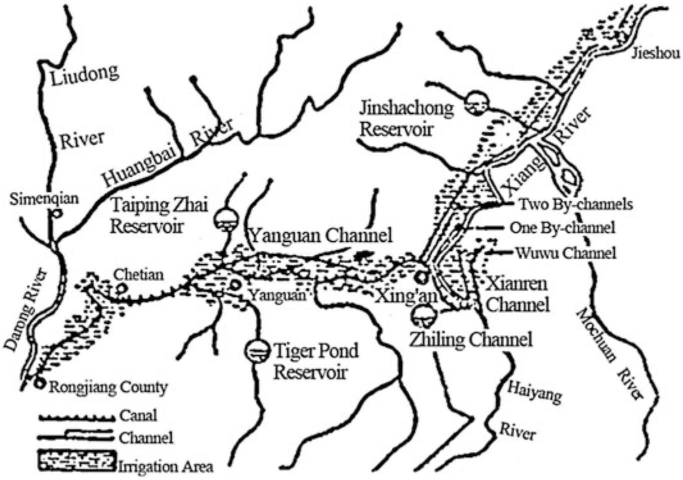


Fig. 8.50 Schematic diagram of the Lingqu Canal Irrigation. No longer a conduit for the transportation of goods, today the canal functions primarily as an irrigation resource for the surrounding farmland. *Source* Editorial Committee on the Lingqu Canal in Xing'an, Guangxi Institute of Education (1974: 39)

Geographical Interpretation

Known as, together with the Dujiangyan Irrigation System and the Zhengguo Canal, the "Three Great Water Conservancy Project of the Qin (approximately the third century BC)," the Lingqu Canal introduces water to connect the Xiang and Li Rivers to one another, thereby joining China's Yangtze River and Zhujiang River networks together. The Lingqu Canal was an important conduit for communication between China's northern and southern regions and helped to promote cultural integration between the *Zhongyuan* culture[11] and the *Lingnan* culture.[12]

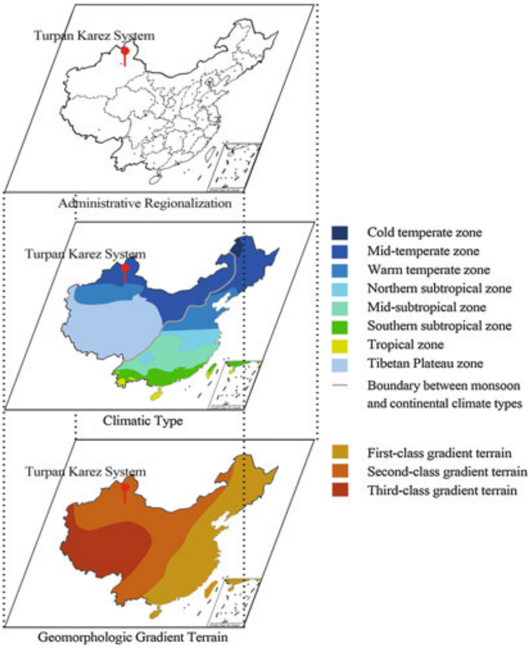
[11]***Zhongyuan culture*** (lit. culture of the Central Plain region in China) is the origin and core part of the Chinese culture centered in Henan Province and distributed in the middle and lower reaches of the Yellow River, which can be traced back to the Neolithic from 6000 to 3000 BC.

[12]***Lingnan* culture** is an important culture in southern China covering what are now the Guangdong, Guangxi and Hainan Provinces.

8.6 Turpan Karez System: An Underground Canal in the Gobi Desert

Location: Turpan, Sinkiang Uygur Autonomous Region
Key Geographical Concept: Water use under extreme arid weather conditions

In the extreme environment of the Gobi desert, there is very little precipitation and strong evaporation. People in the region of Sinkiang utilize a unique system of wells, called the Turpan Karez System, to draw groundwater for irrigation and support the region's agricultural production.



Geomorphologic Features
The majority of karezs in China are found in the region of Turpan (Fig. 8.51). The Turpan Basin has the Tianshan Mountains to its north, South Lake Gobi Desert and the Kumtag Desert to its southeast and Jueluotag Mountain to its southwest (Editorial Committee on the Turpan Municipal Records 2002). After exiting the nearby mountains, the area's rivers flow into a gravel area of the Gobi desert where they seep underground and become groundwater. The Turpan Karez System sits below the mountain diluvial fan and the diluvial plain.

Climatic Features
Turpan falls within the continental arid climate zone. The climate is torrid and features intense solar radiation, powerful winds, a large diurnal range in

Fig. 8.51 The Turpan Karez System is located in the Gobi desert. The land is covered with desert gravel, from which a Karez is relatively easily excavated. *Source* Provided by Bin Huang

Fig. 8.52 Local residents draw water at the exit of an underground karez channel in Turpan, Sinkiang. They use these channels as a means of collecting an otherwise scarce resource. *Source* Photograph by Bin Huang

temperature and rapid evaporation. The average annual precipitation in Turpan is only 16.4 mm, while the average annual evaporation can reach 2,837.8 mm (Editorial Committee on the Turpan Municipal Records 2002). Under these climate conditions, surface water transportation would involve a great deal of loss. The Karez System creatively takes advantage of shallow groundwater and makes the water transportation possible (Fig. 8.52).

Cultural Features

The development of the Karez System is tied to the traditional agricultural culture of the Turpan area. The arid Turpan Basin enjoys abundant sunshine, plentiful warmth and high crop yield. Thus, for a long time, local areas have primarily engaged in a combination of oasis farming and husbandry. Cultivating the land under such climate conditions places a high demand on irrigation water, but the region's high temperatures, powerful winds and severe radiation cause surface water to evaporate extremely fast, which makes surface water transportation or storage very difficult. Shaped as underground channels, the karez collects shallow groundwater and guides it to where it can be collected or used, greatly reducing the amount of water that is lost to evaporation. The karez helps to meet the region's agricultural water supply needs and make Turpan oasis farming possible.

Karez means 'well' in Uygur. The Karez System, also called "underground canal," is an underground water conservancy project built by people who live in arid regions as an adaptation to very hot, rain-deprived and water-scarce conditions. It is also a creative agricultural irrigation system. The Karez System is used to aid agricultural irrigation in dry regions throughout Asia, Europe, South America and North America. Within China's Sinkiang Uygur Autonomous Region, the Karez System is mainly found in the cities of Turpan, Hami, Qitai, Mulei, Kuche, Hetian and Atushi (Tair 2007). Among these areas, Turpan is home to most karezs. The Flaming Mountains have mudstone with poor permeability, so groundwater from the Tianshan Mountains is blocked and lifted by it, bringing it closer to the surface (Editorial Committee on the Turpan City Records 2004). Turpan is primarily arid gravel desert with a surface of sand, gravel and sandy clay that is relatively easy to excavate. This geology precisely provides three basic conditions to harvest groundwater, namely plentiful near-surface groundwater, a steep surface slope and sturdy soil that is also easy to excavate.

Extended Reading: Gobi Desert

The Gobi desert is a desert comprised of the gravel remains of eroded fine-grained materials after wind erosion. Thus, if defined in terms of its origin, the Gobi desert would be a wind-erosion landform. According to its formation process, the Gobi desert can be divided into two types, accumulation and erosion. The accumulation Gobi desert is very flat and distributed on the sedimentary plain of the arid area, filtered by the wind from alluvial materials, while the erosion Gobi desert is distributed among peneplain hills and wavy tableland areas that are in the highly eroded stage. This type of desert is hilly and covered with various higher and lower layers and slopes. In China, the Gobi desert is primarily concentrated in eastern Sinkiang, the junction region between Gansu and Sinkiang, and on the border between China and Mongolia. The Gobi desert is one of the most distinctive natural landscapes of the Turpan-Hami Basin. The desert in this area is connected with the northwest of the Hexi Corridor, which is the most concentrated area of Gobi desert not only in China but in the rest of Eurasia as well (Wang and Chen 2008). Most karezs at the north of the Flaming Mountains are distributed on the southern and western foothills of the Tianshan Mountains, which is the transitional area between the fringe of the alluvial fan and the alluvial plain (Qian 1985) (Fig. 8.53).

Fig. 8.53 The Gobi desert is one of the most distinctive natural landscapes of the Turban-Hami Basin. The Turpan Karez System forms a unique scene amidst this dry landscape because of the perfectly aligned vertical shafts. *Source* Photograph by Bin Huang

As an unpowered water project, the Turpan Karez System consists of vertical shafts, underground channels, open channels and cisterns (Fig. 8.54). The underground channels are the primary components. The vertical shafts connect the surface to the underground channels and serve as access channels for the Karez System excavation. The open channels connect the underground channels to the cisterns, where the water is stored when it is introduced to an oasis area through the Karez System.

As the major component of the Turpan Karez System, an underground channel consists of two parts, the catchment channel and the delivery channel. The catchment channel is at the end of the Karez System that extends deepest into the ground. It penetrates below the level of the groundwater to draw the undercurrent to guarantee the water supply of the entire Karez System. The delivery channel serves to transport underground water (Fig. 8.55). This channel has a slight slope, and the water level at the start of the channel is higher than the end, so water collected in the catchment channel flows down the length of the underground channel without assistance. The entire underground channel is typically 4,000 m in length, 0.5–0.8 m in width and 1.2–1.8 m in height. Channels are dug relatively narrow, which reduces the amount of excavation engineering work required (Editorial Committee on the Turpan City Records 2004).

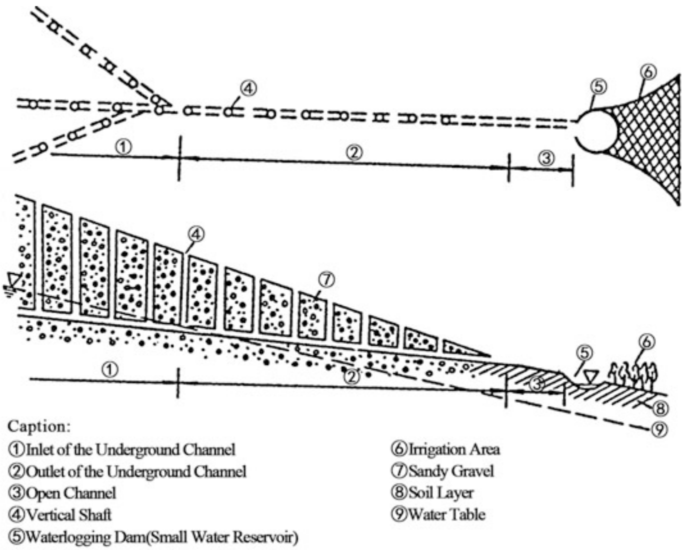


Fig. 8.54 Plan (*upper*) and section (*below*) engineering diagrams of the Turpan Karez System. The vertical shafts are evenly distributed above the underground channels. Water from the mountain area flows into the horizontally sloped underground channel and finally arrives into the oasis. *Source* Editorial Committee on Sinkiang Uygur Autonomous Region Records, Editorial Committee on the Sinkiang Records: Irrigation Records (1998: 175)

Fig. 8.55 Underground delivery channel in the Turpan Karez System. Groundwater flows along the underground channel to reach the oasis. Channels are generally narrow, thus requiring a reduced amount of excavation work. *Source* Photograph by Fang Wang

Fig. 8.56 Vertical shaft of a karez. This shaft is circular in shape, with a diameter of approximately one meter. *Source* Photograph by Jian Liu, provided by Bin Huang

During the excavation process, the vertical shafts help to establish the location of the underground channel and serve as conduits for excavated soil and ventilation. Once a karez is completed, the vertical shafts become important access corridors for inspection and maintenance of the underground channel. The shafts are evenly distributed along the length of the underground channel, spaced 10–20 m apart on the lower watercourse of the karez and 30–50 m apart on the upper watercourse. They vary in shape but usually appear rectangular, square or circular in cross-section. Their diameter or the length of one side is often 1 m, large enough to admit one person to perform excavation work (Fig. 8.56). The upstream sections of the karez tend to be more distant from the surface than the downstream sections, so the upstream shafts tend to be deeper than the downstream shafts (Fig. 8.57).The neatly aligned shaft openings form a fantastic geographic landscape from a bird's eye view (Fig. 8.58).

The end of the Turpan Karez System is the open channel and the cistern, which can directly take in water. When the thickness of the surface ground descends to within 3.2 m, the underground channel is excavated to become an open channel that

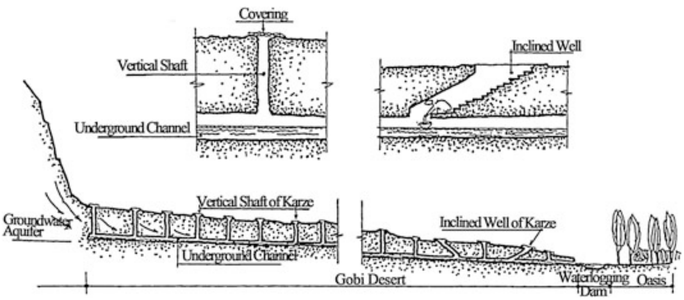


Fig. 8.57 Under the extreme arid and hot weather conditions of Sinkiang, the Turpan Karez System creatively takes advantage of the relationship between ground slope and groundwater gradient to bring water to the cultivated areas. The drawing above is a section of the vertical shafts of a karez, which have varying forms. *Source* Sun (2004: 518)

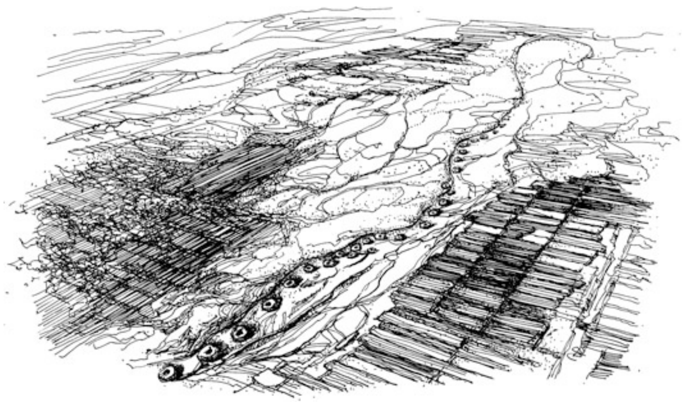


Fig. 8.58 The Turpan Karez System forms a distinctive geographic landscape that is easily recognizable from a bird's eye view. *Source* Drawing by Wen Zhang, provided by Yaogen Peng

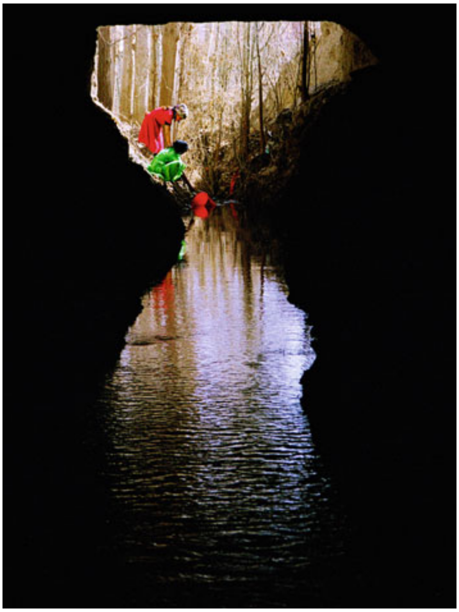


Fig. 8.59 Intersection of the underground channel and the open channel in the Turpan Karez System. When the thickness of the surface ground descends to within 3.2 m, the underground channel is excavated to become an open channel from which water can be drawn directly. *Source* Photograph by Shiying Zhang, provided by Bin Huang

carries water on the surface (Editorial Committee on Sinkiang Uygur Autonomous Region Records 1998) (Fig. 8.59). The cistern stores water delivered from the karez to increase the water temperature and regulate the flow of irrigation. A karez is a completely unpowered water conservation project. Provided there is a sufficient source of water, the karez transports water 24 h a day continuously. At the same time, the cistern can store water at night and release it in daytime as needed, avoiding needless waste of water during the night.

Fig. 8.60 The Turpan Karez System is a popular irrigation method in dry areas because it creatively takes advantage of underground water supplies and makes an oasis in the desert possible. *Source* Photograph by Bin Huang

Opinions differ regarding the origin of the Turpan Karez System; some variously hold that the technique originated from the Chinese mainland or from Persia or that it was a local innovation (Editorial Committee on Sinkiang Uygur Autonomous Region Records 1998). Neither is it clear when the technique was developed. Regardless of when or from which place the use of karez originated, the technique is easy to grasp and requires no power, so the Turpan Karez System is a popular method of water capture and irrigation in dry areas (Fig. 8.60). However, the use of karez in Sinkiang has decreased along with the spread of motor-pumped wells and the decreased groundwater level. Though someday it might be entirely replaced by a modern technology, the karez is still a precious part of the Turpan agricultural lifestyle.

Geographical Interpretation

Under the severe, torrid climate conditions of the Turpan Basin in Sinkiang, the Karez System takes advantage of local unique geology, plentiful groundwater resources, topographic slope and groundwater gradients to bring water up out from under the earth to the agricultural land above.

References

Administration of Dujiang Weir Scenic Spot. (2003). *Dujiang Weir scenic spot records*. Chengdu: Chengdu Times Press. (in Chinese).

Beijing Zito Books Co. Ltd. (2004). *China's great architecture gallery*. Xi'an: Shaanxi Normal University Publishing House. (in Chinese).

Dai, Z. J. (2005). *Chinese corridor bridge*. Fuzhou: Fujian People's Publishing House. (in Chinese).

Deng, Z. X., & Hu, J. (2008). Discussion on utilization and protection of Kariz in Turpan Prefecture. *Arid Environmental Monitoring, 22*(3), 165–168. (in Chinese).

Departments of Geography in Peking University, Nanjing University, Shanghai University, Lanzhou University, Hangzhou University, Northwest University and Sun Yat-sen University. (1978). *Geomorphology*. Beijing: People's Education Press. (in Chinese).

Editorial Committee on Sinkiang Uygur Autonomous Region Records, Editorial Committee on the Sinkiang Records: Irrigation Records. (1998). *Sinkiang records (Volume XXXVI): Irrigation records*. Urumqi: Sinkiang People's Publishing House. (in Chinese).

Editorial Committee on the Chengdu Municipal Records. (1993). *Chengdu Municipal records: Geography records*. Chengdu: Chengdu Press. (in Chinese).

Editorial Committee on the Chengdu Municipal Records. (2001). *Chengdu Municipal records: Irrigation records*. Chengdu: Sichuan Lexicographic Publishing House. (in Chinese).

Editorial Committee on the Dujiangyan Irrigation Records, Guanxian County. (1983). *Dujiangyan Irrigation Records*. Guanxian County: Editorial Committee on the Dujiangyan Irrigation Records. (in Chinese).

Editorial Committee on the Guangxi Zhuang Autonomous Region Records. (1998). *Guangxi records: Irrigation records*. Nanning: Guangxi People's Publishing House. (in Chinese).

Editorial Committee on the Jingxing County Records. (1986). *Jingxing County Records*. Shijiazhuang: Hebei People's Publishing House. (in Chinese).

Editorial Committee on the Jingxing County Records. (2006). *Jingxing County records: 1985–2004*. Beijing: Xinhua Publishing House. (in Chinese).

Editorial Committee on the Lingqu Canal in Xing'an, Guangxi Institute of Education. (1974). *Lingqu Canal in Xing'an*. Nanning: Guangxi People's Publishing House. (in Chinese).

Editorial Committee on the Taishun County Records. (1998). *Taishun County Records*. Hanzhou: Zhejiang People's Publishing House. (in Chinese).

Editorial Committee on the Turpan City Records. (2004). *Turpan City Records*. Urumqi: Sinkiang People's Publishing House. (in Chinese).

Editorial Committee on the Turpan Municipal Records. (2002). *Turpan Municipal Records*. Urumqi: Sinkiang People's Publishing House. (in Chinese).

Editorial Committee on the Vegetation Maps, Chinese Academy of Sciences. (2007a). *Vegetation map of China and its geographic pattern: Illustration of the vegetation map of the People's Republic of China (1: 1,000,000)* (Vol. I). Beijing: Geological Publishing House. (in Chinese).

Editorial Committee on the Vegetation Maps, Chinese Academy of Sciences. (2007b). *Vegetation map of China and its geographic pattern: Illustration of the vegetation map of the People's Republic of China (1: 1,000,000)* (Vol. II). Beijing: Geological Publishing House. (in Chinese).

Editorial Committee on the Vegetation Maps, Chinese Academy of Sciences. (2007c). *Vegetation map of the People's Republic of China (1: 1,000,000)*. Beijing: Geological Publishing House. (in Chinese).

Editorial Committee on the Zhijiang Autonomous County of Dong Nationality Records. (1993). *Zhijiang Autonomous County of Dong Nationality Records*. Beijing: SDX Joint Publishing Company. (in Chinese).

Editorial Group on A Brief History of the Uygur nationality. (1991). *A brief history of the Uygur nationality*. Urumqi: Sinkiang People's Publishing House. (in Chinese).

Fang, Y. (1995). A study on the Hongqiao Bridge. *Architectural Journal,* (11), 55–60. (in Chinese).

Feng, H. (2003). Corridor-bridges in Taishun. *Architectural Knowledge,* (2), 29–34. (in Chinese).

Feng, G. H. (2007). *Integrated documents of the Dujiang Weir irrigation system in the Sichuan volume of historical documents from the pre-Qin Era to the Qing Dynasty*. Chengdu: Bashu Publishing House. (in Chinese).

Guo, Y. W. (1998). Analysis of the significance of fluvial landforms in the construction of Dujiang Weir. *Journal of Hohai University, 26*(3), 102–104. (in Chinese).

Han, H. (1994). On the historical role of the Dujiang Weir. *Sichuan Water Resource, 15*(4), 57–58. (in Chinese).

He, J. F. (2005). Thinking of relation between *Langqiao* protection and water engineering construction. *Zhejiang Hydrotechnics,* (1), 81–91. (in Chinese).

Huang, S. Z. (1962). The land and water connection between Huang-Wei and Jiang-Han basins in history and its contribution. *Acta Geographica Sinica,* (4), 320–335. (in Chinese).

Li, H. Z. (2007). Signal and symbol-probing of architectural culture of old lounge bridge in Eastern Fujian. *Journal of Huaqiao University* (*Philosophy & Social Sciences Edition)*, (2), 117–122. (in Chinese).

Liao, J. X. (2007). *A study on the features of traditional culture of the Dong nationality in the south*. Beijing: Nationalities Publishing House. (in Chinese).

Lin, J. M. (2009). *Manuscripts of the Qin Dynasty history*. Beijing: China Renmin University Press. (in Chinese).

Liu, Z. G. (2009). Protect and develop the water culture the ancient of Lingqu canal: Thinking and suggestion on the protecting of Lingqu canal and development of Lingqu culture. *Guangxi Records (GVANGJSIH DIFANGHCI), 156*(3), 35–38. (in Chinese).

Luo, D. Q., et al. (2009). *Guizhou vernacular dwelling*. Beijing: China Architecture & Building Press. (in Chinese).

Mao, Y. S. (1986). *A history of ancient Chinese bridge technology*. Beijing: Beijing Publishing House. (in Chinese).

Pan, X. J. (2006). The culture of the Dong People Wind and Rain Bridge. *Guangxi Records (GVANGJSIH DIFANGHCI),* (1), 60–62. (in Chinese).

Qian, Y. (1985). Karez well in Sinkiang. *Arid Land Geography,* (2), 17–20. (in Chinese).

Sun, D. Z. (2004). *A study on Chinese residential architecture*. Beijing: China Architecture & Building Press. (in Chinese).

Tair, A. (2007). A review of Sinkiang karez research. *The Western Regions Studies,* (1), 111–115. (in Chinese).

Tang, H.C. (2000). *A history of Chinese science and technology volume of bridges*. Beijing: Science Press. (in Chinese).

Tang, L. X., & Hu, J. F. (2005). The value analysis, preservation and development of ancient corridor bridges in southern Zhejiang as world heritage. *Zhejiang Journal,* (5), 218–221. (in Chinese).

The Cultural Relics Administration of Guilin Revolution Committee. (1975). *Summary of the documents about Lingqu Canal*. Guilin: The Cultural Relics Administration of Guilin Revolution Committee. (in Chinese).

Wang, S. Z. (1999). *Chinese vernacular architecture* (Vol. V). Nanjing: Jiangsu Science and Technology Press. (in Chinese).

Wang, T., & Chen, G. T. (2008). *Landmarks of Serindia: Chinese deserts and gobi*. Shanghai: Shanghai Scientific and Technical Documentation Press. (in Chinese).

Wu, H. (2004). *Village culture of the Dong People in China*. Beijing: Nationalities Publishing House. (in Chinese).

Xu, X. T. (2006). *Study on planning support system of inter-basins water transfer: [Dissertation for Doctorate]*. Beijing: China Institute of Water Resources and Hydropower Research. (in Chinese).

Yang, J. C., & Li, Y. L. (2001). *Principles of geomorphology*. Peking University Press. (in Chinese).

Yao, L. J., & Shi, K. Z. (2005). *The social change in regions of the Dong People*. Beijing: The Press of Minzu University of China. (in Chinese).

Zhang, S. Z. (1997). Evaluation of Mount Cangyan. *Chinese Landscape Architecture, 13*(2), 44–45. (in Chinese).

Zhang, B. R. (2003). *The architectural arts of the Dong People*. Changsha: Hunan Fine Arts Publishing House. (in Chinese).

Zhang, Z. R. (2010). The Overhanging Temple: An exotic flower in the history of Chinese architecture. *China Homes,* (6), 42–52. (in Chinese).

Zhou, Z. M. (1994). A new of peak-forest landform: The Wulingyuan quartz sandstone peak-forest. *Tropical Geography,* (3), 258–262. (in Chinese).

Zhou, C. H. (2006). *A dictionary of geomorphology*. Beijing: China Water & Power Press. (in Chinese).

Zhu, H. Z., et al. (2005). *Poem life: A treatise on ecological aesthetics of the Dong People*. Beijing: The Ethnic Publishing House. (in Chinese).

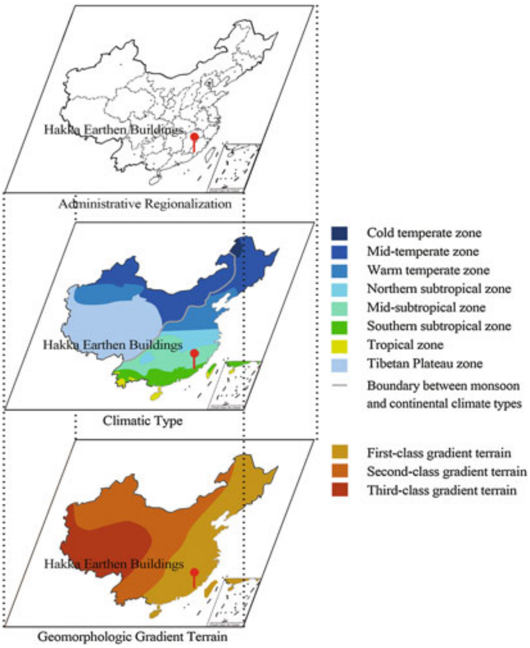
Chapter 9
"Isolation" Cases

9.1 Hakka Earthen Buildings: A Enclosed Community

Location: Yongding, Fujian Province
Key Geographical Concept: Immigration migration and introverted cultural inheritance

To escape from wars, the Hakka people of China made several large ethnic migrations from the *Zhongyuan* region to the Southern Fujian region. In that region, the Hakka people built culturally unique fortress-like structures to defend their culture and themselves. These structures are the Hakka earthen buildings.

F. Wang, *Geo-Architecture and Landscape in China's Geographic and Historic Context*, DOI 10.1007/978-981-10-0483-4_9



Geomorphologic Features

Hakka earthen buildings of Fujian are mainly found in the Western and Southern Fujian regions, where Hakka people live in isolation or together with locals. These types of buildings are mostly concentrated in the areas of Yongding (Fig. 9.1), Nanjing (Fig. 9.2), Pinghe, Zhao'an; the most well-known is the Yongding earthen building. Yongding is located in a section of Fujian Province's mountainous area and belongs to the typical mid-to-low hilly landform. River valley basins and intermountain basins are scattered along both sides of the Yongding River, the Jinfeng Creek, the Huangtan River and the lower reaches of the Tingjiang River, similar to a string of pearls (Editorial Committee on the Yongding County Records 1994). The earthen buildings of this area are primarily constructed in high-up locations where the soil is sturdy.

Climatic Features

Yongding falls within the southern subtropical maritime monsoon climate zone. The summer is long, and the winter is short; both seasons have fairly moderate temperature. Precipitation occurs primarily during the rainy season, which makes the dry and wet seasons rather distinct.

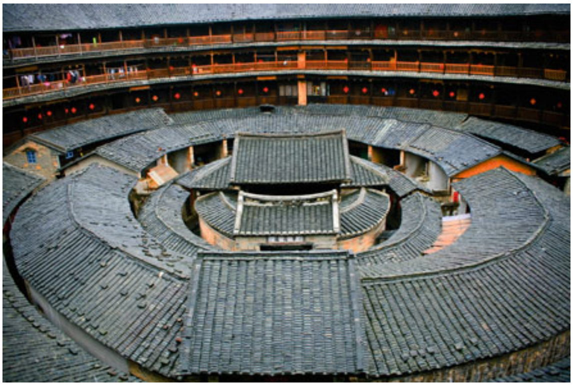


Fig. 9.1 Bird's eye view of the Chengqi Building in Gaotou Village, Yongding County, Fujian. With a diameter of 73 m, the Chengqi Building is the largest existing circular earthen building. The entire building complex consists of three rings and a center. The outermost ring is 16.4 m in height and has four stories of 72 rooms each. The second ring has two stories of 40 rooms on each floor. The innermost circle has only one story with 32 rooms. At the center is the ancestor's hall. *Source* Photograph by Jinfeng Chang, provided by Yiwen Xu

Fig. 9.2 The Tianluokeng earthen building cluster in Nanjing County, Fujian. Four circular earthen buildings surround a square one. Viewed from above, the overall layout is similar to a flower blossom. *Source* Photograph by Jinfeng Chang, provided by Yiwen Xu

Vegetation Features
The native vegetation in Yongding consists mostly of subtropical evergreen broad-leaf forests, but they were damaged by a long period of human activity in the area and have now been replaced by secondary forests. Now, the area agriculture produces mainly rice, complemented by tea and fruit.

Cultural Features
Earthen buildings are a unique architectural form of the Hakka people. Driven by recurrent warfare in the *Zhongyuan* region, beginning in the time of the Eastern Jin Dynasty (317–420), many people gradually began to migrate south. A portion of these emigrants moved to the border of Jiangxi, Guangdong and Fujian Provinces. Rather than assimilating into the local population, these immigrants struggled to

maintain cultural independence (Lin 2006) and eventually developed into a relatively independent cultural group called the Hakka. In concert with the manner of their cultural evolution, the Hakka developed an architectural style of enclosed residences.

After their arrival in Southern China, the Hakka people proceed to develop relatively independently, featuring their agricultural self-sufficiency and close ties of blood. For example, villages naturally formed through blood relations serve as basic housing and work units (Lin 2006) (Figs. 9.3 and 9.4). Emerging during the Song

Fig. 9.3 The Hakka earthen buildings sit in the embrace of the surrounding mountains. These buildings appear in square, circular and other layouts. The circular layout is the most typical and is a distinctive large-scale rammed earth residential structure. *Source* Image by Wen Zhang, provided by Yaogen Peng

Fig. 9.4 The Chuxi earthen building in Yongding County, Fujian. The architectural space of the earthen building is inward-looking, and its eaves corridors form the public spaces for residents. *Source* Photograph by Bihu Wu

(960–1279) and Yuan (1271–1368) Dynasties, these earthen building clusters are ideally suited to the Hakka enclosed residential lifestyle. They create an isolated space for Hakka residents that protects them from war, outside intrusion and attacks by wild animals.

Extended Reading: Large-scale Migrations in Ancient China

The early center of the *Zhongyuan* Han nationality civilization in China was at the river basin of the middle and lower reaches of the Yellow River. The Han nationality has had a number of large-scale migrations over the course of Chinese history, five of which were concerned with the Hakka people (Liu 1998). The first Hakka migration took place after the Yongjia Turmoil of the Eastern Jin Dynasty in the fourth century, when residents of the *Zhongyuan* region were forced to leave the Yellow River watershed for the Yangtze River watershed, facilitating the integration of the Han people with southern locals, the Xi people and the Li people. The second migration occurred in the late Tang Dynasty, around the late 9th and early 10th centuries. During this migration, the Han people migrated to southeastern Jiangxi Province, southwestern Fujian Province and northeastern Guangdong Province. The third migration took place between the Song and Yuan Dynasties in the 13th to 14th centuries. As the Yuan Dynasty armies marched south, the Song residents fled from southern Jiangxi and western Fujian to northeastern Guangdong to seek refuge, and at this time the Hakka people emerged. The fourth migration is known to the Hakka as the "Westward Movement", which took place during the Ming (1368–1644) and Qing (1644–1911) Dynasties. Because of land needs, the Hakka traveled further into the areas of central Guangdong, Guangxi, Sichuan and Hunan. The fifth migration occurred at the end of the Taiping Heavenly Kingdom[1] era (1851–1864), when large groups of Hakka migrated from modern-day eastern Guangdong to southern Guangdong, Hainan and Taiwan. Hakka migrations stretch over a period of 1,500 years from the fourth to the 19th century, with an approximately 300- to 500-year interval between each other. In summary, after the Sui (581–618) and Tang (618–907) Dynasties, frequent dynastic change and war gave rise to large migrations of Chinese people, which inevitably impacted the Hakka. A large ethnic migration traveled from the *Zhongyuan* and *Jiangnan* regions to Jiangxi, Fujian and Guangdong Provinces. This activity accelerated the blending of ethnic groups in these areas and led to the formation of three major ethnic groups, including the Hakka people (Zeng 2001) (Fig. 9.5). In this manner, a number of colorful regional cultures arose, and the Hakka earthen buildings are one blossom from a bouquet of unique regional architectural types.

[1]**Taiping Heavenly Kingdom Movement**, a massive peasant uprising in southern China from 1851 to 1864 against the ruling Qing Dynasty government that was led by Hong Xiuquan (1814–1864).

Fig. 9.5 Map of the Hakka migration drafted in 1933, modified in 1938 and supplemented in 1950. The map illustrates the primary routes of the Hakka people's migration to southern China. *Source* Luo (1989: 35–36)

Fujian's earthen buildings originated in Yongding County (Fig. 9.6), where many of the remaining earthen buildings are concentrated today. This area is located in western Fujian and is home to the majority of immigrant Hakka. Today, there are over 23,000 ancient earthen buildings in Yongding and more than 8,000 of them predate the Qing Dynasty (1644–1911). At the same time, the buildings are built in various forms, such as circular (Fig. 9.7), square (Figs. 9.8 and 9.9), a mansion-like shape and other mixed types; the most widely known are circular ones.

Earthen buildings come in many types, but they are all introverted, enclosed structures. Circular buildings usually have multiple layers, generally with a thick, solid outer wall and introverted windows and doors. Large circular building

Fig. 9.6 The Jiqing Building in Yongding County is the oldest circular earthen building with the most unique structure in Yongding. This image depicts the central ancestor's hall. *Source* Photograph by Bihu Wu

Fig. 9.7 A circular earthen building in Yongding County, Fujian. Usually, the first and second floors of an earthen building do not have windows, but the windows of the third and fourth floors can open. *Source* Photograph by Bihu Wu

Fig. 9.8 The Chuxi earthen buildings in Yongding County, Fujian. The building in the photo has a simple structure and a square floor plan. This type of earthen building is widely found in Yongding, where there are more square buildings than circular ones. *Source* Photograph by Bihu Wu

Fig. 9.9 The Guangyu Building in Yongding County, Fujian. The Guangyu Building, built in 1775, has three stories and total 102 rooms. It is the oldest and best-preserved earthen building in Hongkeng Village. *Source* Photograph by Wenkui Wang, provided by Lin Yan

complexes can have two or more polycyclic concentric rings of rooms (Fig. 9.10). Square-shaped buildings resemble the circular earthen building in structure and set stairways at four corners (Fig. 9.11). The mansion-like buildings, which are also

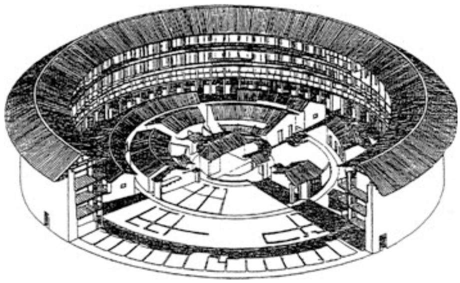


Fig. 9.10 Structure of a circular earthen building. The plan drawing of a circular earthen building is a multiple-ring type. This type of building is usually built with the outer wall first and then interior structures are expanded when needed. *Source* Lu (2001: 112)

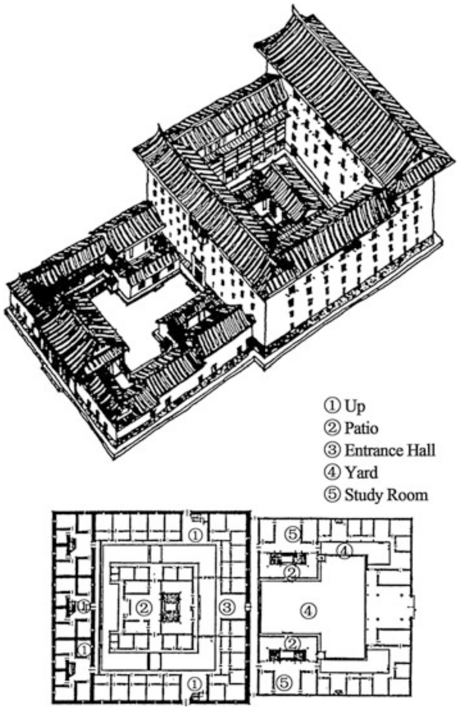


Fig. 9.11 Bird’s eye view (*upper*) and floor plan (*bottom*) drawings of the Yijing Building in Yongding County, Fujian. The Yijing Building is a famous square-shaped earthen building. The structure of the main body with the “—” type five-story rear part and the “冂” type four-story front part surrounds a central single-level building. In front of the main body, there is another building of one or two floors, which form a courtyard. *Source* Lu (2003: 581)

known as the Five-Phoenix Buildings, have two courtyards and three sets of rooms arranged together in a square-shaped building complex. The entire structures of courtyards, halls and side rooms are laid out symmetrically along a central axis that rises as it progresses deeper into the complex (Fig. 9.12). Mixed-type earthen buildings are those that display a combination of the above types (Editorial Committee on the Yongding County Records 1994).

The unique architectural form of the Yongding earthen buildings not only is artistically interesting but also has robust defensive properties. Furthermore, the

Fig. 9.12 The Fuyu Building in Yongding County, Fujian. The Fuyu Building, built in 1880, is a mansion-like earthen building along a central axis. The back of it is higher than the front, and two side rooms complete the courtyard enclosure. This layout utilizes height variance to establish a distinct hierarchical order. There are three gates in front of the building. The main building is separated from the side rooms by inner doors. The entire building complex consists of three sub-complexes. *Source* Photograph by Wenkui Wang, provided by Lin Yan

Fig. 9.13 The Hukeng earthen building in Yongding County, Fujian. Loess and cypress wood provide the primary materials for wall construction. Earthen buildings have walls one to two meters thick at their base that thin as they rise. The building's overhanging eaves are quite large, even the relatively small ones can extend more than two meters from the wall. *Source* Photograph by Bihu Wu

structure gives rise to an interior microclimate of moderate temperatures and constant humidity. Thick, rammed earth walls support the building weight and protect the compound (Fig. 9.13). To facilitate wall construction, the earthen buildings are thicker at the bottom—where they reach one to two meters in width for stability—than at the top. These solid, thick earthen walls provide excellent insulation. In the oceanic climate region where Yongding is located, the walls help to lower indoor humidity as well (Fig. 9.14).

Fig. 9.14 An earthen building complex in Yongding County, Fujian. The complex does not stand out from its surrounding environment due to the use of loess as the major material in the construction. The thick exterior walls support the building's weight and provide protection from intruders. The walls also create a microclimate of constant humidity and temperature. *Source* Photograph by Wenkui Wang, provided by Lin Yan

Fig. 9.15 The Chuxi earthen building in Yongding County, Fujian. This earthen building has three rings. The first ring has four stories, whereas the other two have only one story. Important ceremonies, such as weddings and funerals, are held in the ancestor's hall at the center of the complex. Kitchens and storage rooms are located on the first and second stories; the third and fourth stories contain the residence. *Source* Photograph by Bihu Wu

The defensive function is not only about the massive earthen walls but also about the layout. For example, a typical earthen building may reach 10 m in height, the first and second floors are kitchens and storage rooms, and the third and fourth floors are living spaces (Fig. 9.15). Suitable for use in this way, the first and second stories do not need windows toward the exterior, and the third story only has a thin slit; only the fourth story has outward-facing windows and is equipped with a lookout platform. The bottom of the exterior wall has no aperture and thus is difficult to assail. The fourth-story windows provide an ideal vantage point for attacking oncoming enemy troops (Fig. 9.16). Thus, on the whole, the design of the earthen buildings makes them simultaneously difficult to attack and easy to defend.

Fig. 9.16 Earthen buildings built into the mountains. Few openings in the exterior walls occur only in the upper sections of the walls. The buildings resemble fortresses in the mountain and are easy to hold but difficult to attack. *Source* Photograph by Mu Yuan, provided by Piyan Jiang

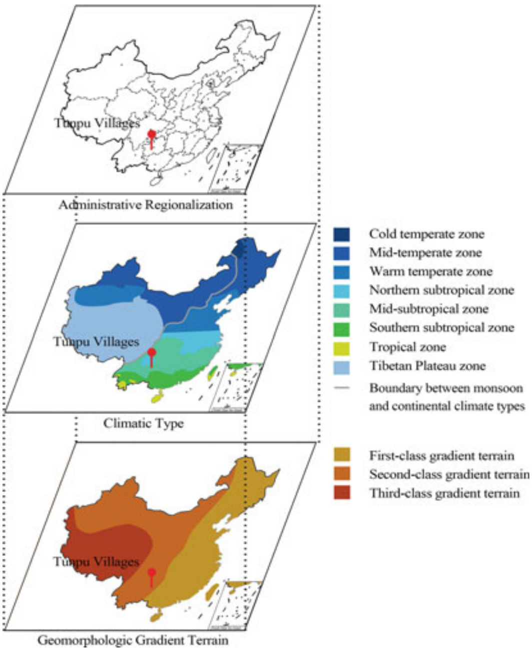
Geographical Interpretation

The earthen buildings arose after the Hakka people migrated to southern China. These buildings are the result of the Hakka's introverted, self-sufficient agricultural society that is organized along exclusive ties of blood. Over the extended course of their development, these buildings came to be built with local natural materials. These materials cause the buildings to meld with their surroundings and to adapt to surrounding temperature and humidity. The robust defensive nature of the earthen buildings is an illustration of the defensive, self-sufficient culture of the Hakka people.

9.2 Tunpu Villages: A Ming Dynasty Settlement Frozen in Time

Location: Anshun, Guizhou Province
Key Geographical Concept: Defensive architecture and introverted cultural inheritance

The Tunpu villages are constructed by local stone. Isolated from the outside within this heavily defense-oriented space, the indomitable Tunpu culture has been passed down for hundreds of years.



Geomorphologic Features

The Tunpu villages are located within Anshun City, in the midwestern part of Guizhou Province. The villages are in the middle of the Yunnan-Guizhou Plateau, in the watershed area between the Yangtze River and Zhujiang River. The area consists of flat and high terrain with limestone, interspersed with karst hills, singular peaks, basins, and exposed bedrock (Editorial Committee on the Anshun Municipal Records 1995). The local residents predominantly use stones to build houses with roofs of slate because of the lack of lumber.

Climatic Features

Anshun enjoys abundant precipitation, with an average annual rainfall of 1,360 mm, belonging to a characteristic plateau-type humid subtropical monsoon climate zone. The average annual temperature in Anshun is 14 °C; thus, winters and summers in this area are very clement.

Cultural Features

The Tunpu villages owe their existence to two initiatives of the Ming Dynasty (1368–1644), namely, the Farming Frontiers System and *Wei-Suo* System (see the following "Extended Reading" parts). When the Ming government began to establish military barracks in the major grain-producing areas and gateways along the Yunnan-Guizhou ancient postal road, soldiers from *Jiangnan*, the region to the south of the Yangtze River, were stationed in the area where the Tunpu villages were later developed. In addition to this strategic military repositioning, which is known in Chinese history as "Deploying the North to Subjugate the South" regarding troop deployment, the Ming government also compellingly relocated a large number of refugees and poor people to Guizhou Province, which became known in Chinese history as "Deploying the North to Fill the South" for the common people.

The Ming Emperor Taizu, Zhu Yuanzhang (reign 1368–1398), the founding emperor, adopted the Farming Frontier System (full title in Mandarin, *tun tian shu bian*, an initiative to establish agriculturally self-sufficient garrisons to manage the frontier) after conquering the areas of King of Liang (reign 1341–1368) and Tusi. The policy was to send troops and residents to till the land and guard the nation's borders. In addition, the emperor also established the *Wei-Suo* System. The people of Tunpu are the descendants of the troops from *Jiangnan* who were stationed to guard Anshun as part of the Farming Frontier 600 years ago. Founders of the villages selected sites in accordance with *Zhongyuan*'s location principle: the optimal site would be the place next to but not against a mountain, near but not beside water, with a convenient water supply and an open view. These principles exactly satisfy the needs of a military barracks: facing the water, backed by the mountain and with an open view, which makes it easy to hold but hard to attack, as well as the availability of water, which is helpful for agricultural production. Such locations have allowed the residents of the Tunpu villages live peacefully on the land, generation after generation.

In Anshun, the military encampment was known as the *Tun*, whereas the area of ethnic migration was known as Pu (or Bao), so the descendants of the region became known as the Tunpu people (or the Tunbao people). The buildings in Tunpu, as the houses of ancient troops' descendants, are primarily defensive in nature (Fig. 9.17). In addition to its military value, this type of protective architecture also served in a latent way to help preserve Tunpu culture throughout the generations.

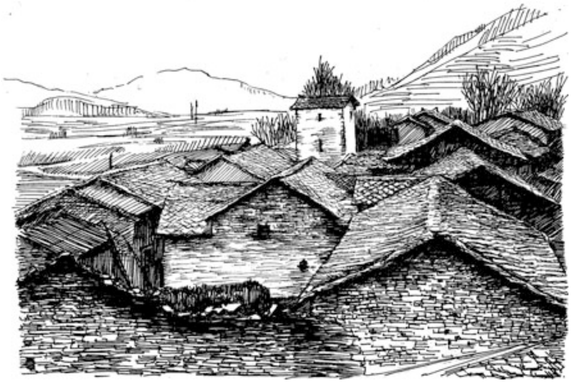


Fig. 9.17 Bird's eye view of the Tunpu residential buildings. The Tunpu villages appear to be a cluster of stone castles. A tower that stands at the corner of the residential buildings provides defense. *Source* Drawing by Kun Gao

Extended Reading: Ming Dynasty Farming Frontiers System

The Yuan Dynasty (1271–1368) ended with a war that was heavily destructive to the Chinese society and economy. In particular, the war greatly reduced the country's ability to support the large national army with rations. Following the military strategy to "integrate farming and border security, deploy troops to reclaim land", advocated by famed historical figures, the Han Dynasty Emperor Wu, Liu Che (reign 140–87 BC) and Wei State King Wu, Cao Cao (155–220), the first Ming Emperor Taizu, Zhu Yuanzhang (reign 1368–1398), established the Military Barracks System, which was combined with the *Wei-Suo* System and the Hereditary Military Household System. Thus, a great number of military barracks were established, which were managed under the *Wei-Suo* System, where the farmland was cultivated by *Wei-Suo* soldiers (Nan and Tang 2003). According to statistics from the time, in the 26th Hongwu year (1393) of the Ming Dynasty, there were over 8930 km^2 of barracks, which accounted for more than one-tenth of all Chinese farmland at that time. For over 60 years from the middle of the 14th century to the early 15th century, these military barracks were self-sufficient, without taking supplies from local areas. Aside from the military barracks, there were also "commercial *tun*" and "peasants *tun*". Commercial *tun* was another specially implemented means to solve the ration problem. The Ming government held a monopoly on the production and distribution of salt, and merchants were permitted to exchange salt for grain as long as they transported and turned in the grain to the barracks. The advent of peasants *tun*, where ethnic migration reclaimed the wasteland, bought about a torrent of ethnic migration. In the early Ming Dynasty, several large-scale campaigns were carried out by the new government to relocate people from densely settled areas to cultivate in regions that were sparsely populated. These campaigns played a key role in the restoration and production of Chinese society after the establishment of the Ming Dynasty (Nan and Tang 2003).

Extended Reading: *Wei-Suo* System

The *Wei-Suo* System was a unique military system implemented across China during the Ming Dynasty, which was conceived of in summary of military organizations that had been implemented by previous dynasties. Based on the Forces Act, written into law by the Ming Emperor Taizu, Zhu Yuanzhang, an official named Ji Liu (1311–1375) organized a *Wei-Suo* System for each of China's cities from the Imperial Capital to *Jun*. According to the system, *Wei* was to be established in militarily strategic locations, whereas locations deemed secondary were to be outfitted with *Suo*. A single *Wei* was made up of some 5,600 individuals, led by a chief commanding officer who further presided over five thousand-household *Suo*, the so-called "soldiers and civilians battalion". Each thousand-household *Suo* included 1,120 people, who were led by the thousand-household commander and were divided into several hundred-household *suo*. The hundred-household *Suo*, in turn, presided over two *zongqi*.[2] In the 26th Hongwu year (1393) of the Ming Dynasty, it was recorded that there were 329 *Wei* nationwide (Nan and Tang 2003). *Wei-Suo* troops were conferred farmland by the Ming government. Soldiers' ration and weapon expenses were paid for with income derived from farming from their own land. Soldiers in the *Wei-Suo* System cultivated fields during peacetime and were deployed to fight during times of conflict. Commanders in the *Wei-Suo* System were government officials, who would return home after the hostilities ended (Jiang 2010). The soldiers lived

Fig. 9.18 In these Tunpu villages, every stone fortress is preserved well. Women still dress in accordance with the fashion of the Ming Dynasty: many wear *blue*, long-sleeved robes with *navy aprons* and *black belts*, with silk handkerchiefs adorn their heads. *Source* Photograph by Kun Li, provided by Fan Yin

[2]***Zongqi***, an army unit in the Ming Dynasty (1368–1644); 50 people in the military establish a *zongqi*.

together with their families and were inherited in the army by their descendants, who were rarely moved from one encampment to another. Thus, military units formed close ties to the place where they were stationed. The feature of the *Wei-Suo* System created such an intimate connection between itself and regional culture, causing these individual locations to become colorful cultural geographic units and leaving a lasting mark in history (Guo 2003) (Fig. 9.18).

The compact layout of each Tunpu village reveals full consideration of wartime defensive needs. The entire village functions as one unit, one castle. At the same time, the interior grid is similar to a maze, with large and small streets that are nested within one another to confound invading troops and give defenders the upper hand in the case of street fighting (Fig. 9.19). In this vein, building walls were equipped with holes from which to shoot projectiles. Many buildings located at intersections have rounded corners, which greatly expands the view of soldiers in street fighting, making the village easy to hold but hard to attack (Fig. 9.20). The predominance of these features, which provide the opportunity for a defensive ambush, illustrate the primacy of defense in the original planning, designing and construction processes of the Tunpu villages (Wang and Ma 2008).

The layout and structure of Tunpu residential architecture similarly respond to the defensive needs of the villages. Residential buildings here are generally either *sanheyuan*[3] U-type houses or *siheyuan*[4] □-type houses, standing separated from

Fig. 9.19 The Tunpu village's winding streets make it a place, which is easy to hold but hard to attack in street fighting. *Source* Photograph by Kun Li, provided by Fan Yin

[3]***Sanheyuan***, a type of three-sided courtyard, is a traditional type of residence that is commonly found in Chinese villages.

[4]***Siheyuan***, also as Chinese quadrangles, a historical type of residence, is commonly found throughout China, most famously in Beijing. It composes of a courtyard surrounded by buildings on all four sides.

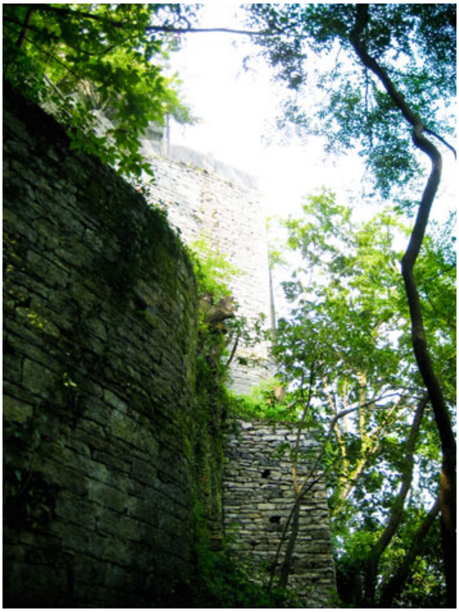


Fig. 9.20 Most of the Tunpu villages' structures, including building foundations, walls, exterior windows, drainage systems and paving, were built with stone. The utilization of such a great amount of stone in local residential structures demonstrates the military defensive needs. The buildings are similar to castles with openings used for shooting at an invading enemy. *Source* Photograph by Xinmin Huang

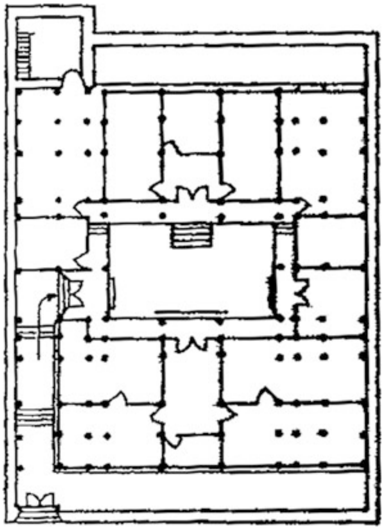


Fig. 9.21 Typical plan drawing of a Tunpu residential structure. These houses are introverted, enclosed and separate from each other. *Source* Wang (1998: 269)

each other (Fig. 9.21). Most of these buildings have two stories and feature a distinct central axis. Some space between the central room and the secondary rooms is reserved for a patio to ensure good ventilation and to protect against fire as well as improving security (Wang 1998). Tunpu residential structures often feature fort-like towers on the corner. With two to four stories, three times higher than the surrounding residential buildings, these towers serve as both observation platforms

Fig. 9.22 Tianlong Tunpu Village. The omnipresent stone buildings are ostensibly simple, but retain an aroma of *Jiangnan* in concealing details. *Source* Photograph by Xinmin Huang

and shooting spaces. Each Tunpu residential structure as at least two or three towers and some even have more than 10 towers.

Although primarily made of stone, Tunpu buildings structurally preserve the residential architectural traditions of the *Jiangnan* region (Fig. 9.22). For military defensive purposes, local stone is used as a protective material, although, as commonly observed in the residential architecture of *Jiangnan*, building structures feature a mixture of traditional Column-and-tie construction with a raised-beam frame[5] buttressed by a wooden bearing structure. Although the buildings of the Tunpu villages appear rough and simple on the exterior, the architectural ornaments are quite beautiful. The upturned wooden eaves are decorated with stone sculptures of a beautiful synthesis of lithoid and wooden materials (Fig. 9.23). Furthermore, bridges, flowing water and green plants in the surrounding environment recall typical images of *Jiangnan* as well.

Today, the towers in the Tunpu villages remain mostly the same as what they were 600 years ago, and the Tunpu people continue to follow a cultural tradition that dates from the Ming Dynasty, which makes it seem as if time has been frozen. Tunpu women still dress in a costume of the Ming Dynasty known as Fengyang Han Ethnic Attire, wearing silk handkerchiefs on their heads, blue long-sleeved robes on their bodies, navy aprons and black belts around their waists (Fig. 9.24), and shoes with sharp tips on the foot, which are said to be used to hide knives for self-defense (Fig. 9.25). Not only that, a unique style of theatre known as Di Drama, also called Nuo Drama, or Jumping Spirit, has been retained. Every Spring Festival and in the middle of the seventh month of the Lunar Calendar, this type of drama will be performed in public spaces, such as the central village temple, or vacant

[5]**Raised-beam frame** is one type of timber frame in traditional Chinese architecture. It is characterized by using beams that are borne up by columns placed in the direction of depth, with layers of shorter columns and beams overlapped on the beam up to the ridge of the roof.

Fig. 9.23 The buildings of the Tunpu villages appear rough and simple on the exterior, but the architectural ornaments are quite beautiful, as components of the residences, such as plinth, gate tower and windows, are all meticulously decorated. An especially great amount of care is given to the carvings above residential gates, which are often adorned with fortunate symbols, including magpies, kylin and sika deer. The upturned wooden eaves are decorated with stone sculptures of a beautiful synthesis of lithoid and wooden materials. *Source* Photograph by Xinmin Huang. *Note* **Kylin** is a Chinese mythical creature that signifies luck and happiness.)

Fig. 9.24 Today, Tunpu women still dress in the style of the Ming Dynasty. *Source* Photograph by Kun Li, provided by Fan Yin

areas (Wang and Ma 2008) (Fig. 9.26). Di Drama was handed down from a military tradition, so the stories acted out in Di Drama are inspired mostly from the historic battles. Other than entertaining the audience, this performance is also intended to banish evil, invite good fortune and bring a bumper grain harvest.

Fig. 9.25 Tunpu women wear shoes with sharp tips, which are said to hide defensive weapons. *Source* Photograph by Xinmin Huang

Fig. 9.26 The Di Drama, also known as Nuo Drama or Jumping Spirit, in the Tunpu villages, is performed twice a year, during the Spring Festival and in the middle of the seventh month of the Lunar Calendar. This type of performance is usually performed in open areas in the village. Performers usually wear specialized colorful masks consisting of a facemask, a helmet and ear-wings. *Source* Photograph by Kun Li, provided by Fan Yin

Extended Reading: Mass Migrations in the Ming Dynasty

To some extent, mass migrations during the Ming Dynasty (1368–1644) were led and enforced by the government. When the first Ming Emperor Taizu, Zhu Yuanzhang, consolidated power, due to protracted warfare, the *Jiangnan* (south of the Yangzi River) and *Huabei* (north of the Central Plain) regions were only sparsely populated and production in these areas was extremely low. To improve this situation, Emperor Taizu enacted a policy to relocate the Chinese people on an unprecedented scale. Beginning in the year 1367, 500,000 individuals relocated from the areas of Lake Taihu, the north of Shanxi, Hebei, Guangdong and Shandong to Fengyang County along the Huai River. The populations of Yangzhou and Huai'an received 570,000 immigrants from Suzhou, Huizhou and Jiangxi. The Ming government further deployed approximately 100,000 soldiers to the Nanjing area (Shanghai, Suzhou and Anhui of today) to secure the new empire's borders in Yunnan and Guizhou. Meanwhile, a portion of the population of Shanxi were immigrated to Hebei and northern Henan, and much of the population of western Zhejiang and Shanxi was forced to migrate to Chuzhou, Hezhou, Beijing, Shandong and Henan. Residents in Jiangxi migrated to Hunan and Hubei by force, the people of Hunan and Hubei were relocated to Sichuan, and other portions of the population of Beijing and Shanxi were relocated to other northern regions to be enrolled in the army. The total number of migrants in the early Ming Dynasty reached 13.4 million, among which seven million were relocated to the area of the Yangzi River, 4.9 million to North China and another 1.5 million to China's northeastern and southwestern borders. During the Hongwu year (1368–1398) of Emperor Taizu's reign, approximately 70 million people were relocated, which accounted for 19 % of the entire Chinese population at that time (Ge et al. 1993). Despite the mass migrations, the immigrant people in the Tunpu villages of Guizhou have still preserved their own traditions.

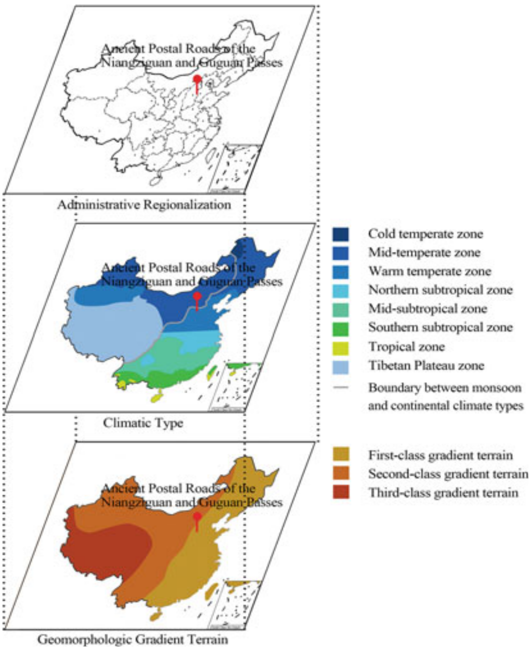
Geographical Interpretation

To meet the defensive needs of military settlements on the Ming Dynasty border, Tunpu has developed into many enclosed stone towns. The immigrants living there have not assimilated into local ethnic minority despite hundreds of years passing; thus, villages still maintain their unique traditions, architectural layout and forms. The Tunpu villages are living fossils of the Han culture of the Ming Dynasty.

9.3 Ancient Postal Roads of the Niangziguan and Guguan Passes: Wheel Ruts Evincing a Well-Traveled Thoroughfare

Location: Pingding, Shanxi Province
Key Geographical Concept: Great Wall defense system in abrupt terrain

The Niangziguan and Guguan Passes were two important passages through the Great Wall of the Ming Dynasty (1368–1644) because of their location in the steep canyon that granted passage across the Taihang Mountains. In addition to their role as part of ancient China's national defense network, the Passes were also critical transportation nodes that connected key routes on either side of the Taihang Mountains.



Geomorphologic Features
The ancient postal roads of the Niangziguan and Guguan Passes are located in Pingding County, Yangquan City of Shanxi Province. Pingding County sits in the middle stretch of the Taihang Mountains (Fig. 9.27), which are located between Shanxi and Hebei Provinces and area major obstacle to east-west transportation between the two provinces. This section of the Taihang Mountains is composed primarily of limestone, which has been eroded by fierce winds and east-west

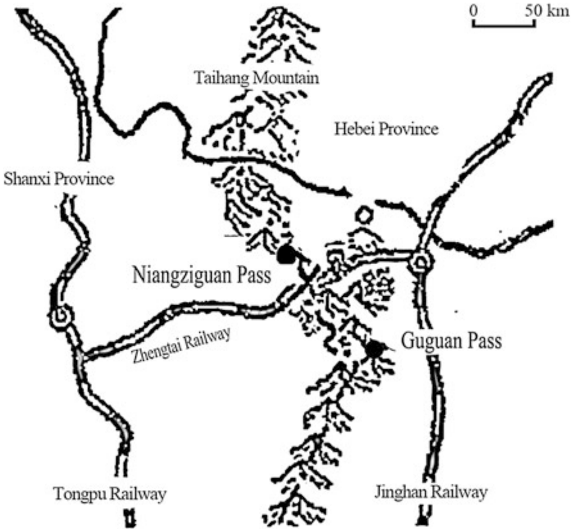


Fig. 9.27 Locations of the Niangziguan Pass (*upper-left callout*) and Guguan Pass (*bottom-right callout*). The Niangziguan and Guguan Passes are seated in the middle section of the Taihang Mountains, where the valley is very steep with a narrow bottom. *Source* An (2008: 191). The location of the Guguan Pass has been added to the above map by the author

flowing rivers over time, giving rise to a great number of canyons and passages across the mountain. The Niangziguan and Guguan Passes are two important routes that lead across the Taihang Mountains (Editorial Committee on the Pingding County Records 1992).

Climatic Features

Pingding County falls into the warm temperate continental monsoon climate zone, which experiences seasonal weather characterized by longer winters and summers and relatively short springs and autumns: arid and rainless spring, hot and rainy summer, cool or even chilly autumn, and dry and frigid winter.

Cultural Features

As the important passages through the Taihang Mountains, both the Niangziguan and Guguan Passes have a long history. They originally were passageways to the Zhongshan Great Wall and later became important gateways to the Ming Dynasty Great Wall. Over the course of Chinese history, the two passes have repeatedly played a prominent role in a number of famous wars. The Qin army passed through the Passes on their way to subjugate the Zhao State (403–222 BC), an important step on the Qin's road toward unifying China for the first time. Centuries later, a bitter engagement was waged there by the Han Dynasty (202 BC–220 AD), and the same Passes were again occupied during the Tang Dynasty (618–907) by armies sent to quell a military rebellion. In recent history, an assault upon the Niangziguan Pass was made by the Eight-Nation Alliance in 1900, and in the Second Sino-Japanese War (1937–1945), the Passes were involved in conflict once again.

Located in the middle section of the Taihang Mountains, the Niangziguan and Guguan Passes are only a few kilometers apart. The two Passes, respectively, guard the locations where the Wenhe and Taohe Rivers flow into the Mianhe River, offering the only routes to cross the Taihang Mountains. Therefore, they have been called "the Gateway of Eastern Shanxi" and "the Throat of Shanxi and Hebei" (Editorial Committee on the Pingding County Records 1992).

Extended Reading: Limestone Mountains

Limestone is a carbonated sedimentary rock that forms in the basins of lakes and oceans. The ease with which limestone is dissolved gives rise to the formation of scenic stone forests and cave areas (Zhou and Cheng 1991). Mountainous areas composed primarily of limestone are characterized by their massive size and steep slopes, interspersed with many intermountain basins, the predominance of exposed rock and the presence of numerous bud stones, caves and underground rivers (Liu and Wang 2006). The northern and southern sections of the Taihang Mountains are both composed of limestone, with most of the outcroppings being located in southeastern Shanxi Province. The region of mountains and hills is huge, and the limestone area covers a massive area of 13,750 km^2. The soil is very dry and heavily eroded, thus exposing rock. In addition, the vegetation has been largely destroyed. These factors contribute to

Fig. 9.28 Located on the west side of the Taihang Mountains, the Guguan Pass is a critical transportation node through which one could reach the other side of the mountain. Ruts in the stone road illustrate the long history and heavy use of the postal road. *Source* Photograph by Fang Wang

an erosion modulus[6] of 4,000–6,000 t/km^2 per year (Shi et al. 1996). Over time, rivers have cut through the easily eroded limestone to form a large number of steep valleys, creating the natural passes and critical transportation nodes through the Taihang Mountains. The Niangziguan and Guguan Passes are two of the most important passes in the mountains (Fig. 9.28).

The Niangziguan Pass sits to the west of Niangziguan Village. Since early in Chinese history, the Niangziguan Pass has been considered “China’s Ninth Most Important Mountain Pass”. The Pass has existed as an important military post in one form or another throughout the centuries, for example, most importantly as “the Dong Zhuo[7] Fortress” in the late Eastern Han Dynasty (25–220), the Weize Pass in the Northern Wei Dynasty (386–534) and Chengtian Village in the Song Dynasty (960–1279). The Pass was complemented by the addition of the Guguan Pass Encampment during the Qing Dynasty (1644–1911). In describing the Niangziguan Pass, Guo Moruo (1892–1978), a Chinese author, poet, historian and archaeologist, wrote this famous verse: “A famous pass, perched atop the Taihang Mountains, crenellations wind into heaven.” The Niangziguan Pass was built on the boundary between Shangxi and Hebei Provinces. On the western and northern sides of the Pass runs the Mianhe River. Positioned as such with a mountain to the rear and water to the fore, the Pass is at once easy to hold but hard to attack (Fig. 9.29). It runs 400 m from north to south and 150 m from east to west. The both eastern and western sides of the Pass have gates, with a fortress sitting above each gate.

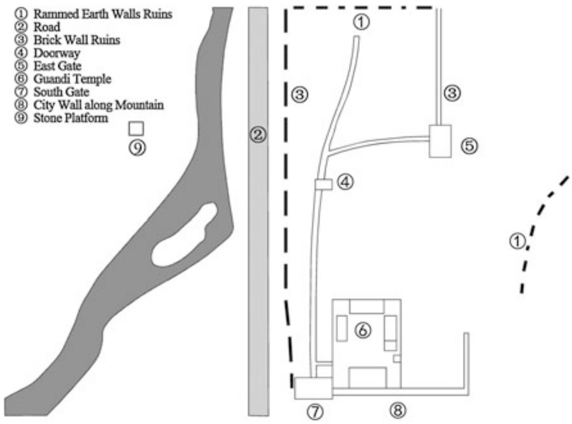


Fig. 9.29 Schematic diagram of the Niangziguan Pass site plan. The Niangziguan Pass sits on the west of Niangziguan Village, on the top of a hill. Still standing today are the east gate, the south gate, the Guandi Temple, and the city walls in south, north and east directions. *Source* An (2008: 187)

[6]The erosion modulus of an area is a measure of soil lost due to erosion per unit of that area over unit of time, usually represented by the annual erosion, or the thickness of soil lost, of one kilometer of area in one year’s time. *Source* Tang (2004).

[7]Dong Zhuo (138–192), a politician and warlord who lived during the late Eastern Han Dynasty (25–220).

Fig. 9.30 The south gate of the Niangziguan Pass. The Niangziguan Pass has gates on its eastern and southern sides. An engraved plaque above the east gate reads, "直隶娘子关" (lit. "the Niangziguan Pass of Hebei"). A similar plaque above the southern gate reads, "京畿藩屏" (lit. "Barrier of Beijing"). *Source* Photograph by Fang Wang

The east gate of Niangziguan Pass opens to the top of a high city wall that slopes downwards at 70 degrees and reaches all the way to a cliff facing north, thereby guarding both east and south directions (Fig. 9.30). The Mianshen River forms a natural barrier to the west and north of the Niangziguan Pass. The river and the section of the Great Wall that adjoins the side of the Niangziguan Pass jointly function as a tight defense system (An 2008).

As one of the Four Passes to the west of Beijing, the Guguan Pass sits in Xinguan Village, south of Niangziguan Town, and its name means solid, secure, and steadfast. During Emperor Jiajing's reign (1522–1566) during the Ming Dynasty, the gate was built once and then relocated 2.5 km south. At that time,

Fig. 9.31 The fortress in the Guguan Pass was built against the mountains and surrounded by water. Above the arched brick entranceway, the name of the Guguan Pass is engraved. *Source* Photograph by Fang Wang

Fig. 9.32 The Great Wall at the Guguan Pass. During the Ming Dynasty, the Guguan Pass defended against other ethnic groups from the north. An Inner Great Wall was constructed on the Taihang Mountains to connect the Niangziguan and Guguan Passes. Throughout history, this location has remained an important gateway for transportation. Today, a highway passes through this location. *Source* Photograph by Fang Wang

sections of the fortress in the Great Wall were also added to both sides of the gate. Architecturally, the Guguan Pass is made up of a fortress, a north gate, a water gate, a barbican wall, east and west walls and six defensive piers (Lu 2005). The colossal fortress in the Great Wall is connected to the Niangziguan Pass by a nine-meter-high city wall (Figs. 9.31 and 9.32).

Extended Reading: Great Wall Defense System

The Great Wall was a grander military defense infrastructure project with a history of more than 2,000 years. It is more systematic and was under construction for a more extended period of time than any other project in ancient China (Li 2001). During the Warring States period (475–221 BC) due to the merging of kingdoms, the expanding zone of war and the enlargement of battlefield areas, different kingdoms constructed sections of the Great Wall along their borders to fight against enemy invasions in succession. At that time, the Zhongshan Kingdom (414–296 BC), although only a small nation, built its own Great Wall to contend with the larger nations, such as Zhao and Jin. The Zhongshan Great Wall stretched southward from Mount Tai (Shandong), across the Great Wall Ridge, Mount Heng (Shanxi) and the Taihang Mountains (Feng and Ma 2005), and many passes, including the Niangziguan Pass, were established along the 250-km route. At this time, attached components, such as the fortresses in the Great Wall, fire beacons and an initial Farming Frontiers System[8], were already incorporated into the Great Wall network, which together formed a tightly organized defense system. The Great Wall construction peaked during the Qin (221–207 BC) and Han (202 BC–220 AD) Dynasties and again during the Ming Dynasty (1368–1644). In terms of scale and completeness of defense system, the Great

[8]See: "Extended Reading: Ming Dynasty Farming Frontiers System" in Sect. 9.2

Wall of the Ming Dynasty far surpassed any other wall system that had previously been built. At this time, the Inner Great Wall was built on the Taihang Mountains to resist the invasion of other ethnic groups from the north. The Niangziguan Pass was rebuilt, with the Guguan Pass established in the south. Heavily fortified connected to each another, the two gates formed the most formidable defense in Shanxi and Hebei Provinces, which was known as "the Barrier of Beijing" (He and Li 2008).

The Niangziguan and Guguan Passes are two of the most critical gateways in the entire Great Wall defense system. Across the Taihang Mountains and through these channels wind the old postal roads of the two Passes. These roads carried important traffic between Shanxi and Hebei Provinces and run close to each another on their journey across the mountain and converge on either side into one road—on the eastern side at Jingxing and the western side at Saiyu.

Also known as the Ancient Yanya Road, the old postal road of the Niangziguan Pass was a commercial road. The road runs along the deep canyons of the Wenhe and Mianhe Rivers. Despite its rugged nature, the old road was a shortcut from the city of Taiyuan to Jingxing and hence was heavily traveled by the merchants of Shanxi and Hebei, especially those who transported coal. Famous as "the Official Road connecting Shanxi with Hebei", the Old Postal Road of the Guguan Pass travels through the relatively flat Xiguan Valley (Fig. 9.33), which was the route favored by officials and postmen. Throughout the centuries, different dynasties maintained and expanded the road (He and Li 2008). During the Ming (1368–1644)

Fig. 9.33 As "the Official Road connecting Shanxi with Hebei", the Old Postal Road of Guguan Pass was historically important for official affairs, for example, as the crucial node of the Jingjing Postal Road. *Source* Photograph by Fang Wang

Fig. 9.34 Deep ruts on the stone surface of the Old Postal Road of Guguan Pass, polished by centuries of carriage and foot traffic, evidence the road's long history. *Source* Photograph by Fang Wang

and Qing (1644–1911) Dynasties, the postal road was the only carriage connection to Beijing, the Imperial Capital; the deep ruts on the road demonstrate its long history of heavy use (Fig. 9.34). These two roads promoted communication between Shanxi and Eastern China and stimulated internal development and external economic and cultural exchange.

As important transportation nodes, the Niangziguan and Guguan Passes witnessed the arrival of a great number of famous politicians and scholars. These individuals, including poets Han Yu (768–824), Sima Guang (1019–1086) and Yuan Haowen (1190–1257), left behind innumerable famous verses and poems. Moreover, Emperor Kangxi (reign 1662–1722) commemorated his travels on this road in his poem *Guo Gu Guan.*[9]

Geographical Interpretation

As the narrow entry and exit points of the Taihang Mountains, the Niangziguan and Guguan Passes are two of the most important strategic passageways through the Great Wall. As defensive fortifications that resisted barbarian invasion, the two Passes hold significant strategic meaning. At the same time, the Old Postal Roads of

[9]***Guo Gu Guan***, a poem, literally *Passing by Guguan Pass*, was written by the Qing Emperor Kangxi (reign 1662–1722) during one of his western tours *to* admire Guguan Pass in all its majesty.

the two Passes allowed for economic and cultural exchange between Shanxi and Hebei. Therefore, the two roads and two passes together display dual properties of isolation for safety and integration for communication.

References

An, J. S. (2008). *The great martial barrier in the world: Interpretations of the ancient passes (Tian Xia Xiong Guan: Gu Dai Guan Ai Shi Du)*. Changchun: Changchun Publishing House (in Chinese).

Cheng, D. L. (2006). *The Great Wall, one of the miracles in the world*. Shanghai: Shanghai Literature and Art Publishing House (in Chinese).

Editorial Committee on the Anshun Municipal Records, Guizhou Province. (1995). *Anshun Municipal Records*. Guiyang: Guizhou People's Publishing House (in Chinese).

Editorial Committee on the Niangziguan Pass Records, Pingding County. (2000). *The Niangziguan Pass Records*. Beijing: Zhonghua Book Company (in Chinese).

Editorial Committee on the Pingding County Records. (1992). *Pingding County records*. Beijing: Social Sciences Academic Press (China) (in Chinese).

Editorial Committee on the Vegetation Maps, Chinese Academy of Sciences. (2007a). *Vegetation map of China and its geographic pattern: Illustration of the vegetation map of the People's Republic of China (1: 1,000,000)* (Vol. I). Beijing: Geological Publishing House (in Chinese).

Editorial Committee on the Vegetation Maps, Chinese Academy of Sciences. (2007b). *Vegetation map of China and its geographic pattern: Illustration of the vegetation map of the People's Republic of China (1: 1,000,000)* (Vol. II). Beijing: Geological Publishing House (in Chinese).

Editorial Committee on the Vegetation Maps, Chinese Academy of Sciences. (2007c). *Vegetation map of the People's Republic of China (1: 1,000,000)*. Beijing: Geological Publishing House (in Chinese).

Editorial Committee on the Yongding County Records. (1994). *Yongding County Records*. Beijing: China Science and Technology Press (in Chinese).

Feng, X. H., & Ma, X. (2005). On the defense system of Zhongshan State in the Warring States period. *Guangxi Social Sciences (Guangxi she hui ke xue),* (2), 141–143 (in Chinese).

Ge, J. X., Cao, S. J., & Wu, S. D. (1993). *Brief history of Chinese migrations*. Fujian: Fujian People's Publishing House (in Chinese).

Guo, H. (2003). Wei-So immigration and the change of regional culture in the Ming Dynasty. *The Paper Collection on Chinese Historical Geography,* (2), 150–155 (in Chinese).

He, Y., & Li, J. S. (2008). Research on the overall protection of ancient villages and towns of with passes: The case of historical and cultural town of Niangziguan. *Shanxi Province. City Planning Review, 32*(1), 93–97 (in Chinese).

Hou, Y. B., & Li, W. Z. (2002). *A pictorial history of ancient Chinese architecture*. Beijing: China Architecture & Building Press (in Chinese).

Jiang, G. T. (2010). *History of China: history of the Ming and Qing Dynasties*. Beijing: Jiuzhou Press (in Chinese).

Jing, A. (2006). *A history of the Great Wall in China*. Shanghai: Shanghai People's Publishing House (in Chinese).

Li, W. L. (2001). Four stages in the development of the Great Wall in ancient China. *Stories of Relics (wen wu chun qiu),* (2), 37–43 (in Chinese).

Lin, J. S. (2006). *Earth building: The condensed music and spatial poem*. Shanghai: Shanghai People's Publishing House (in Chinese).

Liu, D. Z. (1984). *History of ancient Chinese architecture* (2nd ed.). Beijing: China Architecture & Building Press (in Chinese).

Liu, C. X. (1998). The migration of the Hakka People and the formation of their cultural characteristics. *Study of Nationalities in Cuangxi,* (1), 74–76 (in Chinese).

Liu, D. Z. (2004). *An outline of Chinese residence*. Tianjin: Baihua Literature and Art Publishing House (in Chinese).

Liu, C. X., & Wang, L. S. (2006). Afforestation and planting on limestone hills. *Journal of Hunan Forestry,* (4), 16–17 (in Chinese).

Lu, Y. D. (2001). *Hakka residence and culture in China: The paper collection of international Hakka residence seminar 2000*. Guangzhou: South China University of Technology Press (in Chinese).

Lu, Y. D. (2003). *Chinese vernacular dwellings* (Vol. II). Guangzhou: South China University of Technology Press (in Chinese).

Lu, Y. Q. (2005). *Great passes in Shanxi*. Shenyang: Liaoning People's Publishing House (in Chinese).

Luo, X. L. (1989). *Studies of the Hakka origin*. Beijing: The Chinese Overseas Publishing House (in Chinese).

Luo, D. Q. (1995). *Collection of Chinese vernacular dwellings-Guizhou vernacular dewllings*. Beijing: China Architecuture & Building Press (in Chinese).

Luo, Z. W. (2008). *Great Wall*. Beijing: Tsinghua University Press (in Chinese).

Luo, D. Q., et al. (2009). *Guizhou vernacular dwellings*. Beijing: China Architecture & Building Press (in Chinese).

Nan, B. W., & Tang, G. (2003). *History of the Ming Dynasty*. Shanghai: Shanghai People's Publishing House (in Chinese).

Pan, G. X. (2001). *History of Chinese architecture* (4th ed.). Beijing: China Architecture & Building Press (in Chinese).

Qiu, Q. Z. (1999). *Research on the sources and culture of Hakka*. Beijing: Overseas Chinese Publishing House (in Chinese).

Shan, D. Q., et al. (2003). *Chinese vernacular dwelling*. Beijing: China Intercontinental Press (in Chinese).

Shi, M. H., Wang, D., & Li, R. M. (1996). Research on soil and water conservation in the enclosed areas of limestone hills in the Taihang Mountains. *Journal of Beijing Forestry University, S3*, 93–96 (in Chinese).

Tang, K. L. (2004). *Science of soil and water conservation*. Beijing: Science Press (in Chinese).

Wang, S. Z. (1998). *Chinese vernacular architecture* (Vol. II). Nanjing: Jiangsu Science and Technology Press (in Chinese).

Wang, H. N. (2008). Succeeding and changing; Research on Tunpu settlement. *City Planning Review, 32*(1), 89–92 (in Chinese).

Wang, Z. P., & Ma, J. Q. (2008). Tunpu buildings in Anshun, Guizhou Province. *Huazhong Architecture, 26*(6), 171–174 (in Chinese).

Yu, Z. Y., Shuai, X. J., & Liu, T. Z. (2005). *Research and development of Tunpu culture*. Guiyang: Guizhou Nationalities Publishing House (in Chinese).

Zeng, H. X. (2001). Hakka and migration. *Journal of Sun Yat-sen University (Social Science Edition),* (3), 130–134 (in Chinese).

Zhou, C. Z., & Cheng, S. (1991). *A dictionary of earthquake*. Shanghai: Shanghai Lexicographical Publishing House (in Chinese).

Zou, Y. L. (2005). *Overview of Chinese historical geography*. Shanghai: Shanghai Education Publishing House (in Chinese).

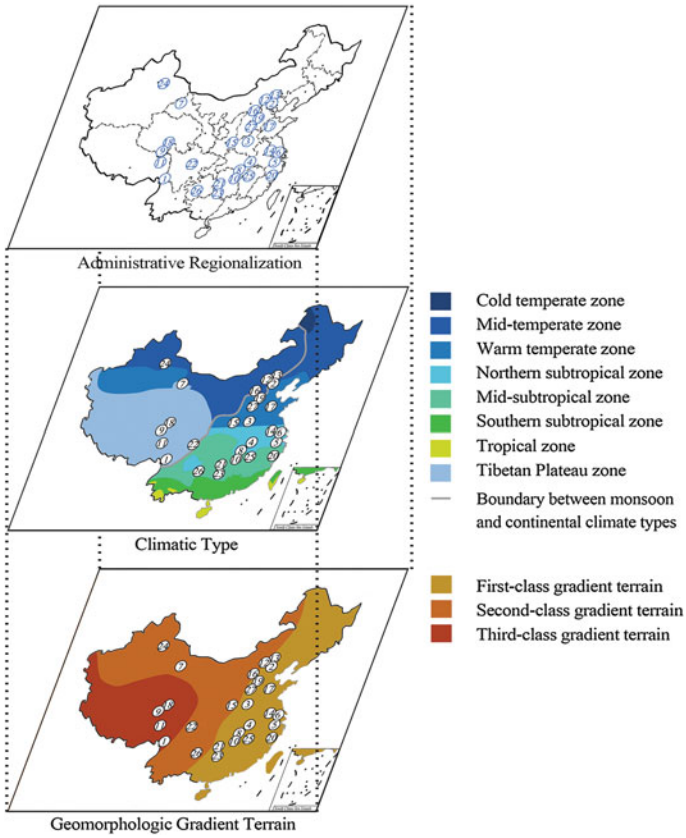
Zuo, G. B., Li, Y., & Zhang, Y. Y. (2005). *Architecture of Shanxi Province in the Ming Dynasty*. Taiyuan: Shanxi Ancient Books Publishing House (in Chinese).

Appendix

Distribution Map of Cases in Volume 1[1]

[1]The base maps in the Distribution Map of Cases in Volume 1 are from the websites of the National Administration of Surveying, Mapping and Geoinformation. (see http://unn.people.com.cn/mediafile/200607/14/F200607141610331489926345.jpg, http://unn.people.com.cn/mediafile/200607/14/F200607141540432633643981.jpg).

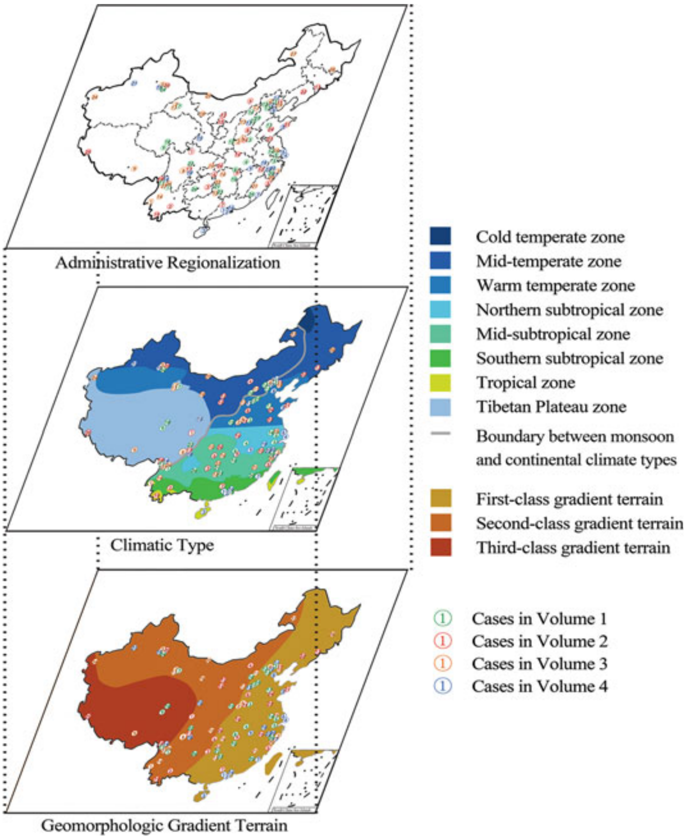
F. Wang, *Geo-Architecture and Landscape in China's Geographic and Historic Context*, DOI 10.1007/978-981-10-0483-4



1. Ganden Sumtseling Monastery
2. Temple of Heaven
3. Gaocheng Astronomical Observatory
4. Yellow Crane Tower and Qingchuan Pavilion
5. Leifeng and Baochu Pagodas
6. Jichang Garden
7. Yangguan and Yumenguan Passes
8. Yueyang Tower
9. Gyanak Mani Field
10. Love Nightfall Pavilion
11. Wuli Village in Bingzhongluo
12. Cockcrow Postal Town
13. Huguang Guild Hall
14. SunYat-Sen Mausoleum
15. Changkong Trail of Mount Hua
16. Ningwu Hanging Temple
17. Eighteen Bends of Mount Tai

18. Qinghai-Tibet Railway
19. Bridge-Tower Hall on Mount Cangyan
20. *Langqiao* in Taishun County
21. Longjin Wind and Rain Bridge
22. Dujiangyan Irrigation System
23. Lingqu Canal
24. Turpan Karez System
25. Hakka Earthen Buildings
26. Tunpu Villages
27. Ancient Postal Roads of the Niangziguan and Guguan Passes

Distribution Map of All Cases in 4 Volumes[2]



Volume 1

1. Ganden Sumtseling Monastery
2. Temple of Heaven
3. Gaocheng Astronomical Observatory
4. Yellow Crane Tower and Qingchuan Pavilion
5. Leifeng and Baochu Pagodas
6. Jichang Garden

[2]The base maps in the Distribution Map of All Cases in 4 Volumes are from the websites of National Administration of Surveying, Mapping and Geoinformation. (See:http://unn.people.com.cn/mediafile/200607/14/F200607141610331489926345.jpg, http://unn.people.com.cn/mediafile/200607/14/F200607141540432633643981.jpg).

7. Yangguan and Yumenguan Passes
8. Yueyang Tower
9. Gyanak Mani Field
10. Love Nightfall Pavilion
11. Wuli Village in Bingzhongluo
12. Cockcrow Postal Town
13. Huguang Guild Hall
14. SunYat-Sen Mausoleum
15. Changkong Trail of Mount Hua
16. Ningwu Hanging Temple
17. Eighteen Bends of Mount Tai
18. Qinghai-Tibet Railway
19. Bridge-Tower Hall on Mount Cangyan
20. *Langqiao* in Taishun County
21. Longjin Wind and Rain Bridge
22. Dujiangyan Irrigation System
23. Lingqu Canal
24. Turpan Karez System
25. Hakka Earthen Buildings
26. Tunpu Villages
27. Ancient Postal Roads of the Niangziguan and Guguan Passes

Volume 2

1. Aba Tibetan Villages
2. Hani Ethnic Villages
3. Xijiang Miao Ethnic Villages
4. Mongolian Yurt
5. Marine Fishing Village at Sandu Bay
6. Gongtan Ancient Town
7. Yangchi Ancient Village
8. Residence of the Huangcheng Chancellor
9. Zhangguying Village
10. Ancient Huizhou Villages in Wuyuan County
11. Eastern Qing Mausoleums
12. Western Xia Imperial Tombs
13. Tombs of the Ancient Koguryo Kingdom
14. Pagoda Forest of the Shaolin Monastery
15. Qingtongxia One-Hundred-and-Eight Dagobas
16. Ancient Building Complexes in the Wudang Mountains
17. Leshan Giant Buddha

18. Feilai Temple
19. Manfeilong Pagoda
20. Emin Minaret and Mosque
21. Qingdao Christian Church
22. Shenyang Imperial Palace
23. Anlan Dragon King Temple
24. Dai Temple
25. Ruins of the Guge Kingdom
26. Enshi Tusi Imperial City

Volume 3

1. Tree-Embracing Pagoda
2. Sunken Courtyards
3. Avalokitesvara Cave in Yandang Mountain
4. Ancient Cliff House in Yanqing
5. Bezeklik Buddhist Caves
6. Longmen Grottoes
7. Mogao Grottoes in Dunhuang
8. Golden Summit of Mount Emei
9. Yongbulakang Palace
10. Shibaozhai Fortress
11. Hanging Monastery of Mount Heng
12. Longji Ancient Zhuang and Yao Ethnic Villages
13. Qikou Hillside Cave Dwelling
14. Three Pagodas of Dali
15. Water *Longtang* of the Grand Canal
16. *Diaojiaolou* in Fenghuang Ancient Town
17. Crescent Spring Temple Complex
18. Lamasery in the Badain Jaran Desert
19. Xifengkou Underwater Great Wall
20. Wanyao Ancient Village
21. Anzhen Fort
22. Shujiatang Miao Ethnic Village
23. Baoshan Stone Town
24. Kashgar Local Dwellings on High Platform
25. Khara-Khoto
26. *Muleng* House by Lugu Lake
27. *Cuoluozi* of the Evenki Ethnic Group
28. Snow Village

Volume 4

1. Kaiping *Diaolou* and Villages
2. Ruins of St. Paul's in Macau
3. Hainan Arcade Architecture
4. New-Style *Shikumen* of Shanghai
5. Badaguan in Qingdao
6. Shanghai Bund
7. Xiamen Gulangyu Island
8. Five Great Avenues in Tianjin
9. Mount Lu Villas
10. Mazar Aldi Village
11. Outlying Temples in Chengde
12. Old Summer Palace
13. Chang Family Grand Courtyard
14. Dukezong Ancient Town
15. Eight-Cornered Ancient Town
16. Hehuxinju Hakka Weilou House
17. Cangpo Ancient Village
18. Luocheng Ancient Town
19. Hongcun Ancient Village
20. Yuyuan Ancient Village
21. Tekes *Bagua* Town
22. Zhuge *Bagua* Village

Related Years and Emperors in Chinese History in 4 Volumes

10th Tianbao year (751) of the Tang Dynasty
10th Wanli year (1582) of the Ming Dynasty
11th Kaiyuan year (723) of the Tang Dynasty
12th year (1886) of the Qing Dynasty Emperor Guangxu's reign
13th Kaiyuan year (725) of the Tang Dynasty
13th year (1735) of the Qing Dynasty Emperor Yongzheng's reign
13th Zhiyuan year (1276) of the Yuan Dynasty
14th year (1416) of the Ming Dynasty Emperor Yongle's reign
15th Taihe year (491) of the Northern Wei Dynasty
17th Taihe year (493) of the Northern Wei Dynasty
18th year (1420) of the Ming Dynasty Emperor Yongle's reign
19th Zhenyuan year (803) of the Tang Dynasty
22nd year (1817) of the Qing Dynasty Emperor Jiaqing's reign
28th Kaiyuan year (740) of the Tang Dynasty
39th year (1700) of the Qing Emperor Kangxi's reign
40th Wanli year (1612) of the Ming Dynasty
45th year (1780) of the Qing Dynasty Emperor Qianlong
51st year (256 BC) of the Qin State King Zhaoxiang's reign
52nd year (1713) of the Qing Dynasty Emperor Kangxi
565th year (1203) of the Dai Calendar
Asoka period (268–232 BC)
Chu State (1042–223 BC) in the Warring States period
Dali Kingdom (937–1254)
Duan Zhengyan and Duan Zhengxing periods (1108–1172) of the Dali Kingdom
Eastern Han Dynasty (25–220)
Eastern Jin Dynasty (317–420)
Eastern Wei Kingdom (534–550) during the Northern Dynasties
Eastern Zhou Dynasty (770–256 BC)
Emperor Yao (approximately 4,000 years ago)
Empress Wu Zetian (624–705)
Era of the Yan and Yellow Emperors (approximately 4,000 years ago)
Fifth Chunxi year (1178) of the Southern Song Dynasty
Fifth Dazhongxiangfu year (1012) of the Song Dynasty
First Dazhongxiangfu year (1008) of the Song Dynasty
First Kaiyuan year (713) of the Tang Dynasty
First Opium War (1840–1842)
First Tianjian year (502) of the Liang State King Wudi
Five Dynasties period (907–960)
Fourth Taiding year (1327) of the Yuan Dynasty
Fourth Xuanhe year (1222) of the Song Dynasty

Fourth year (1570) of the Ming Emperor Longqing's reign
Fourth Yuanfeng year (107 BC) of the Han Dynasty
Gaochang Kingdom (499–640) ruled by the Family Qu
Genghis Khan (1162–1227)
Han Dynasty (202 BC–220 AD)
Han Dynasty Emperor Wu, Liu Che (reign 140–87 BC)
Haotaiwang (reign 391–412), the Koguryo's 19th emperor
Hongwu period (1368–1398) of the Ming Dynasty
Jin Dynasty (265–420)
Jin Kingdom (1115–1234)
King of Liang (reign 1341–1368)
Kublai Khan (1215–1294)
Emperor Xuantong's third year (1911) of the late Qing Dynasty
Later Jin Kingdom (1616–1643)
Later Zhou Dynasty (951–960)
Liang State King Wudi (reign 502–549)
Liao Dynasty (916–1125)
Mid-Tang Dynasty (approximately 766–835)
Mid-to-late Tang Dynasty (approximately 766–907)
Ming (1368–1644) and Qing (1644–1911) Dynasties
Ming Dynasty (1368–1644)
Ming Dynasty Emperor Chongzhen (reign 1628–1644)
Ming Dynasty Emperor Jiajing (reign 1522–1566)
Ming Dynasty Emperor Taizu, Zhu Yuanzhang (reign 1368–1398)
Ming Dynasty Emperor Tianqi (reign 1621–1627)
Ming Dynasty Emperor Wanli (reign 1573–1620)
Ming Dynasty Emperor Yongle (reign 1403–1424)
Ming Dynasty Emperor Zhengde (reign 1506–1521)
Ming Dynasty Emperor Longqing (reign 1567–1572)
Mongolia Yuan Dynasty (1206–1368)
Nanjing Government period (1927–1948) of the Republic of China
Nanzhao Kingdom (738–937)
Ninth year (1514) of the Ming Dynasty Emperor Zhengde's reign
Northern Dynasties (386–581)
Northern Qi Dynasty (550–577)
Northern Song Dynasty (960–1127)
Northern Warlord Government (1912–1928)
Northern Wei Dynasty (386–534)
Northern Wei Dynasty Emperor Xiaowen (reign 471–499)
Northern Zhou (557–581)
Pre-Qin period (approximately the 21st century to 221 BC)
Qin (221–207 BC) and Han (202 BC–220 AD) Dynasties
Qin Dynasty (221–207 BC)
Qin Shi Huang (reign 246–210 BC), the first emperor of China in the Qin Dynasty

Qing Dynasty (1644–1911)
Qing Dynasty Emperor Daoguang (reign 1821–1850)
Qing Dynasty Emperor Hong Taiji (1592–1643)
Qing Dynasty Emperor Jiaqing (reign 1796–1820)
Qing Dynasty Emperor Qianlong (reign 1736–1795)
Qing Dynasty Emperor Shunzhi (reign 1644–1661)
Qing Dynasty Emperor Tongzhi (reign 1862–1874)
Qing Dynasty Emperor Xianfeng (reign 1851–1861)
Qing Dynasty Emperor Xuantong (reign 1909–1911)
Qing Dynasty Emperor Yongzheng (reign 1723–1735)
Qing Dynasty Kangxi (reign 1662–1722) and Qianlong (reign 1736–1795) Emperors
Qing Dynasty Nurhachi (1529–1626)
Qing Dynasty Qianlong and Jiaqing Emperors' reigns (1736–1820)
Qing Dynasty Yongzheng and Qianlong Emperors' reigns (1723–1795)
Qing Dynasty Emperor Daoguang (reign 1821–1850)
Qing Dynasty Emperor Guangxu (reign 1875–1908)
Quanfengyou period (823–859) of the Nanzhao Kingdom
Republic Era (1912–1949 in Mainland China)
Second Chenghua year (1466) of the Ming Dynasty
Second Dazhong Xiangfu year (1009) of the Song Dynasty
Second Jianyuan year (366) of the Former Qin Kingdom
Second Opium War (1856–1860)
Second Sino-Japanese War (1937–1945)
Second Xiande year (955) of the Later Zhou Dynasty
Second year (223) of the Wu State King Huangwu
Second Zhengtong year (1437) of the Ming Dynasty
Shang (approximately the 16th century–1046 BC) and Zhou (approximately 1046–256 BC) Dynasties
Shang Dynasty (approximately the 16th century–1046 BC)
Shaoxi year (1190–1194) of the Southern Song Dynasty (1127–1279)
Shu State (221–263) during the Three Kingdoms period
Sixteen States period (304–589)
Sixth year (1633) of the Ming Dynasty Emperor Chongzhen' reign
Sixth year (1649) of the Qing Dynasty Emperor Shunzhi's reign
Song (960–1279) and Yuan (1271–1368) Dynasties
Song Dynasty (960–1279)
Song Dynasty Emperor Zhenzong (reign 998–1022)
Song Dynasty Emperor Huizong (reign 1100–1126)
Southern (420–589) and Northern (386–581) Dynasties
Southern Dynasties (420–589)
Southern Song Dynasty (1127–1279)
Spring and Autumn period (770–476 BC)
Spring and Autumn period and Warring States period (770–221 BC)
Sui (581–618) and Tang (618–907) Dynasties

Sui Dynasty (581–618)
Sui Dynasty Emperor Yangdi (reign 605–618)
Taiping Heavenly Kingdom (1851–1864)
Tang (618–907) and Song (960–1279) Dynasties
Tang (618–907), Song (960–1279), Yuan (1271–1368), Ming (1368–1644) and Qing (1644–1911) Dynasties
Tang Dynasty (618–907)
Tang Dynasty Emperor Taizong, Li Shimin (reign 627–649)
Tang Dynasty Emperor Xuanzong (reign 712–756)
Third Jingtai year (1452) of the Ming Dynasty
Three Kingdoms period (220–280)
Transition from the Ming Dynasty to Qing Dynasty, the period of the late Ming and early Qing (around the 17th century)
Transition from the Yuan Dynasty to Ming Dynasty (around the 14th century)
Tubo Kingdom (629–840)
Warring States period (475–221 BC)
Wei (220–265) and Jin (265–420) Dynasties
Wei (220–265), Jin (265–420), and Southern (420–589) and Northern (386–581) Dynasties
Wei and Jin Dynasties (220–420)
Wei State King Wu, Cao Cao (155–220)
Western Han Dynasty (202 BC–8 AD)
Western Jin Dynasty (265–316)
Western Wei Kingdom (535–557)
Western Xia and Yuan Dynasties (around the 11th to 14th centuries)
Western Xia Kingdom (1038–1227)
Western Zhou Dynasty (the 11th century–771 BC)
Wu Zhou period (690–705) of the Tang Dynasty
Wuyue Kingdom (907–978) during the Five Dynasties period
Xia Dynasty (approximately the 21st to 16th centuries BC)
Yan Emperor (approximately 4,000 years ago)
Yellow Emperor (approximately 4,000 years ago)
Yonglong period (680–681) of the Tang Dynasty
Yu the Great (approximately in the 21st century BC)
Yuan (1271–1368), Ming (1368–1644) and Qing (1644–1911) Dynasties
Yuan Dynasty (1271–1368)
Yue State (2032–110 BC) in the Warring States period
Zhao State (403–222 BC) in the Warring States period
Zhenguan year (627–649) of the Tang Dynasty
Zhongshan Kingdom (414–296 BC)
Zhou Dynasty (1046–256 BC)
Zhou Dynasty Emperor Cheng (reign 1042–1021 BC)
Zhou Dynasty Emperor Huan (reign 719–697 BC)
Zhou Dynasty Emperor Wen (1152–1056 BC)
Zhou Dynasty Emperor Wu (reign 1046–1043 BC)