FUJIAN WUFENGLOU DWELLINGS

------ VERNACULAR CONTEXT AND ARCHITECTURAL TYPOLOGY

YUDONG WEI

Roma Tre

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Fujian Wufenglou Dwellings: Vernacular Context and Architectural Typology

prof.ssa Giovanna Spadafora
Coordinatore

prof.ssa Paola Porretta
Supervisor

prof. Hanmin Huang
prof.ssa Elisabetta Pallottino
Co-Supervisors

Yudong Wei
Dottorando

Gaobei Town, Datangjiao Village
Yulonglou, Hakka Wufenglou
Self taken in 2024

Gaobei Town, Xibei Village
Rulindi, Hakka Wufenglou
Self taken in 2024

Fushi Town, Xinmin Village
Yonghaolou, Hakka Wufenglou
Self taken in 2024

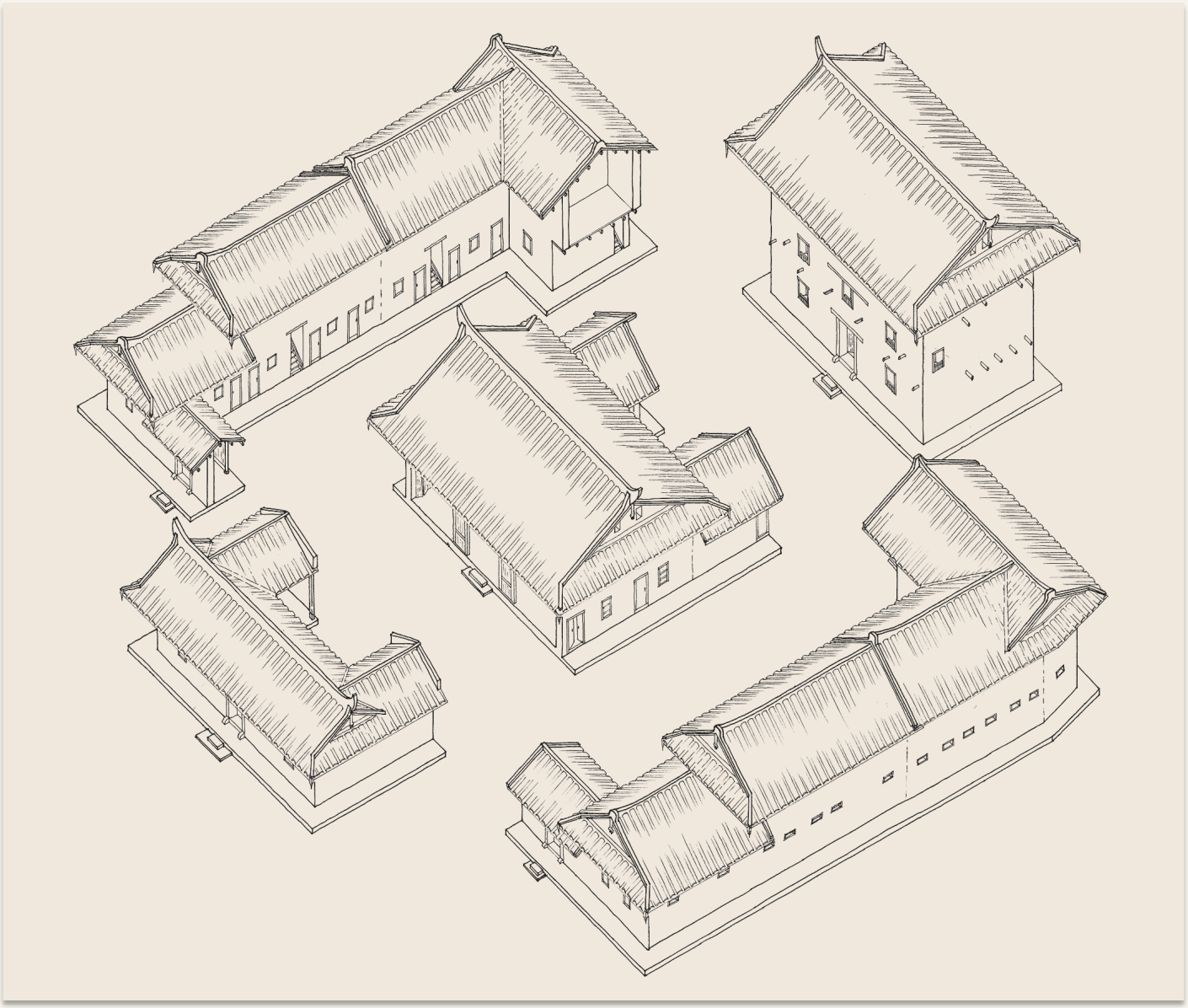
Fushi Town, Queping Village
Xuexianlou, Hakka Wufenglou
Self taken in 2024

Xiandu Town, Dadi Village
Yifulou, Minnan Wufenglou
Self taken in 2024

Xiandu Town, Zhaoshan Village
Fu'anlou, Minnan Wufenglou
Self taken in 2024

Huafeng Town, Xiatian Village
Xinghualou, Minnan Wufenglou
Self taken in 2025

Huafeng Town, Qinling Village
Xiashanlou, Minnan Wufenglou
Self taken in 2024



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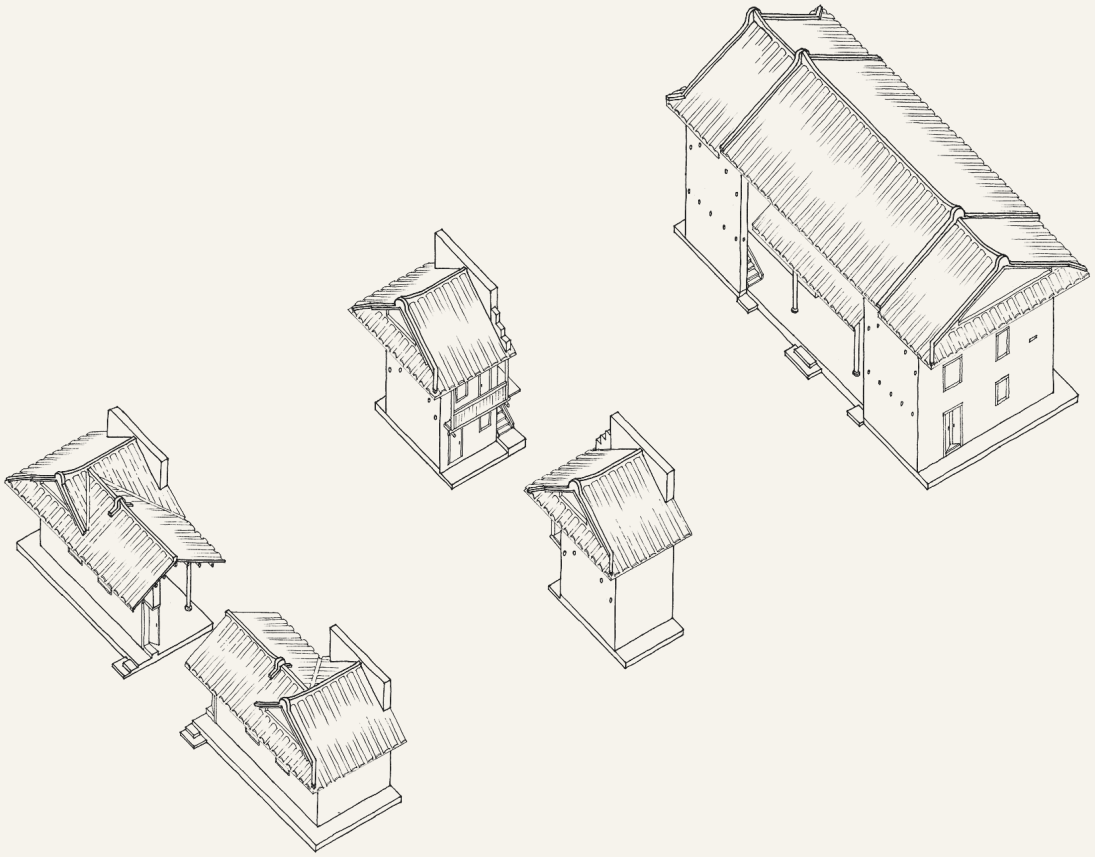


ABSTRACT

ABSTRACT

This dissertation addresses the long-standing misclassification where the Wufenglou dwelling is treated as a subtype of the Tulou within the study of Fujian rammed-earth architecture. Originating from field investigations in the Hakka and Minnan regions, this research reveals that Wufenglou constitutes a distinct architectural category with independent generative logics, spatial grammars, and structural systems. Currently, Hakka Wufenglou faces extinction without formal typological recognition, while Minnan Wufenglou lacks systematic definition. The objective of this study is to establish Wufenglou as an independent architectural type distinct from Tulou, tubao, and zhuangzhai, and to construct a typological system that clarifies the dual-system structure of its Hakka and Minnan lineages.

The dissertation is organized into five chapters:

Chapter I establishes the terminological independence of Wufenglou. It disambiguates the term “Tulou,” distinguishing between its macro Chinese sense (any rammed-earth dwelling) and its micro heritage sense (UNESCO-inscribed compounds), arguing that the broad category should be termed “rammed-earth dwellings”. Through etymological analysis, it demonstrates that “Wufenglou” is a historical concept symbolizing hierarchical order and imperial prestige rather than a mere descriptive label. Critical reviews of local terms (e.g., tanghengwu, dafudi, hutoucuo) reveal their limitations in defining the typology. Consequently, the study adopts “Wufenglou” as an untranslated proper noun, establishing it not merely from a symbolic point of view, but as a real, independent typological structure. Specifically, it is defined as an independent multi-storey courtyard dwelling characterized by a five-volume axial composition and a stepped front-low/rear-high profile.

Chapter II identifies the shared cosmological and spatial principles governing Wufenglou. It details how Fengshui cosmological principle — specifically Yin-Yang balance, the Five Elements, and Qi circulation—is operationalized into a Nine-Square Grid layout. In this schema, the central cell (Position 5) functions as the open courtyard (huangji), while the 1 – 5 – 9 axis organizes the ritual sequence of entrance – courtyard – ancestor hall. The chapter also codifies orientation rules based on an anthropomorphic body analogy, where "front", "back", "left", and "right" are defined by the building’s stance rather than compass directions, and outlines adaptation strategies for non-south-facing sites using symbolic water and rear mounds.

Chapter III analyzes the shared construction features and environmental adaptations of the type.

Distributed along the Ting–Jiulong River basin, Wufenglou employs a stepped section and deep eaves to manage the subtropical climate. The construction process is documented as a ritual-technical sequence, from the Dashijiao (stone footing) to the Xietu (closing ritual). Key systems analyzed include the Sishuiguitang drainage logic, the hybrid load-bearing system combining rammed-earth walls with timber beams, and specific roof truss systems like Tailiangshi, Chuandoushi and local hybrids (Chaliangshi, Diedoushi). Spatial organization follows the "one-bright, two-dim" gradient and the ethical hierarchy where the left is superior to the right.

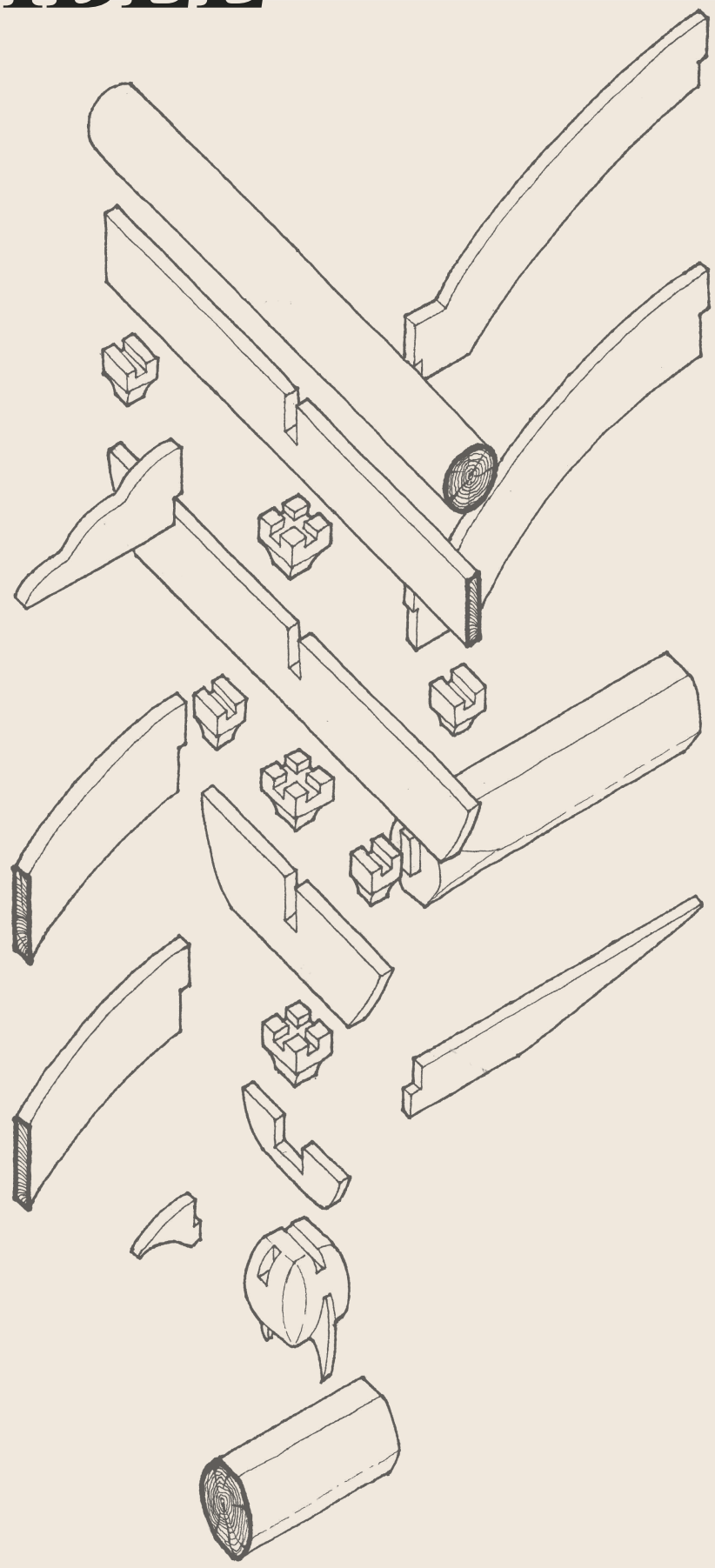
Chapter IV differentiates the distinct generative logics of the two regional lineages. Although sharing a five-volume silhouette, the Hakka Wufenglou separates ritual space from residence, using modular jian-ting-qijiao housing units to form an independent main house (zhenglou), side wings (hengwu), and a separated defensive system. In contrast, the Minnan Wufenglou fuses ritual and residence within a single core, the main house (dingluo) based on an axial-bay (kaijian) housing system, identified by the unique titingjian (stair-pavilion) volume. The analysis highlights that Hakka side wings are constitutive to the basic type, whereas Minnan protective wings (hucuo) are additive extensions.

Chapter V puts forward a preliminary discussion on the similarities and connections between Wufenglou and other Fujian rammed-earth dwellings. It argues that Wufenglou is not a subtype of Tulou but a terminal type derived from distinct layout rules: Hakka Wufenglou evolves from a Hall-and-Wing (tanghengwu) rule, while Minnan Wufenglou develops from an Axial-Bay (kaijian) rule. This is contrasted with Tulou, which follows Corridor Type (Hakka) or Unit Type (Minnan) logics. The study concludes that Wufenglou represents a highly codified architectural system that prioritizes ritual spatial order over the communal defense logic of Tulou.

KEYWORDS

Wufenglou; rammed-earth dwellings; typology; Fujian; Hakka; Minnan

PREAMBLE



PREAMBLE

1. Premise

This study began in the field, through a long-term investigation of rammed-earth architecture in Fujian's Hakka and Minnan regions by Prof. Elisabetta Pallottino, Prof. Paola Porretta, and Ph.D. Elena Colafranceschi[1]. The work first examined Tulou, the Fujianese earthen dwelling inscribed by UNESCO as a World Heritage Site, and its regional variation in the Hakka and Minnan areas[2]. Yet the comparison kept returning to a harder problem: within Fujian, the buildings widely called Wufenglou are not simply another Tulou variant. They form a distinct rammed-earth residential category, long misclassified, misread, and left without a formal typological definition (Figure 1).

This argument derives from direct field investigations conducted across the two major regions[3]. In the Hakka area, Wufenglou dwellings are primarily concentrated in the northern part of Yongding, particularly around the Fengtianli cluster, whereas in the Minnan area, they are mainly distributed in Hua'an and Anxi counties, within the border zone between Zhangzhou and Quanzhou cities. The two types exhibit distinct yet internally coherent systems in terms of spatial composition, volumetric progression, axial–lateral relationships, structural logic, and patterns of use. Field evidence further indicates that new constructions of Wufenglou have completely ceased in the Hakka region, while the Minnan region experienced a concentrated wave of new construction during the 1970s[4]. Moreover, several Minnan Tulou areas were subsequently developed into heritage tourism sites, where Wufenglou dwellings continue to be built and inhabited today.

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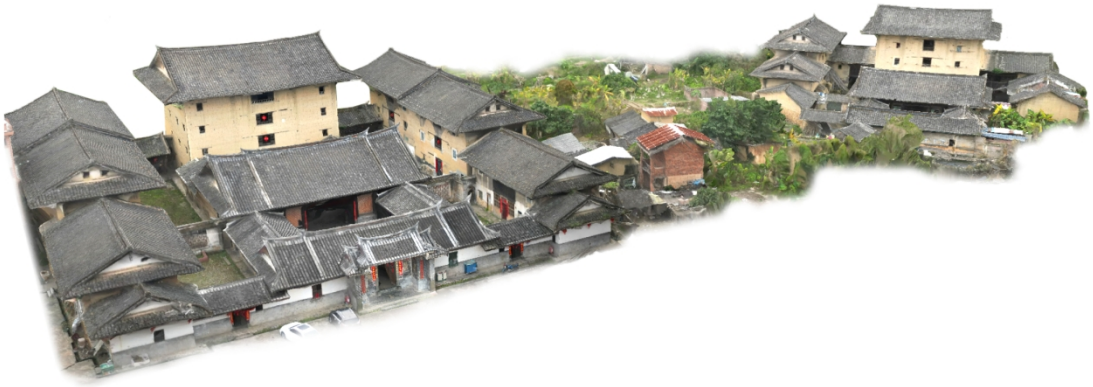
[1] Colafranceschi et al. 2020; Porretta et al. 2022.
[2] Two ethnic regions in southern Fujian Province, explained in detail in Chapter I and Chapter IV.
[3] Knapp 1986. pp. 43-48; Ministry of Housing and Urban-Rural Development of the People's Republic of China 2017. pp. 41-42, 154-155.
[4] This information is based on the author's field interview conducted on 5 March 2024 in Dadi Village, Xiandu Town, Hua'an County—part of the UNESCO World Heritage scenic area of Fujian Tulou.



Yulonglou (left) and an anonymous Hakka Wufenglou in Datangjiao village, Gaobei township, Yongding county.

HAKKA WUFENGLOU

MINNAN WUFENGLOU

Yushuju (right) and other two anonymous Minnan Wufenglou in Sanyang village, Lutian township, Anxi county.

Figure 1. Hakka Wufenglou and Minnan Wufenglou

Self rendered drone relief in 2024

Although Wufenglou dwellings in the Minnan region—particularly in Hua'an and Anxi—are still being constructed and inhabited, the Hakka Wufenglou tradition has entered a critical moment: the extant corpus of Hakka Wufenglou has approached extinction. According to the author's field documentation and site verification conducted between 2021 and 2024, only 142 standard Wufenglou compounds—defined as ensembles composed of five or more principal volumes—remain intact. A further 137 examples have lost one volume but still preserve the tri-axial configuration of three central units along the main axis, and only 21 cases survive as variants, such as those with fewer than three axial volumes or with a single remaining lateral wing. Figure 2 indicates that this architectural type has entered a stage of "decline preceding recognition": it is approaching disappearance even before having obtained a clear typological definition. The enumeration therefore distinguishes intact standard compounds from reduced and variant survivals, making the scale of typological erosion explicit and preventing the surviving corpus from being read as a single homogeneous condition.

In contrast, Minnan Wufenglou are generally smaller in overall scale, remain comparatively numerous, and in some localities continue to be newly constructed. For this reason, the present study records only their distributional range rather than attempting an absolute count. By comparison, Hakka Wufenglou effectively ceased new construction after the 1980s[5] and have continued to decline since then, making it possible to produce an exhaustive enumeration of all surviving examples—whose scarcity is now unambiguous.

Because the typological identity of Wufenglou has not been clearly defined and the Hakka and Minnan branches have not been formally distinguished, descriptions used in Minnan contexts often draw on criteria derived from Hakka Wufenglou. In heritage tourism settings where Tulou and Wufenglou coexist, such as the Eryilou scenic area, site introductions of Wufenglou adopt Hakka-based features despite differences in spatial organization and building logic in the Minnan system (Figure 3). Similar conditions occur in conservation and repair practices, where Wufenglou is treated together with other rammed-earth dwelling types, and building components are placed in mismatched positions or stacked indiscriminately on Minnan Wufenglou, altering its original internal order (Figure 4).[6]

Meanwhile, the inscription of the Fujian Tulou on the UNESCO World Heritage List in 2008[7] led to

[5] This observation is based on the author's field interview conducted on 7 March 2024 in Datangjiao Village, Gaopo (Gaobei) area, Yongding District, Longyan, Fujian.
[6] Chang Qing 2017; Knapp 2005. pp. 176-183.
[7] UNESCO. (2008). Fujian Tulou. Retrieved 20 March, 2025, from https://whc.unesco.org/en/list/1113/.

the consolidation of the term Tulou as a primary international reference for Fujian's rammed-earth architecture. This designation further obscured the independent status of the Wufenglou within the local architectural system. In the years that followed, Wufenglou continued to be subsumed under the category of Tulou—frequently described in nomination documents and academic publications as the "mansion-style" or "palatial" variant of the Tulou. Although the academic assertion that Wufenglou is not a subtype of Tulou was first advanced in 2012[8], subsequent publications have continued to reproduce the earlier classification scheme, indicating that this conceptual correction has yet to gain full recognition or adoption within the scholarly community.[9]

Building on the background outlined above, this study identifies four interrelated issues that currently hinder both the scholarship and conservation of Wufenglou. First, Wufenglou still lacks an accepted independent typological identity within the Fujian rammed-earth dwelling system, which prevents the establishment of clear definitional criteria and policy-level recognition. Second, despite sharing a common name and a broadly comparable five-volume axial set-up, the Hakka and Minnan branches are frequently treated as if they derived from a single housing and layout module; this conceptual overlap obscures their distinct generative logics and blurs regional boundaries in documentation, evaluation, and heritage narration. Third, practical interventions remain uneven and often contradictory: in some contexts Wufenglou is left outside effective protection frameworks, while in others it is preserved through formal imitation that alters its structural grammar; both tendencies stem from the absence of a rigorous typological classification. Fourth, professional terminology and translation are not standardized across languages or disciplines, allowing the name Wufenglou to circulate as a loose label detached from precise form, and making identification, comparison, and restoration criteria difficult to align. Together, these four problems form the core agenda of the present research: to clarify the typological status of Wufenglou, distinguish its regional branches, recalibrate conservation approaches, and stabilize a coherent terminological system.

[8] Huang 2012. pp. 22-24.
[9] Qu and He 2009; Zhen 2013. pp. 114-118, 164-165; Colafranceschi 2020.

Figure 2. The Ongoing Collapse of Wufenglou Dwellings in the Hakka Region, Yongding

Self taken in 2024

Figure 3. A controversial interpretive sign for Minnan Wufenglou in Dadi Village, which mistakenly describes Minnan Wufenglou in terms of Hakka Wufenglou characteristics.

Self taken in 2024

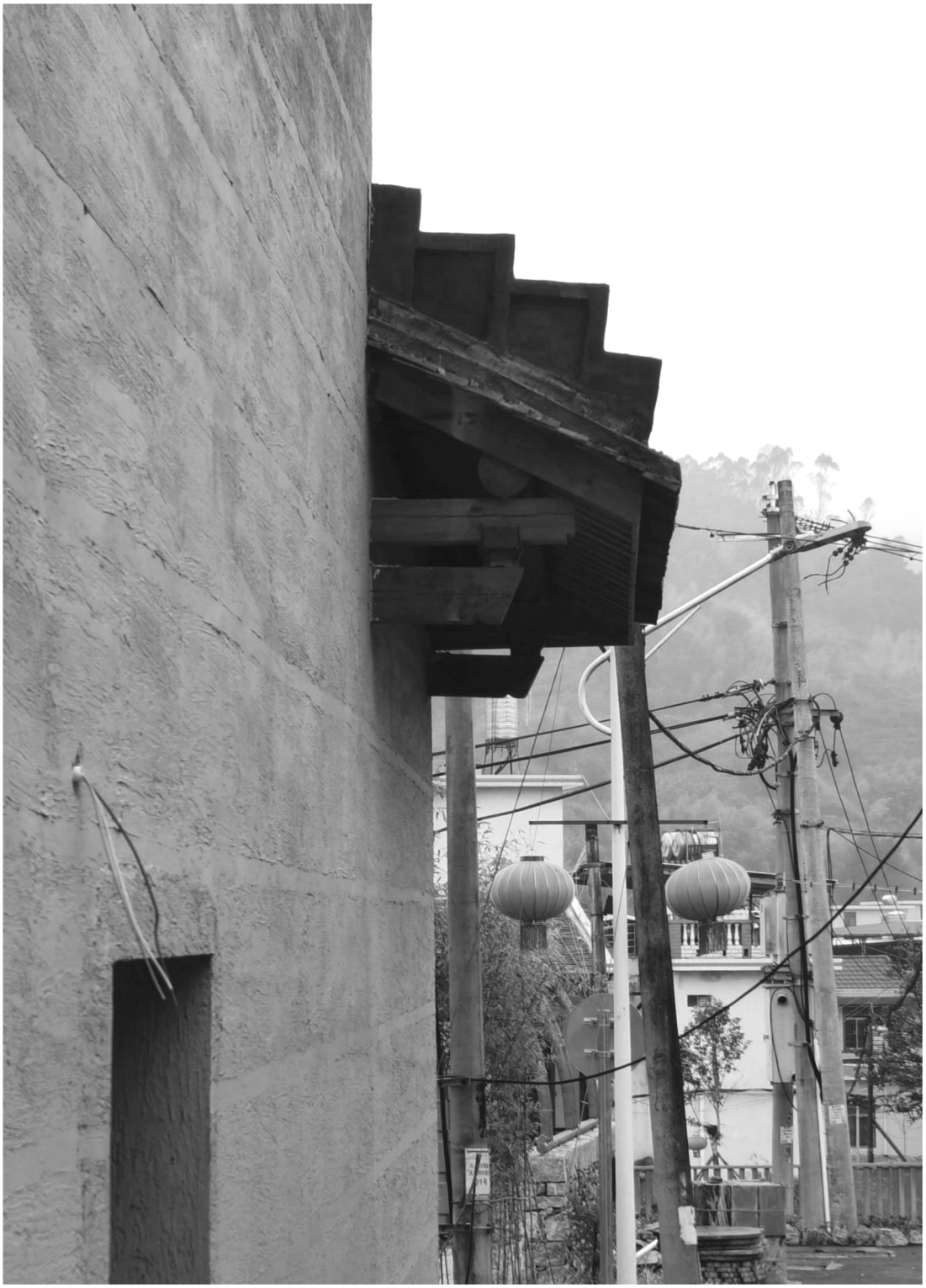


Figure 4. Structure Mistakenly Settled on the Wufenglou's Roof.[10]

Self taken in 2024

[10] "Fangjianqiang" structure is located inside a Wufenglou to prevent rain from spraying into the ancestral hall. See Chapter III.

2. State of the Art

This review focuses on the Wufenglou type, outlining the overall academic development while tracing two research lines: Hakka and Minnan — the two developments were not synchronized, with Hakka research preceding Minnan research. Based on the existing literature, academic discussions on the typology of Wufenglou can be broadly divided into three stages.

The first stage (1940s–2000s): Emerging within the context of Hakka dwellings and Tulou being considered side-by-side, this stage primarily revolved around empirical inductions based on the motif of "main hall and side buildings," at which time Wufenglou was still classified as a branch variant of Tulou.

The second stage (2000s–2010s): This stage saw detailed discussions on whether Wufenglou belonged to the Tulou category, gradually exploring the boundaries between the two in terms of structural form and functional positioning. Several case studies further promoted the differentiation of its types; however, the focus of the research remained firmly on the Hakka system.

The third stage (2010s-present): The Minnan context was incorporated alongside the Hakka one, broadening the research perspective to a wider regional scale. Preliminary comparative attempts emerged to examine the differences between Hakka and Minnan Wufenglou. However, the academic community still lacks clear typological boundaries between the two, so the continued use of the same term in practice has led to persistent classificatory confusion.

The following section provides a more detailed overview of these three periods and summarizes the contributions and shortcomings of each stage in the typological study of Wufenglou.

- First stage (1940s–2000s)

This stage began with Zeng Zhaoxuan (1947)[11], who first placed Wufenglou within the discussion context of Hakka dwellings and Tulou, but the concept had not yet acquired independent status. Subsequently, Liu Dunzhen (1956)[12], in his national residential overview, developed a genealogy based on the "three halls and two wings" framework (Figure 5), classifying courtyard types similar to Wufenglou as "three hall typed houses," and summarizing their commonalities as "prominent central hall, symmetrical layout, lower front and higher back, and tiered design." Within this framework, Wufenglou

[11] Zeng 1947, 5(4). pp. 134-173.
[12] Liu 1956.

was considered a branch of derived patterns such as "three halls and two wings," rather than an independent type. Huang Hanmin (1988)[13] further listed Wufenglou alongside square and round buildings as three forms of Fujian Tulou, and understood Hakka Wufenglou as an early form of square and circular Tulou, reinforcing its positioning as the "predecessor of Tulou." By 1996, Keiichirou Mogi (1996)[14] had incorporated square and round Tulou into the "large-scale collective housing" category within a multi-level residential classification system, thus absorbing Wufenglou into the broader category of "all-building houses," broadening the typological boundaries.[15]

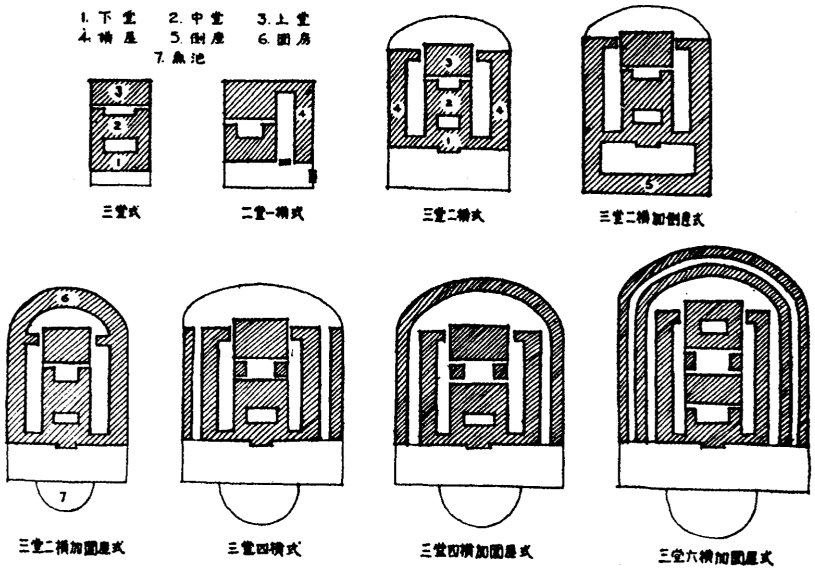


插图9 福建永定县三堂二横式住宅平面

Figure 5. The "Three Halls and Two Wings" Typed Hakka Dwellings by Liu Dunzhen. Source: Liu Dunzhen (2004[1957])[16]

While there was progress during this period, it remained at the descriptive level of using the "three halls and two wings" motif to encompass various forms. Simply summarizing Wufenglou as "three halls and two wings" is inaccurate. Wan Younan (1995)[17] pointed out another type of Hakka dwelling, the weiwu, which also commonly adopts a "three halls, two wings" structure. This makes it difficult to distinguish between Wufenglou and weiwu in the border area between Jiangxi and Fujian based solely on

[13] Huang 1988.
[14] Keiichirou Mogi et al. 1996.
[15] Zeng & Zeng 2004. p. 12.
[16] Liu 2004. pp. 183.
[17] Wan 1995.

this terminology, easily leading to confusion. Building on this, Pan An (1998)[18] attempted to differentiate between the two, emphasizing that although both Wufenglou and weiwu are "three halls, two wings," Wufenglou exhibits a sequential characteristic of "lower in the front and higher in the back, with progressively layered structures," while enclosed houses tend towards a single-layered, enclosed settlement organization. Pan, however, still did not provide a precise definition of the "basic type of Wufenglou" or an operational threshold for differentiation. In the proceedings of the 2000 international symposium on Hakka dwellings, scholars held divergent views on whether the Wufenglou and the Tulou are the same architectural type. This divergence provides the contextual foundation for subsequent discussions on the typological attribution of Hakka Wufenglou.[19]

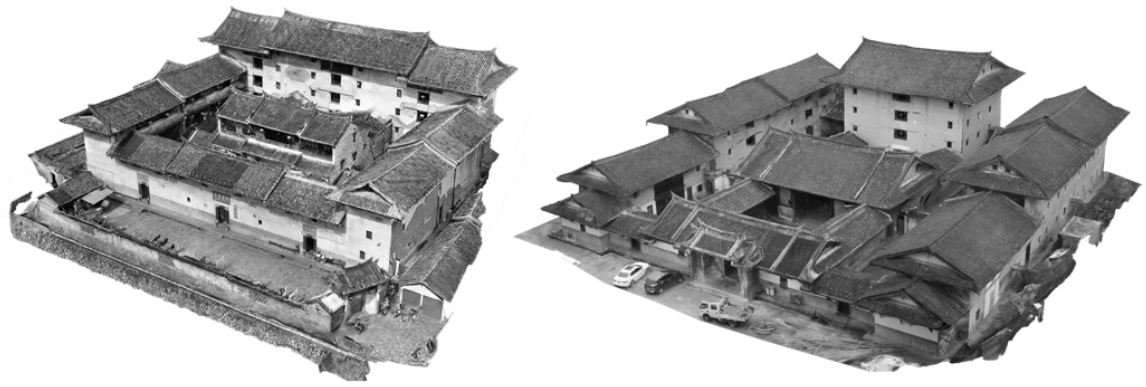
At this stage, Wufenglou dwellings in the Minnan region were almost entirely excluded from discussion. Their structural logic differs fundamentally from that of the Hakka system and cannot be adequately explained through the terminology of "three halls and two wings," representing a completely blank area in the typological study of Wufenglou in Fujian. In summary, the commonalities at this stage are: Wufenglou had come into view, but it had not yet broken away from the broader categories of the "three-hall type" and "Tulou"; its concept and boundaries remained vague, and no clear criteria had yet been established for regional and typological identification.

- Second stage (2000s-2010s)

Entering the 21st century, Wufenglou studies gradually moved away from being a subordinate type of the "Tulou system" and entered a stage centered on typological differentiation. A key turning point was the position proposed by Huang Hanmin and Chen Limu in 2012. Starting in 2003, Huang Hanmin compiled his previous papers into the book Fujian Tulou: A Treasure of Chinese Traditional Civilian Residence.[20] This book and its subsequent reprints (Chinese versions in 2009[21] and 2017[22]; English versions in 2010 (version 1)[23], 2010 (version 2)[24], and 2020[25]) continuously explored the relationship between Wufenglou and Tulou. Although these versions extended to 2017 and 2020, they all maintained the same classification logic of Wufenglou as "a part of Tulou." However, in their 2012 book, Fujian

[18] Pan 1998. pp. 66.
[19] Lu 2001.
[20] Huang 2003, p. 87.
[21] Huang 2009. p. 112.
[22] Huang 2017. p. 112.
[23] Huang 2010 version 1. p. 112.
[24] Huang 2010 version 2. p. 112.
[25] Huang 2020, p. 91.

Tulou Architecture[26], Huang Hanmin and Chen Limu introduced a new theoretical shift. Huang and Chen dedicated an entire chapter to re-examining the relationship between Tulou and Wufenglou, pointing out fundamental differences in their structural forms and functional logic. By comparing the "Dafudi" (Wufenglou) of Gaobei, Yongding, with the "Fuyulou" (previously regarded as Wufenglou) of Hukeng, the book outlines numerous differences in the structural logic of Wufenglou and Tulou, revealing the evolutionary chain from ritual function to defensive function. It redefines Tulou and, based on this, reclassifies Fuyulou as a transitional variant from Wufenglou to a square building rather than a pure Wufenglou (Figure 6), thus pioneering the theoretical view that "Wufenglou and Tulou are two different types of vernacular dwellings." This new viewpoint was later corroborated in Huang's subsequent publication during the third stage of his Wufenglou research. As Table 1 explains, the 2012 definition redefines Tulou by adding “northeastern Guangdong”, “Living spaces are linearly arranged along the perimeter”, and “to cohabit equitably”, which are fundamentally different from Wufenglou typology[27].



Fuyulou
(According to the view point by Huang Hanmin in 2012)

1. Not standard Hakka Wufenglou
2. Transition between Wufenglou and Tulou

Yulonglou
(Also called “Dafudi”)

Standard Hakka Wufenglou with 5 volumes locally called “3 Tang 2 Heng”

Figure 6: Fuyulou and Yulonglou

Self rendered drone relief in 2024, 2025

[26] Huang 2012. pp. 22-25.
[27] See Chapters III and IV.

Meanwhile, other researchers in the academic community have also extended their research around this differentiation. Wu Qingzhou (2008)[28]first proposed a relatively systematic Wufenglou assemblage, considering "a threshing ground in front of the door and a semi-circular feng shui pond" as identifying elements, and emphasizing its axial and ritualistic spatial characteristics. Dai Zhijian (2009)[29] systematically reviewed and expanded the morphological and geographical descriptions of Wufenglou, providing a relatively complete data framework from the perspectives of spatial pattern, facade elements, and regional distribution. The book summarizes core motifs such as "lower in the front and higher in the back, symmetrical left and right," and provides floor plans, elevations, and structural diagrams for easy horizontal comparison and retrieval. The compilation of cross-regional samples provides a reference coordinate for subsequent type comparisons. Li Jianjun (2010)[30] further distinguished between defensive and residential and sacred architectural systems by starting with a functional comparison of "earthen fortresses—Wufenglou," proposing that the core of Wufenglou lies in ritual order rather than defensive function, distinguishing it from the earthen fortress dwellings of northern Fujian. During this period, the application for World Heritage status and its subsequent circulation promoted broader dissemination of related knowledge, while also leading to a more descriptive and generalized approach to the typological description of Wufenglou. Hu Daxin (2006)[31] and The Yongding Hakka Tulou Chronicle (2009)[32] included Wufenglou case studies and related legends within the Tulou framework, considering it one of the relevant types; Lin Jiashu (2005)[33], in his aesthetic narrative, included Guangdong Hakka dwellings such as Weilongwu and Weizi, as well as some ancestor buildings, within the scope of the "Wufenglou" discussion; the Tulou World Heritage application documents (2007)[34] and subsequent official documents (UNESCO, 2008)[35] primarily mentioned Wufenglou as background information, with little discussion of its differences from Tulou. While this generalized approach promoted Wufenglou's international exposure, it weakened its typological independence compared to Tulou.

After 2012, as the theory that "Wufenglou and Tulou are two different types" gradually gained

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[28] Wu 2008, pp. 275.
[29] Dai 2009. pp. 237.
[30] Li 2010. pp. 118.
[31] Hu 2006.
[32] Yongding County Local Chronicles Compilation Committee. 2009.
[33] Lin 2003. pp. 50-100. Lin 2005. pp. 28-266.
[34] Fujian Tulou Editorial Committee. 2007. p. 44.
[35] UNESCO. (2008). Fujian Tulou. Retrieved 20 March, 2025, from https://whc.unesco.org/en/list/1113/.

acceptance in academia, several extended studies based on this theory emerged. Zeng Lingsong (2016)[36] and Mao Min (2016)[37] both reiterated the position that "Wufenglou is not Tulou," yet still discussed the subject within the Tulou academic framework, failing to establish quantitative indicators for the type.

Overall, research in this stage further described[38] the typological characteristics of Wufenglou and its differences from other earthen dwellings, completing the theoretical shift from "convergence" to "distinction" and giving Wufenglou an independent academic identity. However, the research focus still remained on the Hakka region, and discussion of the Minnan system had not yet been developed. Typological standards also remained largely qualitative, while the older view that "Wufenglou belongs to the Tulou category" remains a major theoretical framework in the study of Fujian earthen dwellings. This has led to the continued ambiguity of the regional distinction of Wufenglou in the next stage of research.

[36] Zeng 2016.
[37] Mao 2016.
[38] Knapp 2005. pp. 176-191.

Table 1: Definition Development of Tulou in Huang Hanmin's Publication

	2009 Definition	**2012 Definition to the present**
Chinese Definition	“福建土楼特指分布在闽西和闽南地区那种适应大家族聚居、具有突出防卫功能，并且采用夯土墙和木梁柱共同承重的多层的巨型居住建筑。” (Huang, 2009; Huang, 2017)	“福建土楼是主要分布在闽西、闽南和粤东北地区，具有突出的防卫性能、采用夯土墙和木梁柱共同承重、居住空间沿外围线性布置、适应大家族平等聚居的巨型楼房住宅。” (Huang, 2012)
English Definition	“Fujian Tulou especially indicates the large multi-storied dwelling buildings in the regions of western and southern Fujian that are suitable for a compact community of a big family clan, having particularly defensive functions, with both rammed earth walls and timber-framed structure as bearing construction.” (Huang, 2010; Huang, 2020)	Fujian Tulou refers to large residential buildings mainly spread in the regions of western, southern Fujian and northeastern Guangdong, having particularly defensive functions, with both rammed earth walls and timber-framed structure as bearing construction, with living spaces linearly arranged along the perimeter, suitable for a compact community of a big family clan to cohabit equitably. (self-translated from Huang, 2012)
Remained contents	1. Large 2. Regions of western and southern Fujian 3. Suitable for a compact community of a big family clan 4. Particularly defensive functions 5. Rammed earth walls and timber-framed structure as bearing construction	
Changed contents	1. Especially indicates 2. Dwelling buildings	1. Mainly spread 2. Residential buildings
Added contents		1. Northeastern Guangdong 2. Living spaces are linearly arranged along the perimeter 3. Cohabit equitably
Removed contents	1. Multi-storied	
Relation to Wufenglou	Included	Excluded

- Third stage (2010s–present)

After Fujian Tulou was inscribed as a World Heritage Site in 2008, and Huang Hanmin in 2012 proposed the academic boundary that "Wufenglou does not belong to Tulou," the focus of research gradually shifted to the distribution and morphological differences of Wufenglou in a wider geographical area. However, a significant characteristic of this stage is that while Wufenglou and Tulou have been distinguished, the Hakka and Minnan branches of Wufenglou have not yet been clearly separated at the typological level. Driven by international attention following the inscription on the World Heritage List, the academic community's vision has expanded to the Minnan region, resulting in a situation where different species with the same name are juxtaposed.

Among the research on Wufenglou in the Minnan region, Cao Chunping (2008[39], 2016[40]) used the local term "Hutoucuo" in Anxi as an example.[41] He was the first to systematically describe the architectural features of Minnan Wufenglou. He pointed out that its main house has five parallel bays, and the steps extending forward on both sides form special tiger-ear windows. The central hall is located at the core of the axis, with the left and right wing rooms on both sides, forming a courtyard layout. This perspective includes Minnan Wufenglou in the discussion of "traditional Fujian dwellings", just like Hakka Wufenglou, but in fact, the two are completely different in terms of structural logic, spatial organization, and ritual order. Huang Shixian (2019[42], 2021[43]) further listed a "Hakka Wufenglou-Minnan Wufenglou" comparative analysis in the study of traditional villages in Zhangzhou, pointing out that the former is larger in scale and has a stronger axial ritual, while the latter tends to be simpler, and often has a two-hall-two-wings or two-hall-four-wings layout.[44] Although this attempt is the first to juxtapose two types of Wufenglou within the same spatial framework, its sample scope is still limited, using only Hua'an as the representative of Minnan, and does not cover local variants such as Wufenglou in Anxi County, and quantitative research on Wufenglou has not yet been established.

In the 2020s, researchers conducted extensive empirical studies of Wufenglou in Minnan through

[39] Cao 2008, 6.
[40] Cao 2016, 15.
[41] Another local name for Minnan Wufenglou in Anxi County; see Chapter I.
[42] Huang 2019.
[43] Huang 2021.
[44] This classification is not rigorous. Unlike Hakka Wufenglou, Minnan Wufenglou technically does not belong to the "hall-and-wing" type; instead, it follows a local-style axis-bay housing expansion. See Chapter IV.

large-scale investigations. Qin Qiaohua (2021)[45] studied Wufenglou as a defensive architectural subtype in her doctoral research and subsequent publications about Zhangzhou and other Minnan areas, but the cases she used were located in Hakka territory without verifying their adherence to the fundamental Wufenglou design. Hong Tingting et al. (2023)[46] used cluster analysis to identify "Wufenglou residential areas" within the Zhangzhou city area, summarizing their spatial clustering and co-location relationship with Tulou; however, in this study, Wufenglou was only used as a label in the model, and its typological characteristics were not explored.

The latest achievements at this stage are: Huang Hanmin and Fan Wenyun (2023) proposed the concept of "honeycomb rammed earth dwellings" in their book Yongding Traditional Architecture,[47] arguing that Hakka Wufenglou gradually evolved into honeycomb-shaped square rammed-earth dwellings during the process of wing additions, representing an intermediate form in the evolution of Hakka earthen dwellings; while Huang Hanmin et al. (2025), in Hua'an Traditional Architecture,[48] for the first time used Wufenglou in the Minnan region as a documented sample, meticulously recording Minnan Wufenglou (called Hutoucuo in the Anxi region) in terms of materials, structure, and some dimensional parameters, describing the first relatively systematic Minnan Wufenglou construction archive. These two works constitute a dual direction in Wufenglou research: on the one hand, they completely separate the characteristics of Tulou and Wufenglou for discussion; on the other hand, they summarize for the first time the local construction logic of the Minnan system of Wufenglou.

The third research phase expanded the study area while adding more field data, but it also introduced new challenges. Researchers have still not established clear typological boundaries between Wufenglou and Tulou structures. Although the view that "Wufenglou does not belong to Tulou" has been proposed for more than a decade and has gained increasing support, the opposing view that "Wufenglou belongs to Tulou" still exists, and no unified consensus has yet been reached. At the same time, the academic field still lacks established definitions separating Hakka Wufenglou from Minnan Wufenglou, so the continued use of the same name for different regional forms keeps generating classificatory confusion. Such overlapping nomenclature continues to complicate both classification and comparative research by making regionally different forms appear as one undifferentiated type.

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[45] Qin 2021.
[46] Hong, Lai, Huang, & Zheng 2023.
[47] Huang, Fan 2023. pp. 376, 426.
[48] Huang, Liu, Lin, & Xie 2025. pp. 164-165.

The above review of the research history of Wufenglou dwellings in Fujian Province reveals that while a basic framework has been established—from its initial naming in the mid-20th century, to its typological differentiation in the early 21st century, and further to its regional juxtaposition and empirical deepening in recent years—several significant shortcomings remain.

Firstly, the definition of Wufenglou typology is inconsistent. While existing literature generally mentions the architectural composition and facade morphology of Wufenglou, there is a lack of consensus on the criteria for determining the "basic type" and its variations. Neither a parametric model based on bay width, depth ratio, or spatial sequence has been established, nor has the smallest constituent unit been clearly defined.

Secondly, the regional system remains unclear. The Hakka and Minnan branches of Wufenglou differ fundamentally in form, structure, and functional logic, yet they are still broadly categorized under the same name, leading to sample misuse in statistical and comparative studies.

Thirdly, the research methods are overly descriptive. Most results remain at the stage of visual or documentary summarization, lacking quantitative mapping, structural analysis, and model-based verification at the architectural grammar level.

Fourth, there is a disconnect between documentary and field research. Some academic findings continue the macro-narrative mode of the World Heritage application texts, emphasizing symbolism and morphological overviews while lacking a systematic analysis of local differences in construction techniques, building materials, and spatial order.

Fifth, the academic discourse system still relies on the traditional classification method of the "Tulou system." Although the position that "Wufenglou does not belong to Tulou" has been put forward for more than a decade, the theoretical paradigms and classification frameworks of research still largely use "Tulou" as a reference, limiting the academic visibility of Wufenglou as an independent architectural type.

Overall, research on Fujian Wufenglou has moved from being "attached" to being "recognized," but has not yet achieved being "defined". The key to the future lies in establishing a typological model that is both quantifiable and comparable and in clarifying the academic boundaries within the dual structure of Hakka and Minnan Wufenglou.

3. Objective and Methodology

- Objective

This study aims to establish Wufenglou as an independent architectural type within the Fujian rammed-earth dwelling system and, through typological analysis, to achieve a clear identification and classification system for this type in the Hakka and Minnan regions. The specific objectives are as follows.

Defining a Quantitative Typological System: This study focuses on Hakka and Minnan Wufenglou, comprehensively analyzing their spatial grammar, volumetric composition, structural configuration, and axial-lateral logic. Based on textual research and field surveying, it proposes operational typological definitions and identification criteria, and establishes a progressive discrimination system "from basic type to variants" to achieve the transformation from qualitative description to quantitative identification, providing a foundational model for subsequent comparative analysis and conservation strategies.

Developing a Regional Dual-System Comparative Study: This study selects six typical Wufenglou sites from each of the Hakka and Minnan regions as basic samples, while incorporating several regional variants for auxiliary comparison. Through multi-dimensional comparison of planar structure, three-dimensional framework, and ritual spatial order, it summarizes the commonalities and differences between the two systems in layout logic and construction methods, clarifies the "dual-system structure" of Fujian Wufenglou, and elucidates its inherent laws in regional culture and formal evolution.

Constructing Part of an International Academic Discourse System: By incorporating "Wufenglou" as a proper pinyin term alongside "Tulou" into the architectural context, this study aims to identify long-standing typological misjudgments and translational confusion, and to redefine the internal hierarchy and classification sequence of Fujian rammed earth architecture. This not only provides an independent academic positioning for local architecture but also offers a new comparative framework for the typological study of Fujian vernacular dwellings.

- Methodology

This study employs a three-tiered analytical framework of document archiving, field surveying, and drawing and modeling, combining qualitative and quantitative methods to investigate the typological characteristics of Wufenglou dwellings.

(1) Document Archiving

Through a systematic review of existing academic literature, local chronicles, genealogies, and architectural archives, this research traces the historical evolution and academic context of the Wufenglou concept, clarifying its terminological development and identifying research gaps within the system of "Fujian rammed-earth architecture". By integrating previous survey drawings, architectural records, and oral histories, it also compares the formation logic of the hall-and-side-building layout and the ritual axis with the available documentation, thereby establishing a historical and theoretical basis for defining typological thresholds.

(2) Field Surveying

In the fieldwork stage, six representative Wufenglou sites in each of the Hakka and Minnan regions are selected as core samples, accompanied by several structural variants as supplementary cases. The research employs the following methods: on-site surveying and structural recording to obtain plan, section, and roof-truss parameters; architectural photography and UAV[49] aerial documentation[50] to capture three-dimensional formal and volumetric data; and interviews with local craftsmen, residents, and heritage personnel to understand construction logic and the vernacular terminology in use. This stage aims to grasp the authentic spatial grammar, construction logic, and typological essence of Wufenglou through direct local experience.

(3) Drawing and Modeling

Based on field data, the study applies a combined approach of hand-drawn sectional axonometric analysis and UAV-based typological modeling to reconstruct three-dimensional spatial compositions and abstract their typological structures. Hand-drawn sectional axonometrics reveal axial order, hierarchical relations, and volumetric progression, while UAV modeling extracts architectural parameters and establishes a quantifiable spatial identification matrix. By integrating typological and comparative

[49] UAV (Unmanned Aerial Vehicle) photogrammetric modeling involves capturing a series of highly overlapping photos while precisely knowing each photo's position and orientation, then use algorithms to merge them into a georeferenced 3D model.
[50] Pargieła 2023.

analysis, the research synthesizes the "basic type–evolutionary type–variant" hierarchy within both Hakka and Minnan systems, and proposes corresponding typological thresholds and discrimination criteria for Wufenglou in Fujian.

Through this three-tier analytical framework, the study establishes a logical progression from historical documentation to architectural surveying and typological modeling, forming a coherent and operational methodology for Wufenglou typological research.

- Dissertation Structure

As Figure 7 illustrates, based on the fieldwork, literature review, and typological analysis presented above, the dissertation is divided into five chapters, each developing one step of the typological argument.

The first chapter establishes the terminological independence of Wufenglou through semantic clarification and the disentangling of generic classifications.

The second chapter identifies its shared cosmological order, grounded in Fengshui principles and the spatial logic of the Nine-Square Grid.

Chapter III examines the tectonic mechanisms that translate these abstract principles into environmentally responsive material forms through hybrid construction systems.

Chapter IV then differentiates the distinct generative logics—modular versus integral—that characterize the Hakka and Minnan basic types, despite their shared silhouette.

Finally, Chapter V traces their separate evolutionary lineages, demonstrating how each derives from regionally specific layout rules and occupies its own position within the broader corpus of Fujian rammed-earth architecture.

In addition, to present Wufenglou thoroughly, the dissertation moves from the broad to the detailed across four dimensions: commonalities, differences, individual volumes, and finer details. These aspects are illustrated through hand-drawn illustrations, special diagrams, mapping techniques, and drone modeling data (Figure 8).

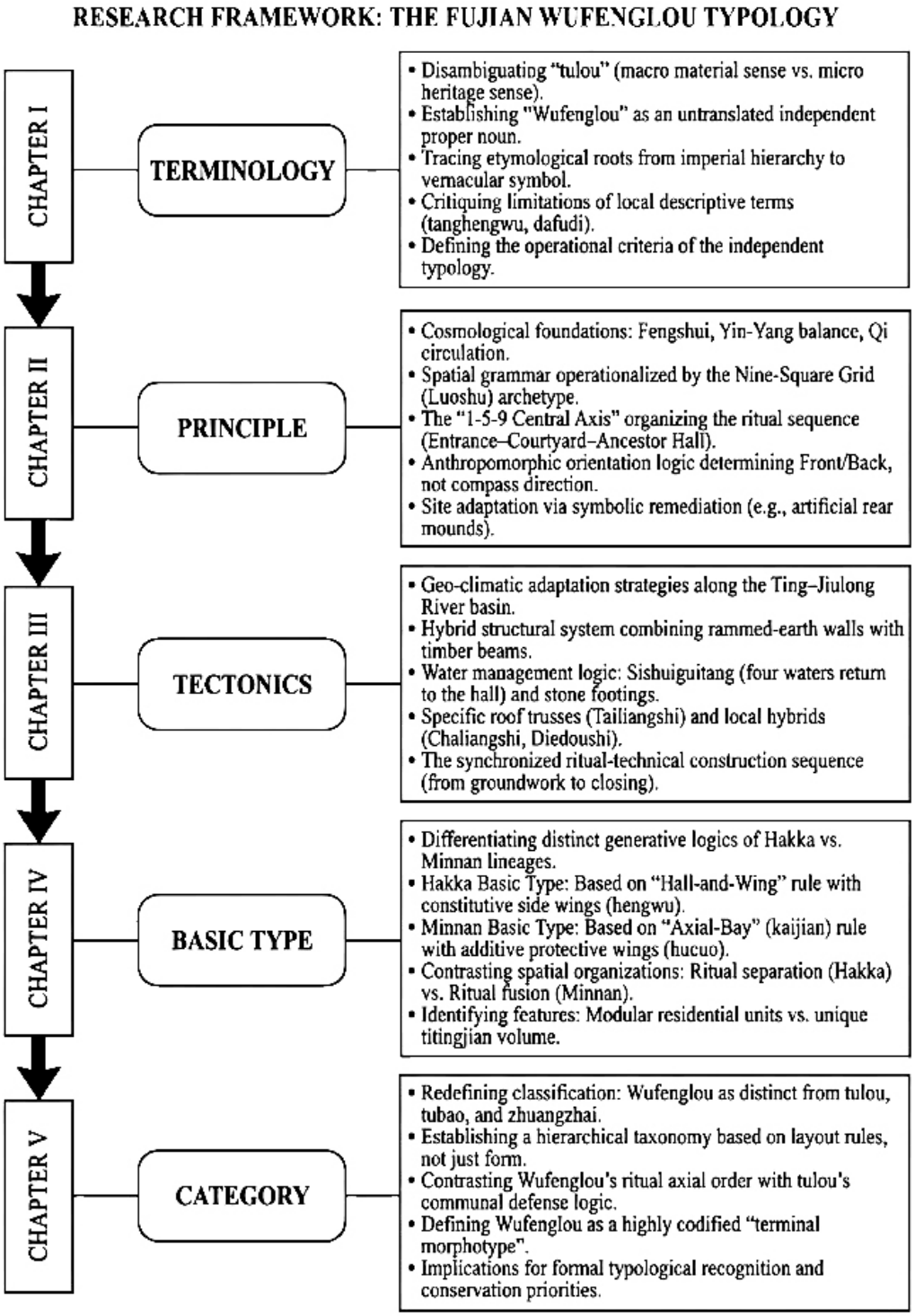


Figure 7. Research Structure 1

Self drawn

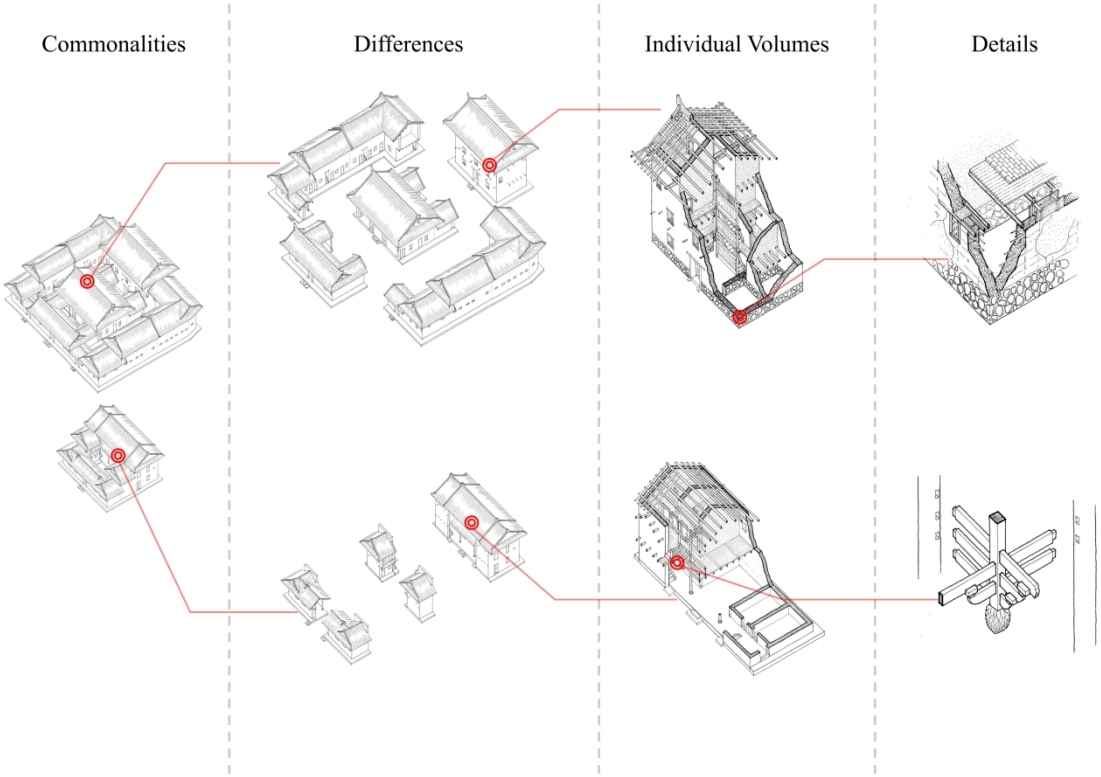
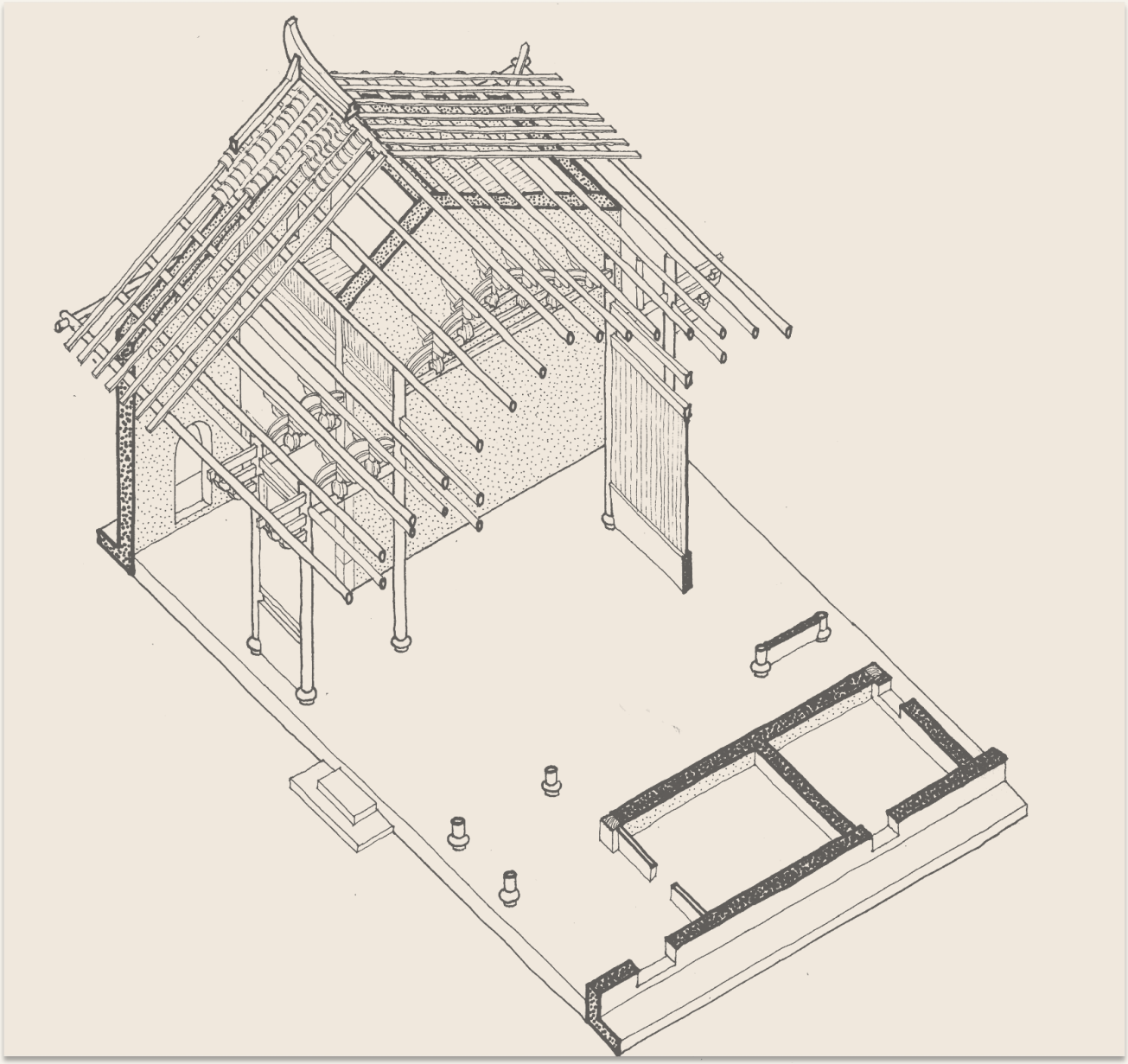


Figure 8. Research Structure 2

Self drawn

CHAPTER I

Terminological Disambiguation of Wufenglou



CHAPTER I. Terminological Disambiguation of Wufenglou

Names are the first obstacle in this chapter, because the terminology surrounding Wufenglou is already unstable before any formal analysis begins. In field notes, local usage, and published studies, Wufenglou is frequently described through words that partly overlap, while still pointing to different scales, traditions, and architectural realities. The most troublesome word is Tulou. In its macro Chinese sense, Tulou may refer quite broadly to rammed-earth dwellings in general; in its micro heritage sense in English, however, it has come to denote the UNESCO-inscribed Fujian Tulou compounds. This difference is not merely linguistic, since the same word can either open out onto a large material family or narrow down to a specific heritage category. For that reason, this dissertation uses rammed-earth dwellings for the wider material family and keeps Tulou as the proper noun for the micro type. From there, the chapter follows Wufenglou from imperial architecture into local architectural speech, where Hakka and Minnan examples must be understood as related but not interchangeable lineages. Terms such as tanghengwu, fudishi, dawujian, huanggongqi, hutoucuo, and others are therefore reviewed critically, not as a glossary of local names, but as evidence of the limits of the existing vocabulary: some labels are too broad, some too local, and some semantically misleading when used for precise classification. The same problem appears in English translation. Wufenglou should remain untranslated because its architectural form, symbolic charge, and cultural memory are not separable from the name itself. On this basis, the chapter defines Fujian Wufenglou as an independent rammed-earth architectural system, marked by a symmetrical five-volume axial composition, a stepped front-low/rear-high roof profile, a nine-grid courtyard order, and two related but distinct Hakka and Minnan genealogies. This definition gives the following analytical chapters their conceptual ground.

1. Key Terminology Delimitation

This dissertation must begin by clarifying how the term “Tulou” will be used. This is because, in everyday Chinese, Tulou has both a broad, generic sense and a narrow, specific sense; in English academic and heritage discourse, only the narrow, proper-noun sense tends to persist. Without disambiguation, later chapters risk category confusion. In the broad Chinese sense, Tulou can denote all

earthen dwellings — including Wufenglou — whereas only by adopting the narrow sense do the UNESCO-inscribed Fujian Tulou become analytically distinguishable from other earthen house types such as Wufenglou.

1.1. The Macro and Micro Sense of "Tulou" in Chinese

- The Macro Sense: "a house made of earth"

In colloquial and regional Chinese usage, "Tulou" can simply mean "a house built of earth." In this macro sense, the focus is on material and construction technique rather than on a specific plan or type:

"tu" (土) refers to compacted or rammed earth, or other earthen mass used as the main load-bearing enclosure;

"lou" (楼) refers to an inhabitable built volume, usually multi-storey or at least substantial enough to function as a "proper house" rather than a temporary shed.[1]

Under this broad descriptive usage, "Tulou" does not designate a single architectural type. It refers to dwellings whose principal walls are earthen, whose bases are usually raised to resist dampness, whose thick envelopes provide structural stability, climatic buffering, and lateral resistance, and whose roofs typically address heavy rainfall through deep eaves and broken, articulated slopes. In other words, in macro Chinese usage, "Tulou" can be understood as "a dwelling constructed primarily of rammed earth."[2]

In this dissertation, when referring to this broad, material-technical family—earthen domestic architecture in Fujian regardless of whether plans are circular or square, axial or perimeter-enclosed—the English terms "rammed-earth architecture," "rammed-earth buildings," or "rammed-earth dwellings" will be used instead of "Tulou." At the macro level, the Chinese word "Tulou" functions as a descriptive label ("a house made of earth"), not as a precise typological category, and the neutral technical equivalents in English are therefore expressions that foreground the rammed-earth structural system.

- The Micro Sense: "a specific architectural type"

Alongside this broad descriptive usage, Chinese architectural and heritage discourse also employs "Tulou" in a narrow, micro sense to designate a recognisable architectural type. This is the sense that became internationally stabilised after the inscription of "Fujian Tulou" on the UNESCO World Heritage

[1] These terms (tu and lou) for the broad sense are locally used colloquial expressions and are not formally defined in official or academic literature.
[2] Cao Chunping 2002; Lin Jiashu 1995. pp. 22-23; Qu and He 2009.

List in 2008[3]. Here, "Tulou" no longer means "any house built of earth," but rather:

– A particular class of enclosed, often multi-household, rammed-earth compounds with defensive or formalised characteristics;

– Organised by a repeatable internal spatial logic;

– Canonically represented (in UNESCO documents, tourism promotion, and much scholarship) by what are commonly termed the "Corridor Type" and the "Unit Type," including the circular and square perimeter compounds most closely associated with Hakka and Minnan regions.[4][5][6]

In this micro sense, "Tulou" has been adopted into English unchanged, as Tulou, and is typically treated as a proper noun naming that specific, recognised subset of Fujian rammed-earth compounds.[7] English-language heritage texts, guidebooks, and much post-2008 academic writing therefore tend to preserve only this narrow, typological meaning of "Tulou," without reflecting its broader, material sense in Chinese language norm.

1.2. The Convention in This Dissertation

Because Chinese uses "Tulou" for both a macro material sense and a micro typological sense, whereas English usage generally assumes only the latter, a clear terminological convention is required. In this dissertation, the following distinctions are adopted:

– Rammed-earth architecture / buildings / dwellings

These expressions refer to the broad material-technical domain: Fujian's earthen domestic architecture as a whole, including multi-volume stepped courtyard compounds, axial ancestral-hall compounds, square perimeter houses, circular perimeter houses, and other forms constructed primarily of rammed earth. They correspond to the macro sense of "Tulou" in Chinese ("a substantial house built of earth"), but this macro set will not be called "Tulou" in English, in order to avoid suggesting that all rammed-earth dwellings belong to the UNESCO-type Tulou lineage.

– Tulou

The term Tulou (left in pinyin, without translation) is reserved for the narrow, micro sense that has

[3] UNESCO World Heritage Centre. 2008
[4] Huang 2020. p. 1.
[5] Colafranceschi, Pallottino, & Porretta 2020.
[6] The Fujian Hakka ethnic region is primarily located in the western part of Fujian province, including areas such as Yongding and Longyan. Meanwhile, the Fujian Minnan ethnic region is mainly found in the southeastern part of Fujian province, including areas like Xiamen, Quanzhou, and Zhangzhou.
[7] Qu and He 2009; Zhen 2013. pp. 114-118, 164-165; Colafranceschi 2019.

been stabilised in international heritage discourse: the canonised architectural type publicised under the name “Fujian Tulou,” typically exemplified by Corridor-Type and Unit-Type perimeter compounds. In this dissertation, Tulou is treated as a proper noun for this specific group and does not mean “any earthen house.”

– Wufenglou

Wufenglou belongs to the wider world of Fujian rammed-earth dwellings in the material sense, but is not reducible to Tulou in the heritage sense.[8] Wufenglou denotes a family of axial, front-low / rear-high, multi-volume courtyard compounds with stepped massing, in which a ritual or ancestral hall forms the spatial spine and symmetrical lateral bodies advance forward in tiers. In this dissertation, Wufenglou is treated as an independent typological noun: it is not translated as “Five Phoenix Building,” the literal Chinese meaning, nor subsumed under Tulou, but argued to represent a distinct typological line within Fujian rammed-earth dwellings.[9]

2. Etymology of the Term "Wufenglou"

The term "Wufenglou" is composed of three Chinese characters: 五 (wu), 凤 (feng), and 楼 (lou). The first two characters carry relatively direct meanings: wu means five, while feng refers to the phoenix, the legendary sacred bird of classical Chinese tradition. In Chinese tradition, five is often used as a symbolic number rather than a strictly quantitative one, normally carrying harmonious and hierarchical meanings: by itself, it can represent the ultimate balance in a certain aspect[10]; while when used with other odd numbers such as three, seven, or nine, it suggests a tiered or progressive order of ranking[11]—a rule that will be elaborated on under the section of Wufenglou Housing Expansion. Thus, the name “Five Phoenixes” (Wufeng) is a combined expression of hierarchical order, harmonic symbolism, and totemic reverence. The last word, lou, can in a broad sense mean a building or built structure. However, from the

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[8] Cai 2005; Ministry of Housing and Urban-Rural Development of the People's Republic of China 2017. pp. 41-43, 154-158.

[9] Chen, Pan, and Lu 1993. pp. 101-105; Knapp 1986. pp. 43-48.

[10] The number five in Chinese tradition often symbolizes a complete set of fundamental forms within a given domain. For example, the Five Elements (*Wuxing*) — Wood, Fire, Earth, Metal, and Water — are believed to encompass all material transformations in the natural world; the Five Directions (*Wufang*) — East, South, West, North, and Center — map out the totality of spatial orientation; and the Five Senses (*Wugan*) — sight, hearing, smell, taste, and touch — represent the full range of human perception. In each of these systems, “five” serves as a symbolic structure that captures the whole spectrum within its respective field, thereby expressing completeness and balance. For a detailed description, see Chapter II.

[11] In traditional Chinese cosmology, also known as *Fengshui*, odd numbers (1, 3, 5, 7, 9) are classified as numbers of *yang* (active, bright, masculine) and even numbers (2, 4, 6, 8, 10) as *yin* (passive, dark, feminine); *yin* and *yang* exist in dynamic balance and mutual generation. For a detailed description, see Chapter II.

architectural point of view in ancient China, lou refers only to structures with two stories or more (explanation from Shuowen Jiezi and Kangxi Dictionary[12]). Given the distinct regional identity, historical continuity, and traditional character of Wufenglou, the term Lou should preferably be understood in its classical Chinese sense, rather than as a generic term for “building”. This definition is vital for identifying and correcting mistakenly categorized one-storey buildings—those mistakenly given the status of "Wufenglou" while only fulfilling the other formal requirements of Wufenglou.

The term Wufenglou has attracted scholarly attention, and its etymological roots have been examined through historical and linguistic analysis. The term Wufeng, according to Wu Qingzhou[13], first appeared as a proper noun during the reign of Emperor Xuan of the Han dynasty (73–49 BC), used as a regnal year title due to the auspicious omen of the “arrival of the Five Phoenixes” between 57 BC and 54 BC (see Table 2)[14]. According to Xiao Mo[15], the earliest recorded use of Wufenglou as an architectural term can be traced back to the Tang dynasty (618–907 AD), referring to a specific architectural form of the principal gate of the imperial palace (see Table 2). As Figure 9 presents, this form of Wufenglou is summarized and restored by Yang Hongxun[16], who further established that although this architectural form first appeared during the Sui dynasty (581–618 AD) under the direction of Yuwen Kai[17], the term Wufenglou itself had not yet appeared in written records at that time (see Table 2).

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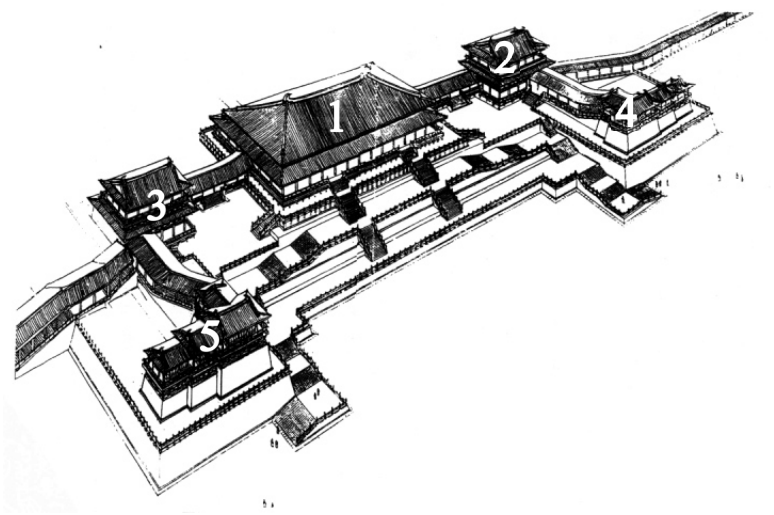
[12] 说文解字 Shuowen Jiezi [Explaining Graphs and Analyzing Characters], compiled by Xu Shen in the Eastern Han Dynasty (121 CE), is the earliest systematic Chinese etymological dictionary; while 康熙词典 Kangxi Cidian [Kangxi Dictionary], commissioned by Emperor Kangxi in 1716, represents the most authoritative pre-modern Chinese character dictionary with over 47,000 entries.
Xu, Shen. 121 CE. 说文解字 Shuowen Jiezi [Explaining Graphs and Analyzing Characters]. Entry for the character “楼 / 樓”, online version of Shuowen Jiezi, Kxue Online Dictionary. Accessed February 2024. https://zidian.kxue.com/zi/lou16_swjz.html
Zhang Yushu et al. 1716. 康熙字典 Kangxi Zidian [Kangxi Dictionary]. Entry for the character “樓”, online version of Kangxi Zidian, Kxue Online Dictionary. Accessed February 2025. https://zidian.kxue.com/zi/lou17_kangxi.html
[13] Wu 2006.
[14] Ban, Gu. 111 CE. 汉书·宣帝纪 Han Shu: Xuandi Ji [Book of Han, Annals of Emperor Xuan]. Chinese Text Project. Accessed November 18, 2025. https://ctext.org/han-shu/xuan-di-ji
[15] Xiao 1984.
[16] Yang 1991; Yang 2001, pp. 371-379.
[17] Yuwen Kai (555–612): Celebrated Sui Dynasty architect and engineer, renowned for designing the imperial capitals of Chang’an and Luoyang.



Volume 1 (the first phoenix): The main building

Volume 2 (the second phoenix): The auxiliary building on the left of the main building (duolou)[18]

Volume 3 (the third phoenix): The auxiliary building on the right of the main building (duolou)

Volume 4 (the fourth phoenix): The building in front of Volume 2 due to etiquette requirements (quelou)[19]

Volume 5 (the fifth phoenix): The building in front of Volume 3 due to etiquette requirements (quelou)

Figure 9. Palace/Gate Wufenglou's Five Volumes, Tang dynasty 618–907 AD. Source: Yang Hongxun 2001.[20]

From the Tang to the Qing dynasty (1644—1911 AD), Wufenglou evolved over a thousand years as a form of the imperial palace's main gate. At the vernacular level, however, the term Wufenglou had expanded beyond imperial architecture to describe a particular type of vernacular dwelling in Fujian province—specifically in the northern part of Yongding County, home to the Hakka ethnic group. Although the precise moment and mechanism of this architectural and semantic transition remain unclear, scholars have offered various interpretations. Huang Hanmin and Fan Wenyun[21], in their 2023 publication, present a new proposition through textual research: (1) the transportation conditions for constructing such large-scale architecture could only be established after the opening of the Ting River waterway post-1213

[18] Watchtowers (duolou) are defensive towers built on or into the city wall, integrated with parapets for surveillance and combat; ceremonial towers (quelou) are the upper structures of paired que that flank palace, temple, or tomb gates, marking rank and sacralising the threshold. At high-status palace gates, a defensive gate tower can coexist with outward-projecting que towers in one gate–wall ensemble, but their functions remain distinct. Xiao 1984; Wu 2006; Wu 2007; Lai 2001; Yin 2014; Li 2020.

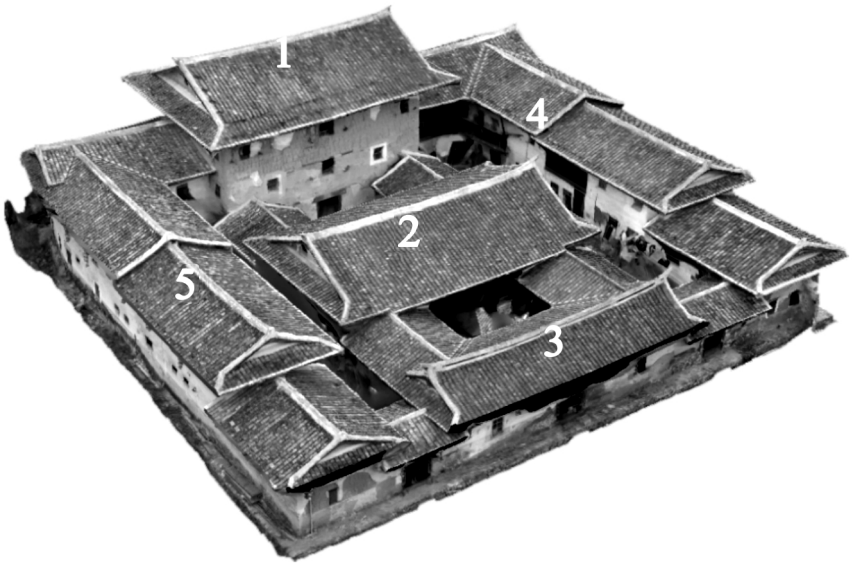
[19] Ceremonial towers, ibid.

[20] Yang 2001, p. 436.

[21] Huang & Fan 2023, pp. 13-15.

AD, which enabled the mass shipment of building materials (see Table 2); and (2) the research dates the emergence of this architectural typology to the period after the establishment of Yongding County in 1478 AD in the Ming dynasty and it emerged before what is now commonly recognized as the Hakka Tulou in the Bopingling mountainous area (see Table 2). Lai Deshao[22] associated the naming of Wufenglou dwellings with traditional Chinese cultural frameworks, including yin-yang cosmology, the Five Elements, phoenix worship, Confucian social hierarchy, and aspirations for an ideal life. Wu Qingzhou[23] further proposed that the term may have originated from the five articulated spatial volumes commonly described by local residents as "Three halls and two side wings" (santang liangheng)—a layout numerically linked to "five" (Figure 10), though structurally distinct from its palace predecessor. He also suggested that the name "five phoenixes" alludes not only to the spatial logic but to the architectural silhouette, which resembles a phoenix with wings outstretched. Significantly, this vernacular form of Wufenglou retains the axial layout typical of the "Hall and Wing" type[24] Hakka dwellings found in neighboring Jiangxi and Guangdong provinces, yet it departs from them in structural and layout expression, emerging as a distinct architectural typology. Since this residential type was constructed and inhabited by Hakka communities and exists only in the Hakka areas of Fujian, it is referred to in this dissertation as "Hakka Wufenglou".[25]

[22] Lai 2001.
[23] Wu 2008, p. 68.
[24] This dissertation regards it as the layout rule that the Hakka Wufenglou applies, which will be discussed in detail in Chapter V.
[25] Zeng Xin and Zeng Xianshan 2004. p. 12.



Volume 1 (the first phoenix): The main building

Volume 2 (the second phoenix): The main hall with auxiliary rooms

Volume 3 (the third phoenix): The main entrance.

Volume 4 (the fourth phoenix): The side wing on the left of the axis

Volume 5 (the fifth phoenix): The side wing on the right of the axis

Figure 10. Hakka Wufenglou's five volumes. Representative: Yaoyuanlou, drone-generated relief by the author in February 2024

In counties such as Hua'an and Anxi in southern Fujian, where Minnan communities are concentrated, a distinctive type of vernacular residence known locally as Wufenglou can be found. These buildings developed from traditional single-storey houses, called Minnan dacuo, and Minnan Tulou. As shown in Figure 12, they preserve the conventional layout with a front main entrance, yet the rear volume is elevated to two storeys. The staircase units on both sides, originally side corridors connecting the front corners to the rear volume, were also vertically increased, forming a double-layered spatial body. The resulting five-volume composition, comprising the raised rear volume, two raised side rooms with staircases, and two single-storey corner rooms, resembles the five-volume spatial configuration of traditional palace- or gate-type Wufenglou, hence the local name.[26]

According to field surveys and interviews conducted by the author, it is inferred that this type of

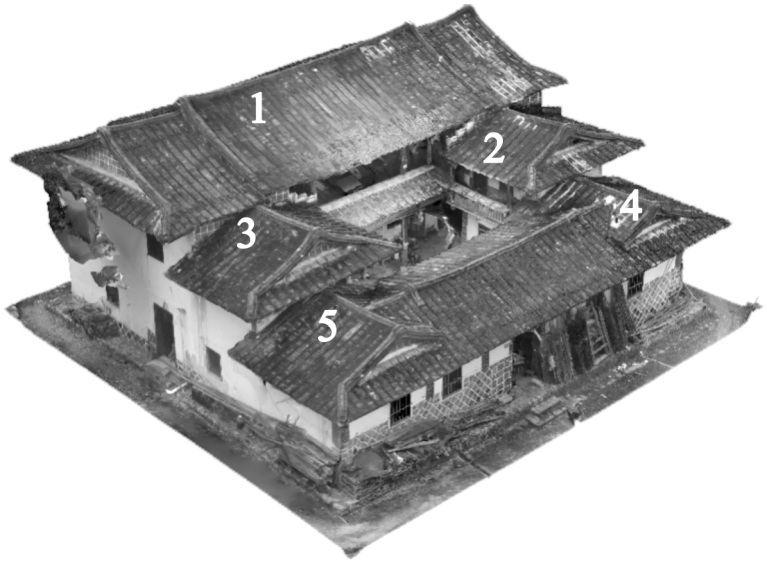
[26] Zeng Wuyue 2006b.

Wufenglou began to emerge during the late Qing to Republican period (circa 1900–1949)[27]. One notable example is the Yuzonglou (circa 1910, Figure 11), which was built upon an original single-story layout with an added rear level and two independent staircases, though the staircases were not yet integrated into an independent volume[28]. Additionally, based on Hua'an and Anxi county heritage records, no examples of this type of building are recorded that pre-date 1900. Thus, though this estimate is still provisional and not yet definitive, the available evidence and the existing Wufenglou dwellings in the region point to a development period around the onset of the 20th century.

Figure 11. Yuzonglou, drone-generated relief by the author in February 2024

[27] Also based on the national third heritage survey, Hua'an section, this timeframe is inferred but not definitive. Fujian Provincial Cultural Heritage Administration. 2015.

[28] Chapters IV and V will discuss that this type is a variation (titingqi) rather than a standard Minnan Wufenglou form.



Volume 1 (the first phoenix): The main building

Volume 2 (the second phoenix): The two-floored body on the left of the building

Volume 3 (the third phoenix): The two-floored body on the right of the building

Volume 4 (the fourth phoenix): Corner rooms on the left of the building

Volume 5 (the fifth phoenix): Corner rooms on the right of the building

Figure 12. Minnan Wufenglou's five volumes. Representative: Nanguilou, drone-generated relief by the author in March 2024

Throughout the field research, the author also discovered that the construction of this Wufenglou type surged after the founding of the People's Republic in 1949, especially during the 1970s, when the term "Wufenglou" came into broad use in Hua'an county (see Table 2). Following the successful UNESCO designation of Fujian Tulou in 2008, these buildings gained increased attention. This type of Wufenglou differs from its Hakka counterparts, which gradually stopped being built after the Republic of China era (1911-1949); many are still being constructed today(Figure 13)—some repurposed as guesthouses for rural tourism, others still serving as everyday residences for local communities. Based on the fact that this type of Wufenglou is constructed only by Minnan people and exists in Fujian Minnan ethnic regions, this type of residence is referred to as "Minnan Wufenglou" in the following sections.

Figure 13. a Minnan Wufenglou under construction, Self taken in 2024

Table 2: Chronological Evolution of Wufenglou Term[29]

Dynasty of China	**Time Period**	**Wufenglou etymological development**	**Researched**
Xia	2070–1600 BC		
Shang	1600–1046 BC		
Zhou	1046–221 BC		
Qin	221–206 BC		
Han	202 BC–220 AD	Wufeng used as a regnal year title (Five Phoenixes omen): 57 BC–54 BC	Wu Qingzhou
Three Kingdoms	220–280 AD		
Jin	265–420 AD		
Sixteen Kingdoms	304–439 AD		
Northern and Southern Dynasties	386–589 AD		
Sui	581–618 AD	Form of Wufenglou appeared architecturally (Palace), but not yet named	Yang Hongxun
Tang	618–907 AD	First recorded mention of Wufenglou as architecture	Xiao Mo
Five Dynasties and Ten Kingdoms	907–979 AD		
Song	960–1276 AD	After the Ting River opened in 1213 AD, it enabled long-distance building material transport for the vernacular residential Wufenglou, though this architectural type had not yet emerged.	Huang Hanmin, Fan Wenyun
Liao	916–1125 AD		
Western Xia	1038–1227 AD		
Jin	1115–1234 AD		
Yuan	1271–1368 AD		

[29] The dynastic names and order in this table are based on the Central People's Government of the People's Republic of China, 2005 中国历史纪年简表 Zhongguo lishi jinianbiao [Concise Chinese historical chronology]. Accessed March 12, 2025 from https://www.gov.cn/test/2005-06/24/content_9306.htm

Ming	1368–1644 AD	Residential-type Wufenglou started to emerge in Hakka region after Yongding County was officially established in 1478 AD	Huang Hanmin, Fan Wenyun
Qing	1644–1911 AD	Residential-type Wufenglou widely expanded in the Hakka region	Huang Hanmin, Fan Wenyun
Republic of China	1911–1949 AD	Minnan Wufenglou started to be constructed in Hua'an and Anxi counties, etc., around the end of the Qing dynasty	The author's field survey
People's Republic of China	1949 AD–present	Minnan Wufenglou construction surged, especially in the 1970s; the term "Wufenglou" came into use in Hua'an, and examples are still built today	The author's field survey

3. A Collection of Folk Legends on the Origins of Wufenglou Dwellings

Even though direct evidence explaining how palace-style Wufenglou evolved into vernacular Wufenglou residences was not found during the field research, the investigation did uncover a number of folk origin narratives related to Wufenglou. These accounts, identified in local gazetteers, archival fragments, and documentary sources, provide valuable cultural context and a useful foundation for understanding how the name and form were adopted across Hakka and Minnan regions on a notable scale.

- The Story of Lady Yu

The Hakka region preserves this legend as part of its historical folklore. The Wanli Emperor of the Ming dynasty selected Yu Siniang (Lady Yu) from a palace draft that spanned China to become his royal consort. The emperor allowed her younger brother to leave the capital after he expressed his desire to return home and ordered the construction of an imperial palace replica for his family. Before departing, Lady Yu petitioned that the honor should extend to her native clan and neighbors. The emperor acquiesced, and soon, grand palatial residences began to rise across Yongding, their tiered structure and axial courtyards echoing palace architecture. These buildings, later called Wufenglou, came to embody imperial grace localized in the homeland.[30]

[30] Yongding County Local Chronicles Compilation Committee, 2009, pp. 175-176.

- Yulonglou's Construction Story

This story belongs to a particular Wufenglou named Yulonglou. A Wang clan ancestor who served as a high official developed a deep attachment to the imperial palace during his final meeting with the emperor. The official showed his attachment to the five-phoenix towers of the palace by looking back at them multiple times as he departed from court. The emperor noticed this and asked for an explanation. The official explained to the emperor that the palace towers had become etched in his memory and he would deeply miss them. Amused and moved, the emperor permitted him to build a residence of similar form in his hometown. Thus, Yulonglou — laid out in the grand "three halls and two wings" configuration—was erected, earning its place as a monumental embodiment of palace dignity transplanted into a mountainous Hakka settlement.[31]

- Wufenglou's folklore in Minnan Region, Hua'an

The Minnan region also preserves a founding narrative for Wufenglou. According to legend, the five celestial daughters of the Jade Emperor, the emperor of heaven in the Chinese Daoist system, Jinfeng, Yinfeng, Yufeng, Caifeng, and Cuifeng (Golden, Silver, Jade, Rainbow, and Emerald Phoenix), broke heavenly rules by coming to Earth. Enraged, the Jade Emperor ordered the Thunder God to kill them. Local people then constructed such buildings to represent the five phoenixes that had descended from heaven. In this version, the name Wufeng receives additional support from classical cosmology because it is connected to the Five Colors, Five Directions, and Five Elements, which served as symbols of cosmic order and imperial power since the Han dynasty. Here, the palace metaphor is legitimized not through lineage or imperial favor, but through mythic cosmology embedded in the regional worldview.[32]

Taken together, these narratives, though not historical evidence, reveal a shared cultural impulse to align the image of Wufenglou with imperial authority, but they do so through regionally distinct imaginaries. In the Hakka tradition, legitimacy is mediated through imperial connection, court favor, and ancestral privilege, producing architectural imitation of palace hierarchy in the form of axial, monumental family compounds. In the Minnan tradition, authority is grounded in cosmic symbolism, where phoenixes, colors, and elemental order transform imperial grandeur into a universal mythic system. The two regions demonstrate how Wufenglou functions as a local expression of palace organization, receiving its authority either from imperial decree or from divine cosmic approval, while pursuing the common aims of ritual

[31] CPPCC Yongding County Committee, 1993, pp. 97-101.
[32] Material provided by Director Huang Jiangyong from the Hua'an Cultural Heritage Center, detailing a tour guide script about the origins of the Wufenglou in the Dadi Village tourist area.

prestige, visual dominance, and symbolic association with the imperial center in local architecture.[33]

4. Existing Architectures Referred to as "Wufenglou"

The existing architectural works named Wufenglou can be broadly classified into five main categories: Palace/Gate, Tower/Pagoda, Ancestral Shrine, Residence, and Others.[34]

- Palace/Gate

Wufenglou of the Palace/Gate type connects architectural magnificence to symbolic authority. With the main palace gate on the central axis, this type is frequently supplemented by two watchtowers (duolou) for protection and two ceremonial towers (quelou) for rituals.Yingtianmen (see Table 3), built in 605 AD in the Sui Dynasty and reconstructed in the Tang Dynasty, is a representative example. It represented imperial rule and state rituals in a central gate body and side towers. Although destroyed in the Northern Song Dynasty, it was painstakingly reconstructed in 2016 AD by architect Guo Daiheng according to records. Wumen (see Table 3), the best-preserved surviving Palace/Gate-type Wufenglou was built in the Ming Dynasty and then reconstructed in the Qing Dynasty. As the Forbidden City's primary gateway, Wumen was a center where imperial rituals, including official announcements and bestowals, were performed, confirming the gate's dual function as a gateway and a symbol of centralized rule.

- Tower/Pagoda

Wufenglou of the Tower/Pagoda category consists of multi-story wooden buildings for religious or memorial purposes. These structures are characterized by their tiered layers, curved eaves, and symbolism. An outstanding example is the Wufenglou of the Yuhuangguan Temple in Nansong Village, Shanxi, originally erected in the Yuan Dynasty (see Table 3). It stands in excess of 20 meters high with five curved eaves, derived from a local myth of five phoenix fairies metamorphosing into a tower. Another example is the Wufenglou of Black Dragon Pool in Lijiang, Yunnan (see Table 3), which was moved and rebuilt in 1979 AD from Zhishan Fuguo Temple. It features an octagonal roof and rectangular plan, phoenix-like eaves, and exquisite carvings in the interior, synthesizing Han, Tibetan, and Naxi architectural traditions. It is one of the best-preserved ancient buildings in Yunnan's minority regions.

- Ancestral Shrine

Wufenglou of the Ancestral Shrine category is generally applied in ancestral rites and family

[33] Wu 2016a; Wu 2016b; Wu 2016c.
[34] Liang 1984; Liang 2006; Liu 1984. pp. 295-296.

celebrations, with regular bracket layouts and symbolic ornaments. One typical example is the one in Shatou Town, Nanhai, Guangdong, also called Cui's Ancestral Hall (see Table 3). Dating back to 1525 AD and rebuilt in the Qing Guangxu years, it extends 100 meters in length and originally had 108 gateways. Although only the front, archway, and wing rooms remain, they still attest to the richness of its gable roofs, pottery phoenixes on the eaves, and carved beams. Another example is the Yu Clan Ancestral Shrine in Wangkou Village, Jiangxi, built in 1787 AD (see Table 3). Along a central axis are arranged a three-tiered roof entrance, post-and-beam main hall, and the rear chamber accommodating ancestral tablets. Its connection from the courtyard to a neighboring river harmonizes with local culture and spatial design requirements.

- Residence

Within the Residential category, Wufenglou buildings are further divided into two subgroups. The first subgroup includes individual residences named Wufenglou, often inspired by architectural form or cultural symbolism. For instance, the Wufenglou in Xinqiao, Zhejiang, also called Aiwulu (see Table 3), built during the Qing Qianlong era, is a grand south China mansion with five courtyards and phoenix-themed roof decorations. Its spatial rhythm and staggered eaves evoke five phoenixes in flight. Another example is the Wufenglou in Shangrao, Jiangxi (see Table 3), constructed by Qing-dynasty official Wang Youdun. Originally a five-section courtyard residence, it was also called "The optimum official mansion in southern China". The second group, and the core focus of this study, refers to the regionally distributed Hakka and Minnan Wufenglou, found across Fujian's southwestern and southern mountains. These buildings combine residential and defensive functions, with symmetrical layouts typically lower in front and higher at the rear, forming a distinct cultural spatial type.[35]

- Others

In addition, the influence of the name "Wufenglou" has gone beyond China, such as the Nanzen-ji temple in Kyoto, Japan (see Table 3), whose upper gate is named Wufenglou and read in Japanese as 五鳳楼 (Go-hō-rō in Japanese). In the contemporary context, the use of this name is no longer limited to traditional ancient buildings. In addition, many newly built antique-style buildings or villas also borrow the name "Wufenglou", such as the building complex of the Beidaihe Workers' Sanatorium (see Table 3) and the ticket office of Luodai Town in Chengdu. These examples demonstrate the cross-cultural spread and influence of this noun.

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[35] Knapp 1992.

Among the categories mentioned above, some refer to architectural types collectively known as Wufenglou, while others are individual buildings or components simply named or given the term as an alias. Table 3 below evaluates each case as either Category A (a building type) or Category B (a specific named individual).

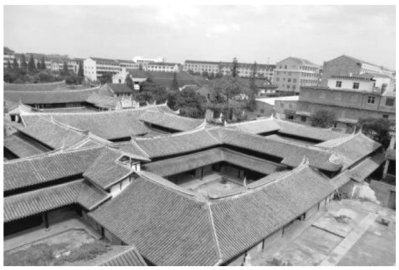
Table 3: Existing Architecture Categories Named "Wufenglou"

"Wufenglou" termed architecture	**Representatives, keeping the original language if phonetically translated**	**Province**	**Category A (a type) Category B (an individual)**
Palace/Gate	Yingtianmen (应天门)[36]	Henan	A
	Wumen (午门)[37]	Beijing	
Tower/Pagoda	Yuhuangguan (玉皇观)[38]	Shanxi	B

[36] Source on line: Accessed April, 2025 from https://h5.ifeng.com/c/vivoArticle/v002DnN5z3zDC4Rn7MfW5mTiUBokvFOiCtXc9vmz07TOpUM__?isNews=1&showComments=0

[37] Source on line: Accessed April, 2025 from https://commons.wikimedia.org/wiki/File:%E5%8D%88%E9%97%A8.JPG

[38] Source on line: Accessed April, 2025 from http://www.360doc.com/content/23/0226/20/47605718_1069567481.shtml

		 Fayunge (法云阁)[39]	Yunnan	
Ancestral Shrine		 Surname Cui Shrine[40]	Guangdong	B
		 Surname Yu Shrine[41]	Jiangxi	
Residence	1: Individual	 Aiwulu (爱吾庐)[42]	Zhejiang	B

[39] Source on line: Accessed April, 2025 from https://blog.udn.com/Olivia20090408/180390481
[40] Source on line: Accessed April, 2025 from http://www.vjiazu.com/index.php?app=ancestry&mod=Index&act=show&id=1166
[41] Source on line: Accessed April, 2025 from https://www.gujianchina.cn/news/show-8459.html
[42] Source on line: Accessed April, 2025 from https://www.sohu.com/a/303771452_120095517

		Jiangnan diyi guanting (江南第一官厅)[43]	Jiangxi	
	2: Regional	Hakka Wufenglou[44]	Fujian	A
		Minnan Wufenglou[45]	Fujian	
Others		Gohoro (五鳳楼)[46]	Kyoto (in Japan)	B

[43] Source on line: Accessed April, 2025 from https://m.thepaper.cn/kuaibao_detail.jsp?contid=2286830&from=kuaibao
[44] Datangjiao Village in Yongding. Drone-generated relief by the author in February 2024
[45] Sanyang Village in Anxi. Drone-generated relief by the author in February 2024
[46] Source on line: Accessed April, 2025 from https://ikidane-nippon.com/zh-Hant-TW/spots/nanzen-ji

	 Worker's Sanatorium[47]	Beijing	

From Table 3, it can be observed that among the various categories of architecture termed "Wufenglou," only the Palace/Gate and Residence 2: Regional categories exhibit clear typological characteristics, falling under Category A. These two represent architectural types rather than individual instances. However, while the Palace/Gate category demonstrates symbolic and ceremonial functions, its geographical distribution is limited, appearing only in specific locations such as Henan and Beijing. In contrast, the Residence 2: Regional category shows a much more concentrated distribution, being uniquely rooted in Fujian Province, where it reflects localized cultural and defensive residential forms. All other categories — Tower/Pagoda, Ancestral Shrine, Residence 1: Individual, and Others — are classified under Category B, suggesting they are individual structures that borrow the name "Wufenglou" more for its symbolic or aesthetic appeal than for representing a coherent architectural type.

This distinction highlights a key insight: while several structures bear the name "Wufenglou" for symbolic or aesthetic reasons, only the Hakka and Minnan examples in Fujian demonstrate consistent typological characteristics that transcend individual cases[48]. Their concentrated presence in a specific region, along with their distinctive spatial form, multifunctional nature, and historical continuity, sets them apart from the rest. As such, they provide the most solid foundation for in-depth typological analysis. Given that both forms are exclusively found in Fujian Province and share distinct regional characteristics, this dissertation will refer to them collectively as "Fujian Wufenglou" in the following discussion.

5. Divergent Local Terminological Conventions: Wufenglou and Other Terms

5.1. Wufenglou's Local Names in Hakka and Minnan Regions

[47] Source on line: Accessed April, 2025 from http://www.360doc.com/content/22/0728/10/5299136_1041686654.shtml

[48] The basic type of both, and the rules from which they derived, is illustrated in detail in Chapters IV and V.

In the regions where Fujian Wufenglou is distributed (including counties in both Hakka and Minnan areas), this architectural form is referred to by various names in local usage, creating terminological confusion that complicates academic research. This section aims to clarify the discrepancies between academic and vernacular terms for Fujian Wufenglou, consolidating its various alternative names. It analyzes why other designations are either too general or overly limited, ultimately standardizing the term Wufenglou to ensure terminological consistency in subsequent discussions.

- Hakka Wufenglou: Specific and Generic Confusion

The naming of Hakka Wufenglou in academic literature often reflects a lack of consistency, where terms fluctuate between referring to specific architectural instances and broadly defined categories. This inconsistency blurs typological boundaries and complicates accurate classification.

堂横屋 (tanghengwu), 堂横式 (tanghengshi), or 三堂两横式 (santang-lianghengshi). These names literally mean[49] "An architectural style that conforms to the rule whereby the halls (tang) were on the center axis and the side wings (heng) added symmetrically on either side." The name is a generic attempt at typological categorization of Hakka Wufenglou[50]. However, the primary flaw with this categorization is that it is not specific: it encompasses not only Hakka Wufenglou, but also other traditional Hakka homes situated in Jiangxi or Guangdong provinces with similar planar arrangements, but with considerably different overall spatial organization and circulation[51]. Therefore, even though Hakka Wufenglou can be a subcategory of the greater group of Hakka tanghengwu, the direct naming of Hakka Wufenglou as Tanghengwu is imprecise and inaccurate. In other words, this naming series can only describe a family of residences in which Hakka Wufenglou is included, but not Hakka Wufenglou itself.[52]

大夫第 (dafudi, literally"officials' residence") is a name commonly used in scholarly literature to refer to Hakka Wufenglou[53]. Some scholars specifically use this name to refer to a specific Hakka

[49] Liu 2004, pp. 181-208.
[50] The description above, which refers to the hall-and-wing house as a generic attempt at typological categorization, essentially identifies it as a layout rule for Hakka Wufenglou, which is elaborated and detailed in Chapter V.
[51] According to local customs or the Chinese language tradition, it is common to use the most representative function of a particular building volume to refer to that volume as a whole. For example, in the term san tang liang heng (three halls and two wings), the phrase does not literally define the entire structure but uses the "three halls" as the key reference point for naming the building unit. As a result, this term not only describes Hakka Wufenglou, but also other dwellings that fit the phrase.
[52] Pan et al. 2013. pp. 104, 116-120, 135-137; Knapp 1986. pp. 43-48; Zeng and Cheng 1967.
[53] Moteki, Inatsugi, & Katayama 1991. p. 171.

Wufenglou[54], such as Yulonglou of Datangjiao village. However, this designation is overly generic. Admittedly, some of the buildings of the Wufenglou type carry the name "Dafudi" on their plaques, but the earliest usage of Dafudi is a residence of high-ranking officials in ancient China. In other regions of China, there also exist Dafudi buildings, which typologically diverge from the Hakka Wufenglou; Dafudi is actually a small-scale official residence in the broad sense and is not a unique architectural type. Besides, most of the buildings of the Wufenglou type either don't carry the name Dafudi or carry other names such as 儒林第 (rulindi, lit. "Confucian Scholars" Residence'), which is the residence traditionally used by lower-ranking officials or scholars. Whether named Dafudi or Rulindi, these Wufenglou reflect a local Hakka practice of adopting official-style nomenclature for grand private residences as a means of signifying familial prestige. Even those Wufenglou lacking such names do not differ in their typological arrangement. Therefore, to generalize Hakka Wufenglou under the term Dafudi not only fails to capture their essential characteristics but also conflates them with other architecturally and functionally distinct buildings, rendering the classification reductive and inaccurate.

府第式 (fudishi, literally "mansion style") or 府第式方楼 (fudishi fanglou, literally "mansion style square building")[55] is a generic term widely used by scholars to describe Hakka Wufenglou. The term is founded on the monumental scale, front-low and rear-high vertical hierarchy, and the axial symmetry typical of Wufenglou, features that correspond to the disposition of the Chinese mansion layout. But this usage has some limitations. First, the term mansion style assumes familiarity with the structural principles of Chinese mansions, making it insufficient for describing the specific architectural features of Wufenglou, especially for scholars unfamiliar with Chinese architectural tradition. Besides, within the common distribution area of Hakka Wufenglou, this term not only encompasses Wufenglou but also transitional residential styles from Wufenglou to square Tulou, such as Fuyulong, as well as fully square but front-low and rear-high Tulou, such as Yijinglou, and other houses lacking volumetric composition of Wufenglou, such as Santangwu[56], with only three volumes on the center axis with no symmetrical side wings. More extensively, Fudishi can be used for other large-scale dwellings, with similar examples existing in other provinces. Therefore, even though it is acceptable to make use of Fudishi as a generic category for the inclusion of Wufenglou and other tiered architectural styles, it is not appropriate for the exclusive description of Hakka Wufenglou.

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[54] Huang 2020, p. 65.
[55] Luo, Hu, & Wei 2011, pp. 189,290.
[56] A branch of "Hall-and-Wing" rule which is explained in detail in Chapter V.

- Minnan Wufenglou: Broad and Regional Difference

The naming of Minnan Wufenglou is shaped by regional usage and local vernacular traditions, often resulting in terms that are either too generalized or too specific to one area. This creates ambiguity and hinders clear typological identification.[57]

大五间 (dawujian, literally "big five-bay building") or 五间张 (wujianzhang) is a colloquial term used in Hua'an and Anxi counties for Minnan Wufenglou. This naming pattern is similar to 大七间 (daqijian, literally "big seven-bay building") or 小三间 (xiaosanjian, literally "small three-bay building")[58]. Even though this naming can distinguish Minnan Wufenglou from Minnan Tulou, it is still not accurate, since it is equally suitable for any local house with a similar bay structure, like one-storey local houses without staircases or two-storey ones that have not developed the complete five-volume composition of Wufenglou[59]. Hence, although Minnan Wufenglou can be included as a type of Dawujian architecture, the name fails to capture the characteristic features of Minnan Wufenglou, particularly its five-volume composition, the split-level structure, and the elevated principal building at the rear.

大厝起 (dacuoqi, literally “big house risen”)[6061] is a vernacular term commonly used in the Minnan region. It is an inverted expression of qidacuo (“construct a big house”), reflecting a syntactic feature of the Minnan dialect. However, this term is broadly applied to all types of local dwellings, including single-storey Minnan Cuo, Minnan Tulou, and others. Therefore, it should be excluded when specifically describing Minnan Wufenglou, as it lacks the precision necessary to distinguish this particular architectural form.

皇宫起 (huanggongqi, literally “imperial palace risen”)[62] refers to a type of grand rammed-earth mansion whose form evokes the dignity and ceremonial scale of an imperial residence. It describes large multi-bay compounds with raised or tiered rooflines, thick earthen walls, deep eaves with clay tiles, and

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[57] Lin Wenwei 1998. pp. 8-9; Chen Zhihong 2005; Liu, Lin, and Li 1965.

[58] This expression is often used among owners or constructors of Minnan Wufenglou to describe the scale of their houses. This term, referring to "large five bays and small three bays," was a local Minnan Wufenglou expression collected during the field research in China from March to April 2024. It does not appear in any official historical documents on Wufenglou but is purely a local oral description that is noted here for its descriptive value.

[59] In a manner similar to “tanghengwu” for Hakka Wufenglou, terms such as "dawujian" (large five-bay) and "wujianzhang" are essentially a rule for categorizing Minnan Wufenglou. In this dissertation, this rule is named the "axial-bay module," and it will be specifically listed and elaborated upon in Chapter V.

[60] This term is the most commonly used folk term in Anxi County. Collected during the field research in 2024.

[61] The term "qi" (起), used not only in Wufenglou but also in many architectural contexts in the Minnan region, was mentioned by local craftsmen during the 2024 field research in Hua’an and Anxi counties. It is an archaic expression preserved in the Minnan and Wuyue linguistic traditions and not used by the Hakka. In Minnan, "qi" generally means a structural unit or a building phase, often used in compound words to indicate a particular construction segment or style. It was a term noted from local artisans and builders for its descriptive value.

[62] Cao 2008, p. 109; Cao 2016, pp. 05-06.

richly carved stone or wooden details. In vernacular usage, huanggongqi emerged as a popular expression of admiration, applied to houses perceived as exceptionally monumental or aristocratic. Architecturally, it represents a more elaborate and prestige-oriented variant within the broader system of dacuoqi (“big house risen”), yet it lacks the structural or spatial specificity necessary to constitute an independent typological category. Field observations indicate that houses identified as huanggongqi vary widely in plan—from ordinary multi-row Minnan mansions to compounds close to the configuration of Minnan Wufenglou. Therefore, huanggongqi can only be regarded as a descriptive folk label summarizing Minnan Wufenglou and other similar Minnan rammed-earth dwellings, rather than a definitive term that distinguishes them.

虎头厝 (hutoucuo, literally "tiger head house")[63] is the common name for Minnan Wufenglou in the Anxi region. The name is appropriate, because it is derived from a unique building technique of Wufenglou known as 下山虎 (xiashanhu, literally "the tiger going down the mountain")[64], which will be discussed later in the chapter on Minnan Wufenglou. But for the sake of uniformity and to avoid terminological confusion throughout the work, the name Minnan Wufenglou will be used when referring to these local buildings, unless otherwise necessary. The reason is that the typological characteristics of hutoucuo are entirely consistent with those of Minnan Wufenglou in Hua'an County.

爬狮 (pashi, literally “crawling lion”)[65], similar to the above-mentioned xiashanhu, describes a construction technique in which the rooflines and building masses ascend gradually from front to back, creating a layered silhouette resembling a lion climbing upward. In practice, pashi refers to a compositional method rather than a specific architectural type. It is most often applied to a three-sided courtyard house, where a single main house is flanked by two projecting side wings and enclosed by a front gate wall, but without a front entrance hall or extended middle bay. Although the visual rhythm of pashi (or xiashanhu) echoes the stepped profile later standardized in Minnan Wufenglou, the term itself denotes only the incremental massing technique, not the Wufenglou architecture as a whole. Therefore, pashi should be understood as describing the layered building practice characteristic of certain Minnan courtyard houses rather than as a name for the Minnan Wufenglou type itself.

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[63] Cao 2016, pp. 15-16.

[64] The vernacular dwelling form known as xiashanhu (下山虎), also referred to as pashi (爬狮), originates from the Chaoshan region in Guangdong province, where its three-sided courtyard form is compared to a tiger descending a slope or a crouching lion. This terminology has since been adopted in parts of the Minnan region to describe similar residential configurations. Cai 2012, p. 19.

[65] Cao 2016, p. 18; Knapp 2000, p. 50.

5.2. Wufenglou English Translation Review

In both academic literature and non-academic contexts where Wufenglou requires translation into English, various approaches have been adopted. Besides direct phonetic transliteration, many translations rely on semantic interpretations based on the literal meaning of the term. However, none of these translations fully captures the architectural and cultural specificity of Wufenglou. Table 4 summarizes the main English renderings of the term, together with their semantic implications and respective strengths and limitations.

Table 4: Comparison of English Translations of Wufenglou

"Wufenglou（五凤楼)" in English	**Author / Year**	**Strengths**	**Limitations**
Five-Phoenix Dwelling[66]	Knapp / 2000	"Wu Feng" was translated correctly	"Dwelling" marks residence only; not size or storeys
Five Phoenix Mansion[67]	Knapp / 2004	"Wu Feng" was translated correctly; "Mansion" indicates the large size of Hakka Wufenglou	" Mansion " does not fit Minnan Wufenglou, which is smaller; storeys are not indicated
Five-Phoenix Building[68]	UNESCO World Heritage Centre / 2008	"Wu Feng" was translated correctly	"Building" marks architecture only, not residence, causing confusion
Five-Phoenix Tulou[69][70]	Huang / 2010, 2020	"Wu Feng" was translated correctly	"Tulou" misclassifies Wufenglou within the Tulou series
Five-Phoenix House[71]	Katayama / 2012	"Wu Feng" was translated correctly	"House" marks housing only; storeys are not indicated
Wufeng Compound (See Figure 14)	Hua'an touristic center / 2011	"Compound" indicates Wufenglou's collective housing characteristic	"Wu Feng" was not translated

[66] Knapp 2000, p. 272.
[67] Knapp 2004, p. 176.
[68] UNESCO World Heritage Centre. 2008. Nomination file 1113 (inscribed). Accessed 21 March 2025. https://whc.unesco.org/en/list/1113/documents/
[69] Huang 2010, p. 72.
[70] Huang 2020, p. 49.
[71] Katayama 2012.

Given the varied semantic translations of Wufenglou enumerated in Table 4, the most accurate and contextually appropriate approach is phonetic transliteration — retaining Wufenglou as a proper noun. Semantic translations such as Five-Phoenix Dwelling, Five-Phoenix Mansion, or Five-Phoenix Building aim to capture the literal meaning of the term, but these necessarily fall short of the full richness and cultural specificity of Wufenglou as an architectural type. These translations emphasize only the dwelling function (Dwelling, House), the size (Mansion), or the building essence (Building), but none of these capture its typological singularity or symbolic depth.

Figure 14. Wufenglou's English translation in Dadi village (UNESCO heritage site)

Self taken, April 24, 2024

On the other hand, using "Wufenglou" itself as a transliterated proper noun not only avoids the reductionism of literal translation but also retains the embedded meanings of the term, as already discussed in the etymological section of this chapter. The term Wufenglou has several layers of meaning: it denotes the volumetric structure (usually five architectural volumes), signifies hierarchical spatial structure, encompasses fengshui principles, conveys totemic symbolism, and denotes the vertical stacking of floors. These symbolic, cultural, and spatial meanings of the term are lost or misrepresented with semantic translation.

Therefore, keeping the name Wufenglou as a phonetic transliteration allows the term to remain a unique architectural typology with regional provenance, just as other culturally specific terms such as siheyuan or Tulou do.[72] In this manner, linguistic precision and sensitivity can be maintained in scholarship and practice.

[72] Siheyuan refers to a traditional Chinese courtyard dwelling type, especially common in North China and Beijing, in which rooms are built along the four sides of a rectangular plot to enclose a central open courtyard; it functions as a multi-generational family compound and encodes clear hierarchies of axis, orientation, and domestic space. Ma 1999; Knapp 2000, p. 12.

6. Define Wufenglou

The need to define Wufenglou clearly at this stage arises from the instability of all existing terms. Words such as Tulou shift between a broad material sense (“a house made of earth,” i.e. any rammed-earth dwelling) and a narrow heritage sense (the UNESCO-defined Corridor- and Unit-Type compounds), while vernacular labels such as fudishi, huanggongqi, and hutoucuo describe status, massing sequence, or roof stepping rather than a consistent architectural type. Even Wufenglou itself has been used for palace gates, pagodas, ancestral halls, elite mansions, and, in contemporary Fujian, for two different regional dwelling traditions: Hakka Wufenglou and Minnan Wufenglou. These two traditions share core traits such as axial hierarchy, a front-low and rear-high stepped profile, and multi-volume organization, but they differ in genealogy, construction history, and growth logic. At present, then, “Wufenglou” is both too broad and too vague. For this reason, this chapter introduces an operative definition of Wufenglou as an architectural type: not as an honorific label or tourism name, but as a repeatable spatial system with identifiable volumetric grammar and hierarchical order. This definition is proposed here and will be tested in the following chapters rather than simply assumed. Following this definition, Chapter II examines the orientation and cosmological principles that Wufenglou should follow; Chapter III reconstructs shared structural and spatial rules; Chapter IV compares the differences between Hakka and Minnan Wufenglou; and Chapter V positions Wufenglou and its variations within the same layout rules, so as to rethink their place within the category of rammed-earth dwellings. In other words, Wufenglou is defined here so that the following chapters can test and substantiate the definition. Figure 15 presents the front elevation drawings of the twelve Wufenglou dwellings examined in this dissertation —six Hakka Wufenglou and six Minnan Wufenglou—providing a visual reference for the operational definition proposed below.

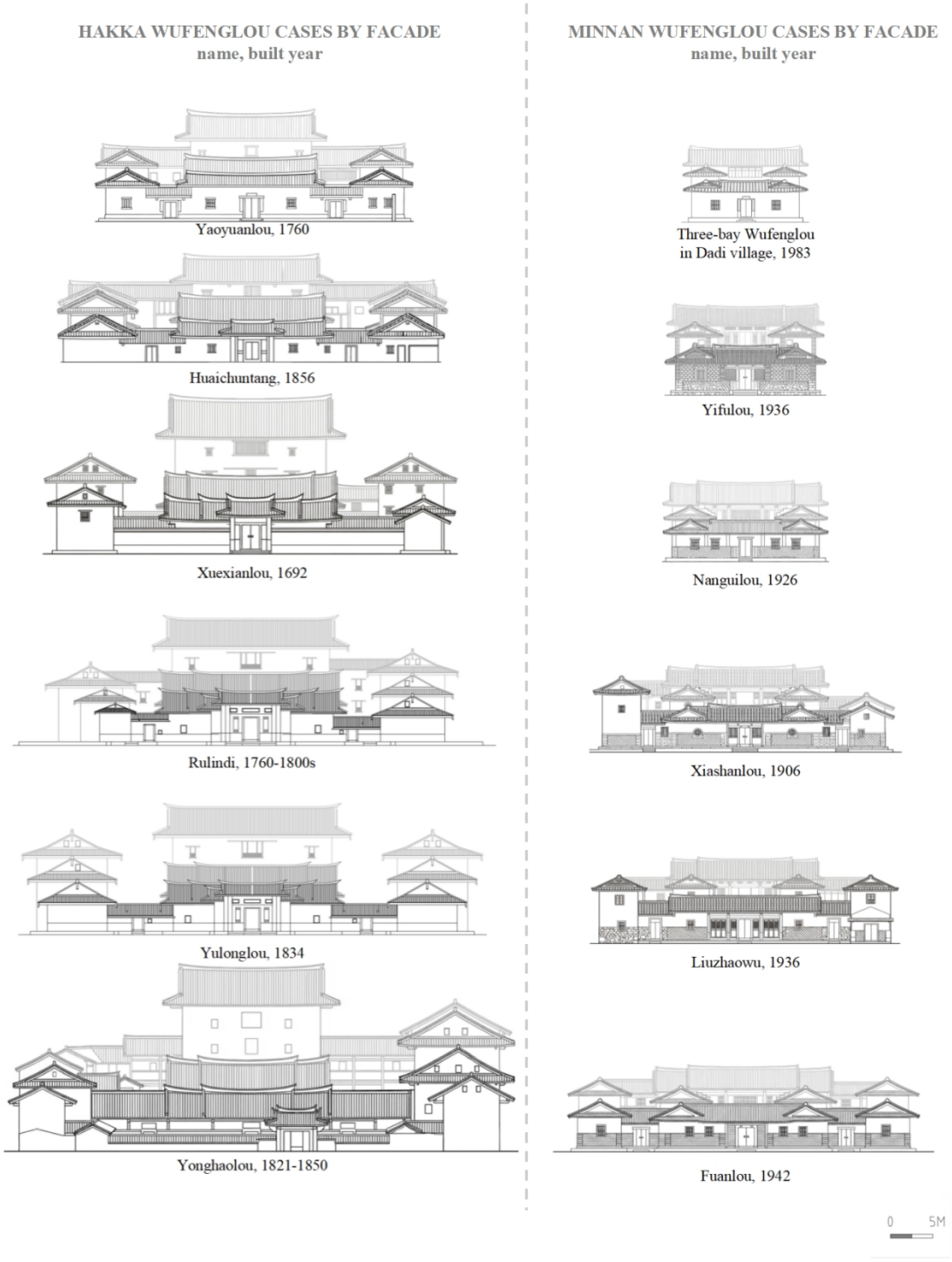

Figure 15. Fujian Wufenglou Cases by Facade.

Self drawn

6.1. Fujian Wufenglou Dwellings

Fujian Wufenglou dwellings are vernacular multi-storey houses[73] found in both the Hakka and Minnan regions[74], characterized by a symmetrical composition of five built volumes arrayed along a central axis[75] whose overall massing follows ideal fengshui principles[76], with a central courtyard layout whose plan derives from a nine-square-grid layout principle unfolding to express hierarchical order[77]; structurally they have multiple entrances[78], while the main one on the front façade is limited to a single storey[79] and the overall storey count rises in staggered tiers from the entrance towards the rear volume[80], with the main entrance and ancestral hall supported by timber columns and the housing units by rammed-earth walls as load-bearing systems[81]; the roofscape adopts an overhanging gable system[82] with additional eaves at the bottom[83], forming a multi-ridged structure[84], and the gable walls of the flanking volumes face forward and step down from back to front[85], producing a visually unified architectural entity.[86]

In this opening chapter, after defining the overarching concept of Fujian Wufenglou dwellings, the following table is introduced as a preliminary overview. This table, Table 5, offers a concise reference that outlines the general characteristics drawn from the definition, serving as a guide for later chapters.

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[73] From the outset, the definition of "Wufenglou" fixes it as a multi-storey house. It must have at least two stories; any building that does not meet this minimum height is not considered a Wufenglou.

[74] The specific distribution will be clarified in Chapter IV, where the differences between Hakka and Minnan Wufenglou are discussed.

[75] This aspect is elaborated in Chapter III, while the differences in arrangement are discussed in Chapter IV.

[76] The ideal fengshui principles include the balance of yin and yang, the five elements, and the flow of qi. These points will be specifically elaborated in Chapter II.

[77] The formation and fundamental logic of the nine-square-grid layout, including why it is considered a core principle for Wufenglou and other courtyard buildings, will be elaborated in Chapter II. They share a common set of internal rules that will also be discussed there.

[78] Structurally, the presence of multiple entrances in Wufenglou stands in fundamental contrast to the UNESCO-listed definition of Tulou, which typically has only a single entrance. Relevant website, accessed on 21 January 2024. https://whc.unesco.org/en/list/1113/

[79] The standard Wufenglou always has a front façade limited to a single story. Variants where the façade is elevated to two stories are discussed in Chapters IV and V, but these are not considered standard Wufenglou.

[80] Additionally, the overall storey count of a Wufenglou rises in staggered tiers, indicating actual changes in the number of floors. Unlike other Minnan vernacular dwellings that may only increase in height without adding floors, the Wufenglou's tiers reflect true multi-storey construction.

[81] See Chapter III

[82] The overhanging gable roof used in Wufenglou corresponds to the xuanshan roof form in traditional Chinese architecture, in which the eaves project beyond the gable walls. This differs from the yingshan roof, where the gable walls extend upward to meet the roof without eave projection. Both xuanshan and yingshan are among the most common roof types in southern China.

[83] The additional eaves at the bottom of the gable are known as piyan in Chinese. This is a distinctive decorative element of Wufenglou gables, where a flat extension connects the slopes of the two gable sides, forming a triangular gable end. See Chapter III.

[84] While the multi-ridged structure of the roof is often equated with the traditional Chinese xieshan roof, a high-level roof type, it is not truly a xieshan type. The distinctions between this multi-ridged form and an actual xieshan roof will be elaborated in Chapter III.

[85] This feature is the most visually consistent characteristic shared by both Hakka Wufenglou and Minnan Wufenglou. While other vernacular dwellings may employ different gable orientations or stepped profiles, this forward-facing, descending gable arrangement is a distinctive point of convergence between the two regional traditions.

[86] Cai 2005.

Table 5. Definitional Characteristics of Fujian Wufenglou Dwellings

Aspect	Condensed description
Building type	Vernacular multi-storey dwelling
Region	Hakka and Minnan regions of Fujian
Minimum height	At least two storeys
Overall composition	Five volumes in one system
Axial order	Central longitudinal axis
Symmetry	Bilaterally symmetrical layout
Plan principle	Central courtyard based on Nine-square grid pattern
Hierarchy expression	Spatial–social hierarchy coded
Fengshui logic	Yin–yang, five elements, qi
Entrance system	Multiple entrances overall
Main entrance	Single-storey front gate
Height progression	Stepped tiers rising rearward
Storey logic	Tiered storeys (real floors) from front to rear, not just higher walls
Structural system	Mixed timber and earth structure
Load-bearing parts 1	Rammed-earth walls for housing units
Load-bearing parts 2	Timber columns for entrance and ancestor hall
Roof type	Overhanging gable roof system (xuanshan)
Eaves detail	Additional lower eaves (piyan)
Ridge composition	Multi-ridged, quasi-xieshan form
Gable orientation	Flanking gables facing forward
Gable profile	Stepping down from back to front for lateral volumes
Visual effect	Unified five-volume silhouette

6.2. Hakka Wufenglou

Hakka Wufenglou is a multi-storey courtyard dwelling with rammed-earth walls and a timber-framed structural system, distributed in the Hakka areas of western Fujian Province, especially northern Yongding, based on the rule of the Hall-and-Wing house (tanghengwu)[87], in which three built volumes lie on the central axis while two flank them on both sides; the rearmost and tallest volume, the main house (zhulou),[88] together with the two side volumes (hengwu)[89] constitute the principal housing parts composed of repeatable "room–hall–stairs" (jian–ting–qijiao) modules[90]; while in front of the main house, the ancestor hall volume and, further forward, the entrance hall volume are aligned on the same central axis; the side volumes flanking the axis are lower than the main house and step down toward the front, so that, by means of these five major volumes of the basic type, the living units and ritual units are clearly separated and multiple courtyards are enclosed.[91]

Figures 16 and 17 respectively show the exterior and interior views of four selected Hakka Wufenglou. These figures serve the same purpose of providing a preliminary impression of Hakka Wufenglou at the beginning of the discussion.

[87] Hall-and-Wing houses in the Fujian, Jiangxi, and Guangdong Hakka regions, with three halls on the central axis and two flanking side wings, forming the basic volumetric pattern behind the Hakka Wufenglou type. See Chapter V
[88] The rear main house volume in Hakka Wufenglou, the tallest core block where the principal family rooms are concentrated and the overall dwelling composition is commanded. See Chapter IV
[89] The paired side-wing house volumes in Hakka Wufenglou, each built as a self-sufficient housing unit that repeats the internal logic of the main house and is constitutive of the basic type. See Chapter IV
[90] A housing and structural module in Hakka Wufenglou, composed of jian (room bays), ting (central hall), and qijiao (vertical stair-core unit) that can be scaled up to form main house and side-wing units. See Chapter IV
[91] Pan et al. 2013. pp. 104, 133-138; Knapp 2005. pp. 176-183.

Yaoyuanlou

Yonghaolou

Xuexianlou

Yulonglou

Figure 16. Hakka Wufenglou Outside View

Self taken in 2024

Yaoyuanlou's Side Wing

Yonghaolou's Entrance Hall

Xuexianlou's Kitchen

Yulonglou's Ancestor Hall

Figure 17. Hakka Wufenglou Inside View

Self taken in 2024

6.3. Minnan Wufenglou

Minnan Wufenglou is a multi-storey courtyard dwelling with rammed-earth walls and a timber-framed structural system, distributed in the Minnan areas such as Hua'an and Anxi in southern Fujian Province, based on an axial-bay rule, in which one built volume stands on the axis, with two volumes stepping down and extending forward on both sides of it, and another two step down continuously from them: the rearmost and tallest volume main house (dingluo)[92] is the core volume that contains the central ancestor hall and lateral housing spans, following an "axial-bay expansion" (kaijian) module[93] of 3, 5, or 7 spans, while the two volumes attached to the main house (titingjian)[94] provide transitional service spaces with temporary bedrooms or kitchens; the two single-storey volumes at the side front (jiaojian)[95] are reserved for ancillary functions rather than core bedrooms so that, by means of these five major volumes of the basic type, the living units and ritual units are combined, enclosing a single central courtyard.[96]

Figures 18 and 19 illustrate the exterior and interior views of four Minnan Wufenglou, providing a foundational visual reference to understand their architectural characteristics before delving into detailed discussions in later sections.

As described above, in this chapter, the definitions of Hakka Wufenglou and Minnan Wufenglou are also established as a baseline. The following table, Table 6, is included to provide a succinct comparative overview, ensuring that the key distinctions are clearly visualized. This table thus serves as a precise reference point for the more detailed discussions in subsequent sections.

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[92] The main house volume in Minnan Wufenglou, a two-storey core that integrates the ancestor hall and residential rooms within a single body following an odd-bay sequence. See Chapter IV

[93] The bay module of the Minnan Wufenglou main house, in which three, five, or seven structural bays are symmetrically arranged around the central hall; the Minnan Wufenglou layout rule is also based on this module. See Chapter IV

[94] The paired stair-pavilion house volumes in Minnan Wufenglou, mediating between the main house and corner rooms and acting as a key typological marker for identifying the Minnan Wufenglou basic type. See Chapter IV

[95] The front corner-room volumes in Minnan Wufenglou, the lowest and outermost tier of the five-volume system, mainly used for kitchens, storage, and household work. See Chapter IV

[96] Zheng Huiming 2018. pp. 3, 7-17.

Nanguilou

Xiashanlou

Yifulou

Fuanlou

Figure 18. Minnan Wufenglou Outside View

Self taken in 2024

Nanguilou's Stair Pavilion Room (Titingjian)

Xiashanlou's Ancestor Hall

Yifulou's Timber Structure

Fuanlou's Protective Wing

Figure 19. Minnan Wufenglou Inside View

Self taken in 2024

Table 6. Definitional Characteristics of Hakka and Minnan Wufenglou

Aspect	Hakka Wufenglou	Minnan Wufenglou
Geographical distribution	West Fujian, north Yongding	South Fujian, Hua'an, Anxi
Building type	Courtyard earthen-timber dwelling	Courtyard earthen-timber dwelling
Layout rules	Hall-and-Wing (tanghengwu)	Axial-bay regulation
Number and arrangement of main volumes	3 axial + 2 side	1 axial + 4 flanking
Central axial composition	Zhulou–ancestor–entrance axis	Dingluo with ancestor hall
Main housing volume	Zhulou + hengwu core	Dingluo core volume
Internal modular logic	"Jian–ting–qijiao" module	"Kaijian" span module
Ancestor hall's position and relation	Ancestor hall as central volume	Ancestor hall inside dingluo
Relation between living and ritual units	Living vs ritual separated	Living + ritual combined
Courtyard configuration	Multiple courtyards	Single courtyard
Functional emphasis of side/front volumes	Side wings = main housing	Side/front = ancillary

Chapter Summary

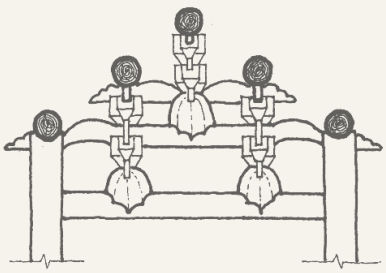
The discursive construction of Wufenglou shows that the name has never been a neutral architectural label, but rather a historically stratified compound of myth, cosmology, geomantic symbolism, social ambition, and local naming practice. The character wu (five) signals the compositional logic of five articulated volumes; feng (phoenix) — as previously described — condenses natural iconography, hierarchical order, and auspicious imagination into a single cultural trope; and lou (two-floored building) denotes verticality, marking the number of storeys and thereby signalling social rank. Together, the three characters function as metaphor, spatial program, and cultural signifier: Wufenglou operates less as a purely technical typology and more as a semantic vessel that legitimizes status, encodes ritual order, and retrofits diverse local building grammars into a recognized symbolic form.

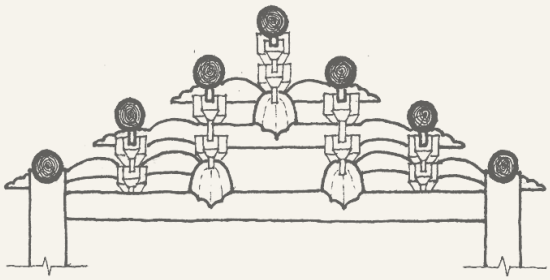
The history of the term shows that the name preceded a fixed building type. At first, Wufenglou mainly carried stories, political associations, and moral meanings; only later were these meanings translated into recognizable building forms. This process did not unfold in a straight line. The same name could be used in different places, with different scales and construction systems, not because the buildings were identical, but because the symbolic force of the name was widely understood and could be appropriated by different communities. Therefore, Wufenglou is not an original, closed architectural category that can be defined only by form. It is a concept created in speech and then applied to buildings —a "word-first" process that legitimizes certain houses and then pulls local building practices into the name's meaning.

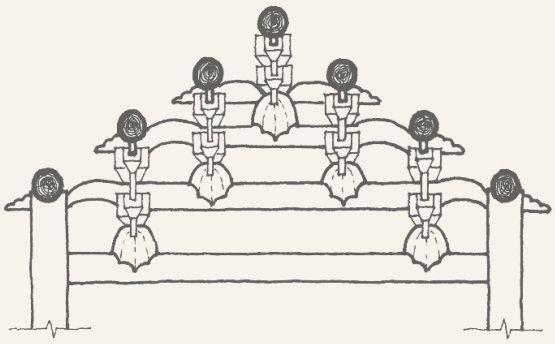
This leads to a methodological principle: Wufenglou should be studied first through how the idea formed and then through its physical features. The focus therefore needs to include the system behind the term, namely how symbolic authority, repeated meanings, and spatial description together produce a classificatory logic. That logic explains why Hakka and Minnan versions of Wufenglou could develop differently within their respective building traditions.

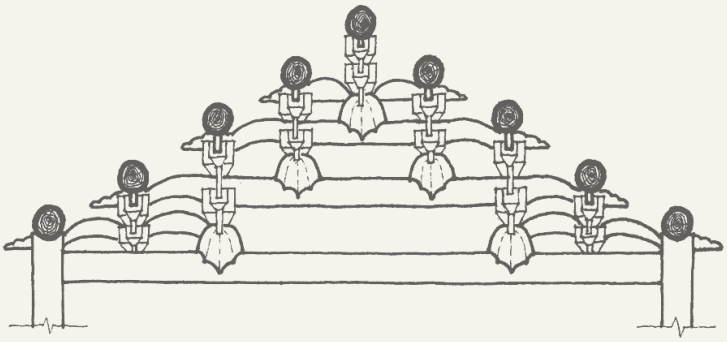
CHAPTER II

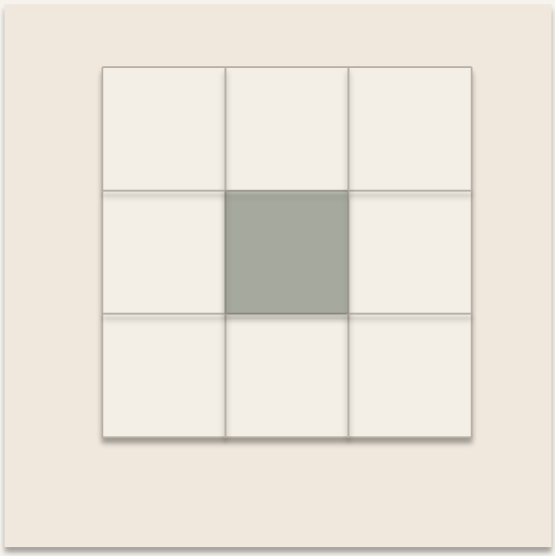
Wufenglou's Fengshui Principles











CHAPTER II. Wufenglou's Fengshui Principles

The spatial problem taken up in Wufenglou is practical before it is theoretical, because the building's order has to be established under the conditions of actual construction rather than only within an ideal scheme. In actual construction, a Wufenglou must still make its internal order legible even when terrain, entrance direction, and ideal south-facing orientation do not neatly coincide with one another. For this reason, the chapter begins not with abstract symbolism, but with the basic planning rules through which front, back, left, and right are identified, fixed, and made operative within the building itself. Only after these directional terms have been clarified does the discussion move to the question of how symbolic order can be sustained when a building is unable to face south. The argument remains grounded in fengshui cosmology, especially Yin – Yang balance, the Five Elements, and the circulation of Qi, but these ideas are treated here as architectural procedures embedded in spatial organization rather than as detached doctrine. The Luoshu-derived nine-square grid provides the main analytical framework for this reading: the centre is retained as an open courtyard; the 1–5–9 axis links the entrance, courtyard, and ancestral hall; the corner cells are given over to enclosed subordinate rooms; and the lateral cells organise movement and secondary access. At the same time, the chapter also keeps in view the culturally specific habit of imagining the building as a body, so that left and right are understood from the building's own position rather than from a cartographic viewpoint. When the site cannot conform to canonical orientation, the same elemental order is preserved through symbolic reorientation, rear mounds, and front ponds, which allow the spatial system to remain intelligible even without a strict south-facing arrangement.

1. Principle Essence: The Balance of Yin-Yang and Five Elements

- Yin-Yang

Yin and Yang as Chinese systems of cosmological balance are not opposing contraries, but contrasting powers in a permanent relation. Yin is associated with qualities of darkness, quiet, softness, coolness, inwardness, whereas Yang is associated with brightness, movement, hardness, warmth, outwardness. As Table 7 makes clear, such duality characterizes all domains of being: acoustics (quiet vs. loud), quality in material (soft vs. hard), temperature (cold vs. hot), spatial configuration (enclosed vs. open), elevation (down vs. up), etc. Yin is associated with the passive, the hidden, the even, the subsidiary;

Yang with the active, the exposed, the uneven, the chief. The interplay of both powers creates an energetic field in which harmony, not uniformity, is the principle of order.

The first philosophical description of Yin and Yang is in the Book of Changes (Yijing)[1][2], where the Shuogua Zhuan says, "The Way of Heaven is found in the alternation of Yin and Yang." The cosmological process is elaborated further in Commentary on the Appendant Phrases (Xici Zhuan[3]), where Yin and Yang are equated with cycles of sun and moon. Yin and Yang are "the guiding principles of Heaven and Earth, source of life and death, foundation of all transformation" in Huangdi Neijing[4], an early medical classic of the Warring States. Philosopher Laozi also highlighted their creative and harmonizing function. "All things have Yin and contain Yang; harmonization comes from the interplay of the two" says Chapter 42 of the Daodejing[5]. Later, Zhuangzi[6] expressed this same orientation in stating that "Yin and Yang merge and mix, creating all things".

In architectural theory, especially within traditional Chinese spatial design, Yin-Yang principles are not simply conceptual—they are enacted through deliberate spatial allocation. Although buildings are composed of fixed materials and stable forms, they serve as frameworks for organizing dynamic relationships. According to Yin-Yang logic, orientation, exposure, enclosure, elevation, and visibility can all be aligned along a Yin-Yang spectrum. In the application of Fujian Wufenglou, this philosophy materializes through the allocation of spaces that are quiet or active, shaded or illuminated, enclosed or open. The layout does not passively mirror natural forces; it choreographs them. Thus, even through a seemingly static nine-square grid, Wufenglou achieves a dynamic spatial balance—an architectural embodiment of Yin-Yang transformation rendered through form, direction, and spatial hierarchy.[7]

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[1] 易经 Yijing (the Book of Changes) is one of the oldest Chinese classics, originating in the Western Zhou period. It presents a cosmological and philosophical system based on yin-yang dynamics and hexagrams, and has deeply influenced Chinese thought, including philosophy, medicine, and architecture. Accessed November 14, 2023. https://ctext.org/book-of-changes/yi-jing/zhs

[2] Lu 1992.

[3] 系辞传 Xici Zhuan (Appended Statements), or the Great Commentary, is part of the Yijing's Ten Branches. It reflects on the hexagrams' deeper meanings, focusing on yin-yang dynamics and cosmology. Accessed April 22, 2024. https://ctext.org/book-of-changes/xi-ci-shang

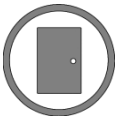
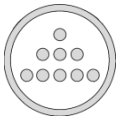
[4] 黄帝内经 Huangdi Neijing (Emperor Huang's Inner Canon) is an ancient Chinese medical classic outlining theories of health and illness based on yin-yang, the five elements, and qi. Accessed October 9, 2024. https://ctext.org/huangdi-neijing

[5] 道德经 Daodejing (Tao Te Ching), attributed to Laozi, is a foundational text of Daoist philosophy composed around the 6th century BCE. It explores the nature of the Dao (the Way), advocating non-action (wu wei), simplicity, and harmony with the natural order. Accessed March 3, 2024. https://ctext.org/dao-de-jing

[6] 庄子 Zhuangzi is a classical Daoist text by Zhuang Zhou, emphasizing spontaneity, freedom from norms, and harmony with the Dao through allegory and paradox. Accessed July 15, 2024. https://ctext.org/zhuangzi

[7] Liang 1954.; Liu 1984. pp. 8-11, 40-45.; Chen, Pan, and Lu 1993. pp. 13-19.

Table 7: Yin-Yang expression in different categories

Categories of Yin and Yang	Yin	Yang
Gender	Feminine	Masculine
Mobility	Still	Fluctuate
Acoustics	Quiet	Noisy
Light	Dark	Bright
Temperature	Cold	Hot
Humidity	Wet	Dry
Directionality	Inward	Outward
Energy State	Passive	Active
Spatial Function	Side	Center
Visibility	Hidden	Exposed
Privacy	Enclosed 	Open
Elevation	Down	Up
Parity	Even	Odd 

- Five Elements

The Five Elements, or Wuxing, form another cosmological system that works in harmony with Yin and Yang in traditional Chinese philosophy (see Table 8). While Yin and Yang explain dynamic dualities, the Five Elements describe cyclical relations in spatial, temporal, and functional terms. Wood, Fire, Earth, Metal, and Water correspond to direction (east, south, center, west, north), color, shape, temperature, and materials. Rather than fixed material substances, the Five Elements are understood as processes or phases that articulate the rhythms of generation, change, and balance. Together with Yin and Yang, they organize the universe as a system of correspondences in which harmony arises not from the primacy of a single element, but from their ordered mutual presence and regulation.

The earliest concept of the Five Elements appeared in the Guoyu (Discourses of the States)[8] during the Western Zhou period, suggesting the idea that the world is composed through the combination of five fundamental substances. In the Spring and Autumn period, the Zuo Zhuan (Zuo Commentary, Duke Xiang, Year 27)[9] further emphasized that none of the five can be neglected. The Kongzi Jiayu (Family Sayings of Confucius)[10], in the chapter "Five Emperors," is the earliest extant text known to explicitly associate the Five Elements with the five cardinal directions. It stipulates that “Wood corresponds to the east, Fire to the south, Metal to the west, Water to the north, and Earth to the center.” In the Book of Documents (Shangshu·Hongfan)[11], the Five Elements are formally defined by characteristics: “Water moistens and descends; Fire blazes and rises; Wood curves and straightens; Metal obeys and transforms; Earth enables sowing and harvesting.” In Zuo Zhuan, it is noted that “Heaven created five materials—metal, wood, water, fire, and earth. The people use them all, and none can be neglected.” Such statements underscore the necessity of mutual balance. By the Han dynasty, texts such as the Huainanzi[12] and Huangdi Neijing expanded Five Element correlations to include physiology, emotion, climate, color,

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[8] 国语 Guoyu (Discourses of the States) is an ancient historical text from the Warring States period, recording political speeches and events from the early Zhou dynasty to the Spring and Autumn period. Accessed May 18, 2024. https://ctext.org/guo-yu

[9] 左传 Zuo Zhuan (Zuo Commentary), traditionally attributed to Zuo Qiuming, is a narrative-style commentary on the Spring and Autumn Annals, offering detailed accounts of historical events, including during the reign of Duke Xiang. Accessed January 27, 2025. https://ctext.org/chun-qiu-zuo-zhuan

[10] 孔子家语 Kongzi Jiayu (Family Sayings of Confucius) is a collection of sayings and anecdotes attributed to Confucius and his disciples, supplementing the Analects with additional biographical and philosophical material. Accessed February 11, 2025. https://ctext.org/kongzi-jiayu

[11] 尚书 Shangshu (The Book of Documents), particularly the “Hongfan” chapter, outlines cosmological and political principles, including the doctrine of the Five Elements (Wuxing). Accessed June 30, 2024. https://ctext.org/shang-shu

[12] 淮南子 Huainanzi is a Western Han philosophical anthology compiled under the patronage of Liu An. It blends Daoist, Confucian, and Legalist thought, covering cosmology, governance, and ethics. Accessed March 19, 2025. https://ctext.org/huainanzi

and sound. Later Daoist works like Baopuzi[13] further emphasized the regulatory functions of mutual generation (xiangsheng)[14] and mutual restraint (xiangke)[15], as presented in Figure 20, forming complete cycles of interaction. These texts collectively establish Five Elements as a universal model of balance through differentiation, interaction, and restraint.

In architecture, the Five Elements are applied not only as materials per se, but as principles guiding spatial orientation, allocation, and environmental alignment. Their directional qualities—Wood with the east, Fire with the south, Earth with the center, Metal with the west, and Water with the north—inform both symbolic order and functional distribution. In the case of Fujian Wufenglou, although the building itself is fixed in structure, its design embodies these elemental correspondences through orientation, room usage, and central-axis dominance. The core hall facing south (Fire), central courtyard (Earth), and rear enclosures aligned to Water collectively illustrate a ritualized system of placement. Thus, through a seemingly rigid and symmetrical form, Wufenglou realizes a dynamic equilibrium among elemental forces—balancing ritual, hierarchy, and environment in accordance with traditional Chinese cosmology.[16]

[13] 抱朴子 Baopuzi (Master Who Embraces Simplicity), written by Ge Hong in the 4th century CE, is a Daoist text that explores inner alchemy, immortality, and Daoist philosophy, alongside essays on politics and ethics. Accessed November 18, 2024. https://ctext.org/han-shu/xuan-di-ji

[14] Mutual generation (xiangsheng) means that each of the five elements can support the growth of another. In other words, it's not just the elements themselves, but anything with the properties of those elements can generate or nourish something with another elements' properties. For example, water-type qualities can help wood-type things grow.

[15] Similarly, mutual restraint (xiangke) means that each element can inhibit another. Anything with water-like properties can restrain or extinguish fire-like properties. In this way, the concept extends beyond just the basic elements to anything that shares their characteristics.

[16] Liang 1954.; Liu and Wang 2000. pp. 14-15, 22, 252.; Chen, Pan, and Lu 1993. pp. 13-19.

Table 8: Five Elements (Wuxing) expression in different categories. Compiled by the author based on Sun & Wang[17]

Five Elements (Wuxing)	Representative Categories	Orientation	Yin or Yang	Characteristic	Mutual Generation (Xiangsheng)	Mutual Restraint (Xiangke)
	River, Lake, Pool... Flow, Drip, Pour... Fluid, Wet, Flexible...	North	Yin	Energetic		
	Timber, Forest, Grass... Grow, Develop, Born... Fresh, Alive, Lush.....	East	Mutual	Corporeal		
	Flame, Spark, Light... Ignite, Burn, Flash... Hot, Warm, Chaotic...	South	Yang	Energetic		
	Rock, Sand, Hill... Hold, Support, Bury... Stable, Firm, Fertile...	Center	Mutual	Corporeal		
	Iron,Blade, Bell... Cut, Sharpen, Forge... End, Sharp, Bright...	West	Mutual	Corporeal		

[17] Sun 1990, p. 58; Wang 2005, p. 33.

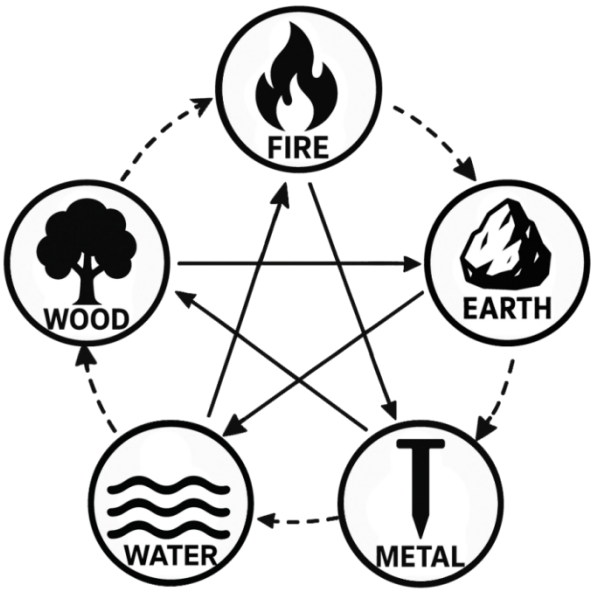

Figure 20: Five Elements' Mutual Generation and Restraint Circulation.

Self drawn based on the illustration of Yi et al.[18]

- The Flow of Qi

"Qi" refers to all the flowing elements in the architecture: air, light, water, and human circulation moving through and around a dwelling. It may be conceived as a continuous energetic current that underpins the tension between Yin and Yang and propels the circulation of the Five Elements. It is not a static "substance," but a movement of dynamic balance. In architectural space, Qi is not merely present—rather, it is directed by the built form. A building directs air, light, water, and human traffic through its design to achieve energy flow instead of basic accommodation. The smooth movement of Qi through buildings and sites maintains equilibrium between Yin and Yang qualities when the space avoids both abrupt barriers and excessive empty areas which allow the Five Elements to develop through time and space. The Yin–Yang balance becomes disrupted when Qi experiences blockage or rapid dissipation or gets stuck in specific areas of the structure which disrupts the elemental sequence.[19]

Classical fengshui manuals describe how this architectural directing of Qi operates in practice. Huangdi Zhaijing[20] likens the dwelling to a living body, in which terrain is the body, water the blood

[18] Yi, Yu, & Hong 1996, pp. 3, 62.
[19] Knapp 1986. pp. 97, 108-114.; Knapp 2005. pp. 55-60.; Chen, Pan, & Lu 1993. pp. 13-19.
[20] 黄帝宅经 Huangdi Zhaijing (Yellow Emperor's Classic of House Siting) is a fengshui treatise on residential siting and orientation, explaining how topography, directions, and the distribution of yin and yang affect fortune and calamity in dwellings. Accessed October 12, 2024. https://ctext.org/wiki.pl?if=gb&remap=gb&res=908557

vessels, land the flesh, and buildings the clothing, and it maps the monthly pattern of “shengqi” (live Qi) and “siqi” (dead or depleted Qi) onto different directions that are treated as auspicious or inauspicious for construction and repair. Later dwelling siting texts such as Yangzhai Shishu[21] and Yangzhai Bamen Jiugongtu Daquan[22] refine this logic by reading surrounding mountains and watercourses as veins and by dividing the house into eight gates and nine palaces[23], so that doors, halls and rooms are arranged where auspicious Qi can enter, turn and be stored, rather than rush straight past or leak away. Craft manuals like Huitu Luban Jing[24] translate these ideas into concrete rules for the form and size of openings and for the placement of protective devices such as shigandang steles at vulnerable points like alley mouths or bridges facing a main door, in order to deflect cutting flows and stabilise the Qi-field at the entrance. At the territorial scale, Hanlong Jing[25] reads river bends and mountain chains as organs through which “Qi and blood” flow and halt, and takes cities and settlements to be best placed where these currents gather and rest rather than where they are broken or scattered. Within this shared tradition, the main gate of the house is explicitly treated as the qikou (“mouth of Qi”)[26], which makes clear that building a dwelling is understood as shaping an organ for receiving, filtering and distributing Qi, rather than merely enclosing space.

The Fujian Wufenglou demonstrates this mechanism in architectural form. Its precise axial symmetry is not simply ceremonial; it creates a structural spine that enables Qi to progress, linger and redistribute. The central open courtyard functions like a reservoir of Qi: open enough to draw and release energy, enclosed enough to accumulate and calm it, thus preventing scatter or stagnation. The characteristic configuration of five sequenced volumes transforms the movement of Qi from a flat diffusion into a layered progression: the gradual rise in volume creates alternations of compression and

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[21] 阳宅十书 Yangzhai Shishu (Ten Books on Yang Dwellings) is a late imperial manual on yang-dwelling geomancy, systematising rules for judging house forms, water and road patterns, directions, and internal layout in relation to the flow of qi. Accessed May 20, 2024. https://ctext.org/wiki.pl?if=gb&res=618102

[22] 阳宅八门九宫图大全 Yangzhai Bamen Jiugongtu Daquan (Complete Diagrams of the Eight Gates and Nine Palaces for Yang Dwellings) is an illustrated fengshui handbook that applies the nine-palace grid and eight-gate system to classify house types and organise rooms according to directional and familial patterns. Accessed October 10, 2024. https://archive.org/details/20210924_20210924_0406

[23] This corresponds to the nine-square grid that will be examined in detail below. However, in this study the nine-square grid is discussed as a Fengshui layout principle shared by all Wufenglou, whereas in the present context the “nine palaces” refers to the concrete application of each of the nine cells under different conditions. The two notions are therefore related but not identical.

[24] 绘图鲁班经 Huitu Luban Jing (Illustrated Luban Canon) is a traditional carpentry and building manual attributed to the craftsman Lu Ban, preserving diagrams and rules for measurements, proportions, joinery, and auspicious construction practices in timber architecture. Accessed October 10, 2024. http://catalog.digitalarchives.tw/item/00/66/9d/d8.html

[25] 撼龙经 Hanlong Jing (Shaking-Dragon Classic) is a fengshui text devoted to landform analysis, focusing on mountain “dragon veins” and their configurations as the basis for choosing auspicious burial and dwelling sites. Accessed March 5, 2025. https://ctext.org/wiki.pl?if=gb&remap=gb&res=739860

[26] Yi, Yu, & Hong 1996, pp. 122-123; Wang 2005, p. 65.

release that calibrate the flow of Qi through depth. The circulation paths network, which includes entrance points and side entrances and lateral corridors and stair halls, creates continuous loops that prevent Qi from stopping or escaping. The drainage system operates with the same principle as the building design because roof eaves and slopes and channels direct water through a controlled sequence; water carries Qi so the controlled water discharge also controls Qi circulation. In sum, the Wufenglou is not simply a static aggregation of rammed earth and timber but a calibrated apparatus for Qi-regulation: through axial order, the courtyard void, hierarchical volume, circulation loop and managed discharge, the architecture itself becomes the system of flow—Qi becomes the invisible mechanism by which Yin and Yang, Five Elements and built form are unified into a continuous living organism.

2. Central Layout Based on a "Nine-Square Grid"

2.1. The Forming Process of the Nine-Square Grid

Building upon the cosmological balance expressed through Yin-Yang and the Five Elements, the conceptual evolution of ancient Chinese spatial thinking is marked by the emergence of two foundational diagrams: the Hetu (Yellow River Chart[27]) and the Luoshu (Luo River Writing[28]), as presented in Figure 21. These diagrammatic cosmograms symbolize not merely numerical order but the intrinsic logic of universal forces. As recorded in the Book of Changes (Yijing·Xici Zhuan[29]), "The Yellow River brought forth the Chart, and the Luo River brought forth the Writing; the sages followed their patterns" ("河出图，洛出书，圣人则之"). According to legend, the Hetu was revealed to Fu Xi[30] on the back of a dragon-horse emerging from the Yellow River and reflects the dynamic balance of Yin and Yang through odd and even numbers arranged in symmetrical pairs. The Luoshu, later discovered by Yu[31] the Great on the shell of a divine turtle from the Luo River, transforms these numerical and metaphysical concepts into a spatial ordering system—bridging abstract cosmology and concrete directionality. The origin of the traditional Chinese logical descriptions of directions is related to these two figures.[32]

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[27] Hetu (The Yellow River Chart) is a mythical diagram said to have emerged from the Yellow River on the back of a dragon-horse. It symbolizes cosmic order and is foundational to ancient Chinese numerology and cosmology.
[28] Luoshu (The Luo River Writing), said to appear on the back of a divine turtle from the Luo River, is viewed as a development of the Yellow River Chart (Hetu). Together, they form the symbolic foundation of early Chinese cosmology and the theory of the Five Elements.
[29] See footnote 3 in this chapter
[30] Fu Xi, a legendary culture hero of ancient China, is traditionally credited with creating the eight trigrams (bagua) of the Yijing, inspired by patterns observed in the Yellow River Chart (Hetu). He is regarded as a foundational figure in Chinese cosmology and symbolic systems.
[31] Yu (Yu the Great), a legendary ruler of ancient China, is famed for controlling the floods and is traditionally associated with the revelation of the Luo River Writing (Luoshu), which he used to establish principles of order and governance.
[32] Mei. ca. 17th c.; Mao. ca. 18th c.; Sun 1990, pp. 5-6; Lo 2016

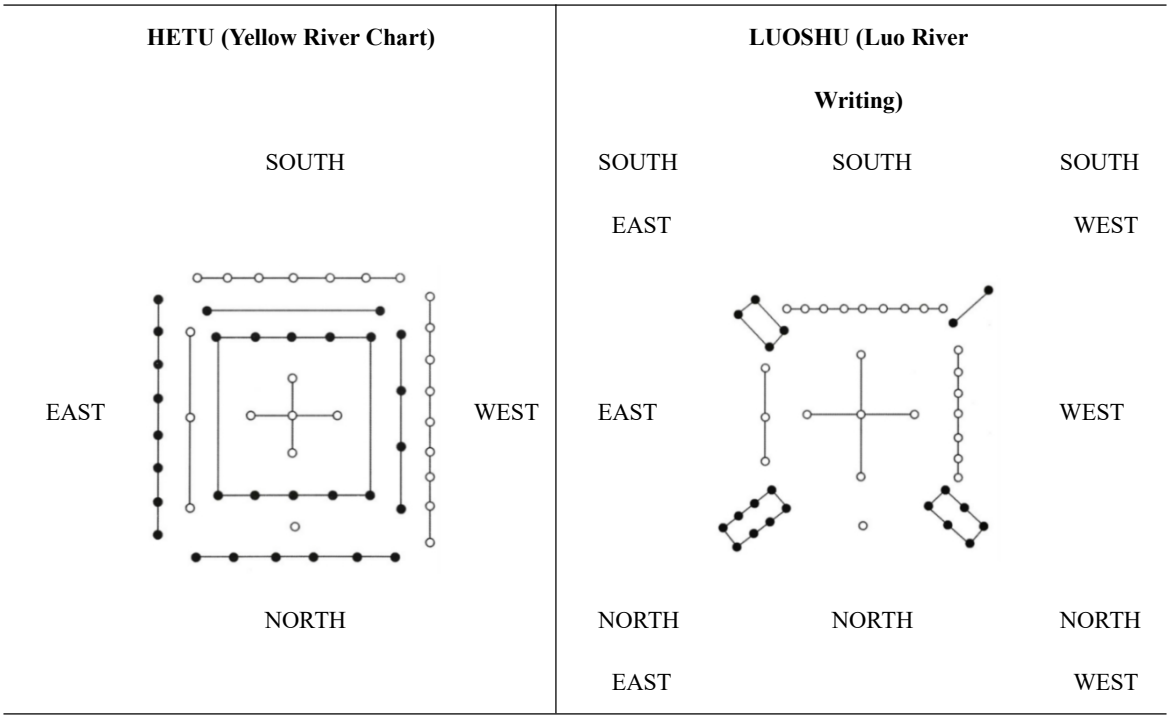

Figure 21: The Hetu and Luoshu Conceptual Scheme (with the North at the bottom and the South at the top).

Self redrawn. Source: Zhu Xi (2010)[33]

Unlike the Hetu, which presents the four cardinal directions—east, south, west, and north (called "the four dominants")—along with a central point, the Luoshu builds upon this foundation by adding the four intercardinal directions: northeast, northwest, southeast, and southwest (called "the four corner"). This expansion forms a complete ninefold spatial framework grounded in all-direction symmetry. This transition from fourfold to ninefold spatial logic marks a significant transformation from metaphysical abstraction to architectural application. The Luoshu's layout, expressed through the Nine-Square grid (3×3 matrix), assigns numbers from one to nine in a fixed pattern where every row, column, and diagonal totals fifteen, forming one of the earliest known magic squares in global mathematical history. In this arrangement, 1 is positioned in the north and 9 in the south, following cosmological principles that align water (north) with beginning and fire (south) with culmination (Shangshu·Hongfan[34]). Moreover, symmetrical pairs in the grid always sum to 10 (e.g., 1 and 9, 3 and 7, 4 and 6), symbolizing Yin-Yang complementarity. Odd numbers (Yang) occupy the cardinal directions and the center, while even numbers (Yin) are set in the corners, forming a spatial distribution that mirrors the balance between active and

[33] Zhu 2010, pp. 5–6.
[34] See footnote 10 in this chapter

passive forces.[35] In this way, the Luoshu layout transforms numerical abstraction into a visual-spatial system that conveys both mathematical precision and philosophical meaning.[36]

While traditional Chinese diagrams of Hetu and Luoshu often place north at the bottom as Figure 21 shows, in the following contents, this study adjusts the orientation reversely that all diagrams with north at the top for clarity.

2.2. The Layout Generation Logic of the Nine-Square Grid Pattern

The Nine-Square grid derived from Luo Shu patterns (Figure 21 and subsequent diagrams, oriented with north at the top and south at the bottom) is not only the central courtyard layout principle of Wufenglou, but also a recurrent spatial schema and replicable cultural consensus in traditional Chinese courtyard architecture,[37] where the centripetal layout and shared rules remain largely consistent.[38] In this configuration, each of the nine cells of the grid is associated with a fixed spatial orientation and a corresponding functional role. As shown in Figure 22, the courtyard functions as the central space of Position 5 which stands at the middle of the grid to control all other areas of the design. The main public hall or ancestor hall always receives Position 1 (North) designation which establishes this area as the central interior space of the residence. Positions 6 and 8, flanking Position 1, are used as primary residential rooms. Position 9 (South) is reserved for the entrance. Positions 2 and 4, to either side of the entrance zone, are assigned auxiliary or secondary functions. The east–west axis positions 3 and 7 as transitional bands which connect the front and rear zones. The four corner cells are enclosed and used as rooms, which stabilizes the overall composition at the periphery. As a whole, the main entrance hall aligns with the central ancestor hall along the principal axis, and the remaining spaces are arranged symmetrically around this axis. The organizational system creates a physical structure through hierarchical design and supports structural equilibrium. The following discussion will analyze the nine-square grid as the generative mechanism behind this system.[39]

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[35] Chen et al. 1995.
[36] Fu, Duan 2001.; Sun 1990.; Dai 2004
[37] Huang, Seeumpornroj 2024.; Cao 2004. p. 221.
[38] Wang 2022.
[39] Liu & Wang 2000. pp. 14-15, 22, 252.

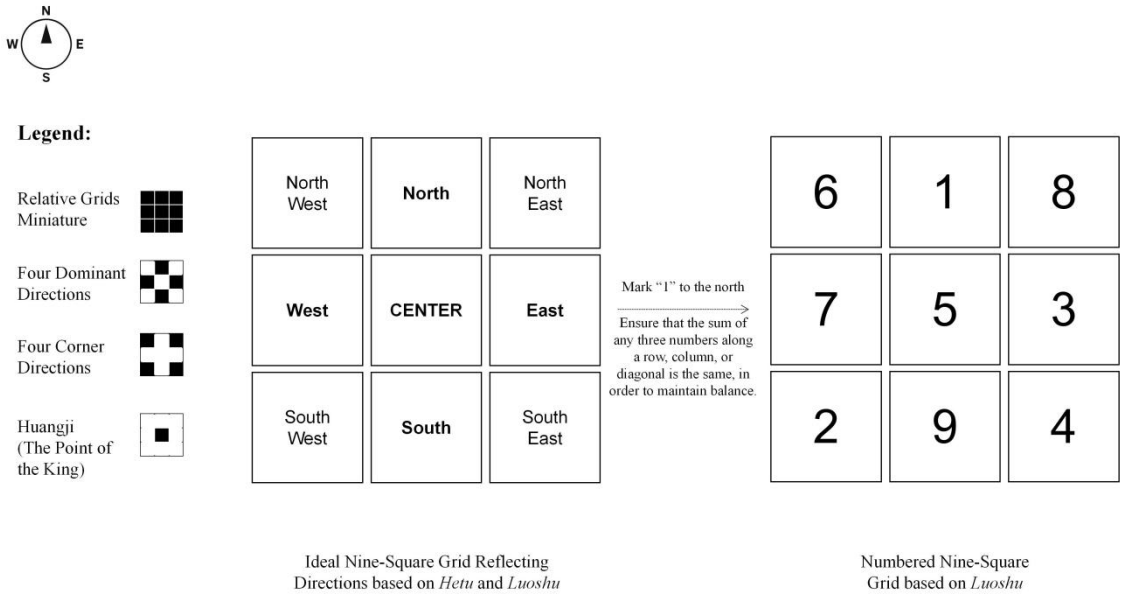

Figure 22: The Luoshu Nine-Square Grid: Traditional Correspondence Between Orientations and Numbers (Reset the North to the top).

Self drawn

- Yin-Yang Relationship of the Overall Nine Grid: Determining the Courtyard Location

According to the principles of traditional Chinese geomancy, the Luoshu-style nine-square grid corresponds not only to the spatial arrangement but also to the dynamic balance between Yin and Yang. Within this framework, the central fifth cell is not an ordinary square parallel to the others, but rather the axial core of the entire system. It is regarded as the supreme position of central authority—the so-called huangji (the supreme center)[40]—which represents the utmost point of equilibrium, corresponding to the position of the polaris, the center of all under heaven (Figure 23). This center is regarded as the most abundant and purest "Yang," while the other eight grid cells arranged in a ring around it are arranged sequentially, each guarding its own area, and are collectively regarded as the relative "Yin." The "Yang" corresponds to openness, flow, movement, and brightness; therefore, the center should not be closed or compacted, but rather kept open, airy, and breathable, serving to unify the entire building. The eight outer cells are not independent entities, but are arranged in terms of position, function, and hierarchy within the order defined by this center, with the central cell determining the overall alignment, hierarchy, and

[40] Sun 1990, p. 209.

placement.

This cosmological framework directly translates the central cell into architectural form "courtyard"[41]: It is the uncovered part at the center of the dwelling. The courtyard materializes this principle in architectural form—the core must remain void, allowing the circulation of light, air, and water. This is the spatial expression of the idea that "the center is Yang," meaning that the middle of the dwelling should be preserved as the most vital and dynamic part rather than being completely built over. Particularly in the humid climate of southern China, the tianjing serves essential environmental functions: it brings sunlight into deep interior spaces, facilitates vertical air exchange, and channels rainwater away. The commonly seen drainage configuration known as sishui guitang (four waters returning to the hall)[42] is often organized precisely around this central space. The courtyard thus acts not only as the convergence point for lighting, ventilation, and drainage, but also as the spatial datum of the entire building—establishing the central axis and elevation reference from which the surrounding grid cells derive their respective functions and hierarchical order.[43]

[41] In both northern and southern Chinese architecture, the spatial proportion between the central courtyard and the surrounding buildings differs significantly. In the north, the central space tends to resemble an open yard, whereas in the south, due to the tighter enclosure of surrounding structures, the open area at the center appears more like a vertical shaft admitting light—hence the term tianjing, meaning "sky well." Although in the local vernacular of the Wufenglou dwellings discussed in this study the central courtyard is referred to as tianjing, this dissertation will continue to use the term courtyard for clarity and consistency.

[42] Sishui guitang: A traditional roof drainage pattern in which rainwater from four slopes converges toward the central courtyard, symbolizing the gathering of prosperity." See Chapter III

[43] Wang 2005, pp. 99, 135.

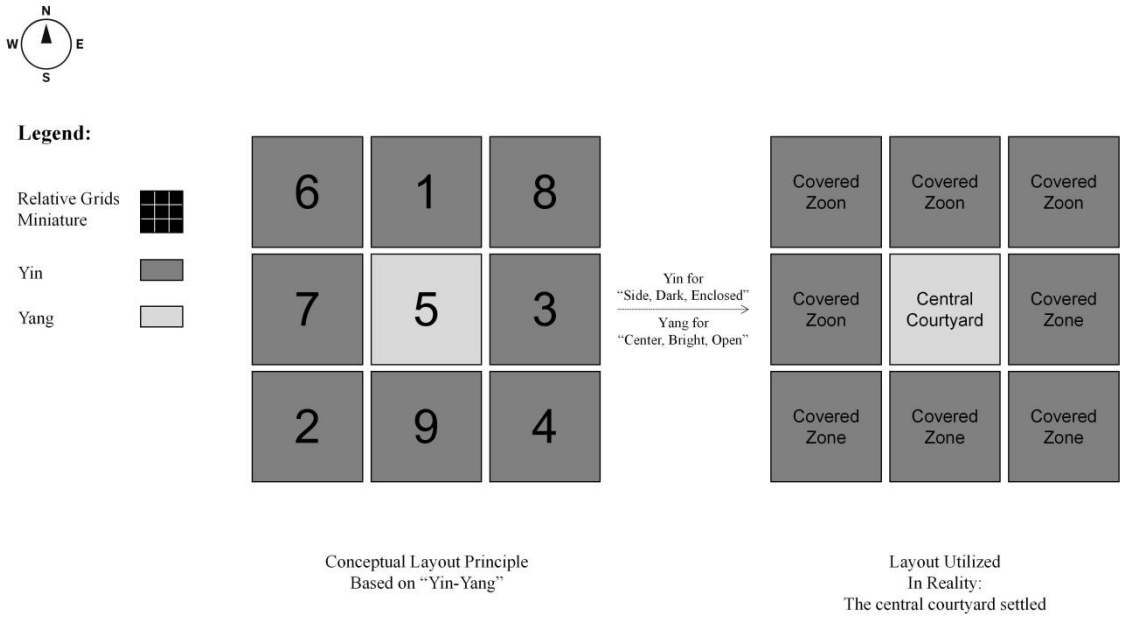

Figure 23: The Yin-Yang Relationship within the 9 Cells in the Nine-Square Grid. (No. 5 represents Yang: center, bright, open; The rest represent Yin: side, dark, close)

Self drawn

- Yin–Yang Attributes of the Rest Eight Grids Except the Central Courtyard

When the central fifth cell is opened to form the courtyard, the remaining eight positions within the nine-square grid must continue to be assigned functional roles. The determination of Yin and Yang properties for these positions is not based solely on their orientation or proximity to the center, but also on the inherent odd–even structure of the Luoshu numerical sequence itself (Figure 24). Because odd numbers (1, 3, 7, 9) correspond to Yang and even numbers (2, 4, 6, 8) to Yin, the cells bearing odd numbers are regarded as the principal positions, representing leadership, order, and movement, whereas the even-numbered cells are considered secondary positions, associated with assistance, response, and receptivity, embodying stillness.

The same distinction reappears in practical geomancy through another set of terms: cells facing the main directions, with the odd numbers, are classified as Yang or zhengwei (cardinal positions)[44], while those located diagonally, with even numbers, are considered Yin or yuwei (corner positions)[45]. Each

[44] Zhengwei: Cardinal position oriented toward principal directions (north, south, east, west). Sun 1990, p. 29.
[45] Yuwei: Corner position oriented diagonally, corresponding to subsidiary directions. Sun 1990, p. 16.

carries specific names and taboos and is treated as a subordinate zone requiring cautious arrangement. Collectively, these eight peripheral cells are known as sizheng siyu (the four cardinal and four corner positions).[46]

The Yang positions (1, 3, 7, 9), located along the north–south and east–west primary axes of the nine-square grid, are regarded as dominant positions that issue direction and establish order. These locations lie closer to circulation paths associated with entry, arrival, and external communication, making them suitable for halls, passageways, entrances, and zones of public interaction. They serve to define the building's frontal orientation and organize spatial movement, rather than functioning merely as enclosed rooms.

The Yin positions (2, 4, 6, 8), situated in the four diagonal zones, are considered subsidiary parts emphasizing stability and support. These cells are typically configured as enclosed rooms or semi-private units, accommodating bodily rest, dwelling, storage, and everyday support activities. They are more practical living functional zoning in the building, making them appropriate for living quarters, storage, and service spaces rather than reception or circulation functions.

On this basis, the nine-square grid evolves into a fundamental spatial grammar: open, welcoming, and fluid units unfold along the primary axes; enclosed, supportive, and stabilizing units cluster at the corners. This pattern is not simply a matter of convenience, but a manifestation of hierarchy and functional differentiation. Final designations—whether a cell becomes an entry hall, main hall, living chamber, or utility area—are determined in conjunction with orientation, status hierarchy, and circulation routes.[47]

[46] He 1990, p. 43.; Sun (Guozhong) 1990, pp. 29, 54-58.; Sun (Zongwen) 1990.; Wang 2005, p. 94.; Wang 2009.
[47] Liang 1984.; Liu 1984. pp. 8-11.; Chen, Pan, and Lu 1993. pp. 13-19.

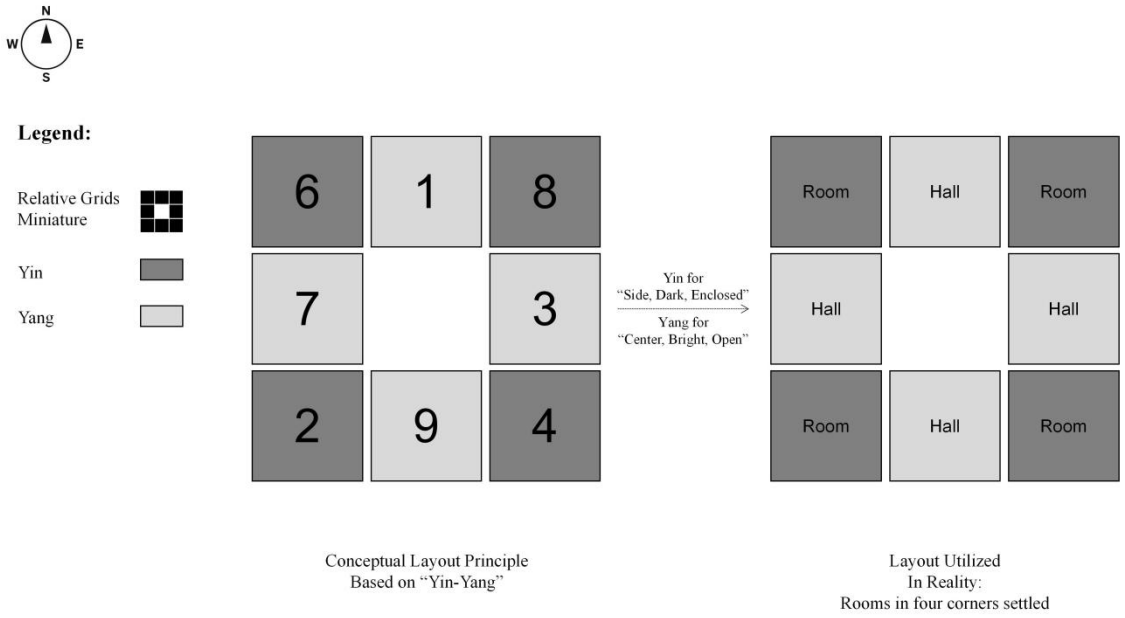

Figure 24: The Yin-Yang Relationship within the 8 Cells after Removing the Central Cell 5 in the Nine-Square Grid. Self drawn

- Establishment of the Central Axis — The North as the Main Hall, the South as the Main Entrance, Forming the 1–5–9 Axis with the Courtyard

Within the north–south sequence of the nine-square grid, the southern position corresponds to 9, the northern to 1, and the center to 5. The south is the Yang direction and belongs to fire, while the north is the Yin direction and belongs to water (see Table 8)[48], further explaining that Yang energy is generated in the north and flourishes in the south, while Yin energy is born in the south and reaches maturity in the north. In residential architecture, this cosmological differentiation between south and north is translated into spatial hierarchy: the southern side, facing outward, functions as the receptive facade of the dwelling, where the main gate, front yard, and zones of external interaction are placed. Conversely, the northern end is reserved as the most honorable position—the main chamber sits north and faces south (zuobei chaonan)[49], the Ancestor Hall occupies this palace and should be the tallest and grandest part of the residence. It thus assumes the role of ritual center and locus of familial authority, serving as the most

[48] Sun 1990. p. 118.

[49] In traditional Chinese architecture, orienting a house with a layout of face south (the main entrance at south) is considered ideal because it aligns with three key concepts: the balance of yin and yang, the principles of the five elements, and the natural flow of qi. By facing south, a house can receive more sunlight, balancing the yin (cool, shaded) and yang (warm, sunny) energies, harmonizing the five elements, and ensuring a smooth circulation of qi throughout the living space. Yi, Yu, & Hong 1996, p. 258; Wang 2005, p. 37.

solemn Ancestor Hall of the entire house (Figure 25).

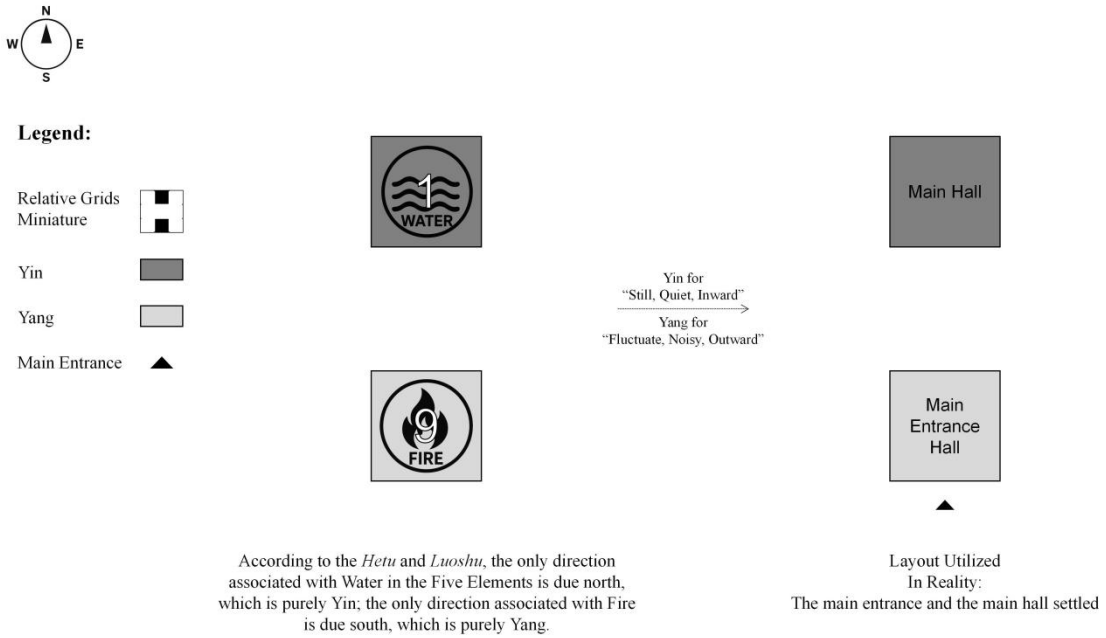

Figure 25: The Yin-Yang Relationship within the Cells 1,3,7,9 in the Nine-Square Grid

Self drawn

On this basis, the south-facing end (9) becomes the main entrance and reception front, while the north end (1) becomes the Ancestor Hall, the two being linked by the centrally located 5 to form a principal axial line (Figure 26). This 9–5–1 axis is regarded as the dwelling's primary sequence: reception at the front, command at the center, and the principal seat at the rear. By comparison, the units on the left and right are merely subsidiary allocations derived from this main line; they assume roles of subordination, accommodation, and accompaniment, and do not determine the residence's hierarchical status. In other words, the south–center–north sequence connected by the axis is understood as the active, directive chain—legible as the Yang sequence—whereas the lateral units tend toward bearing and compliance—legible as the Yin sequence.

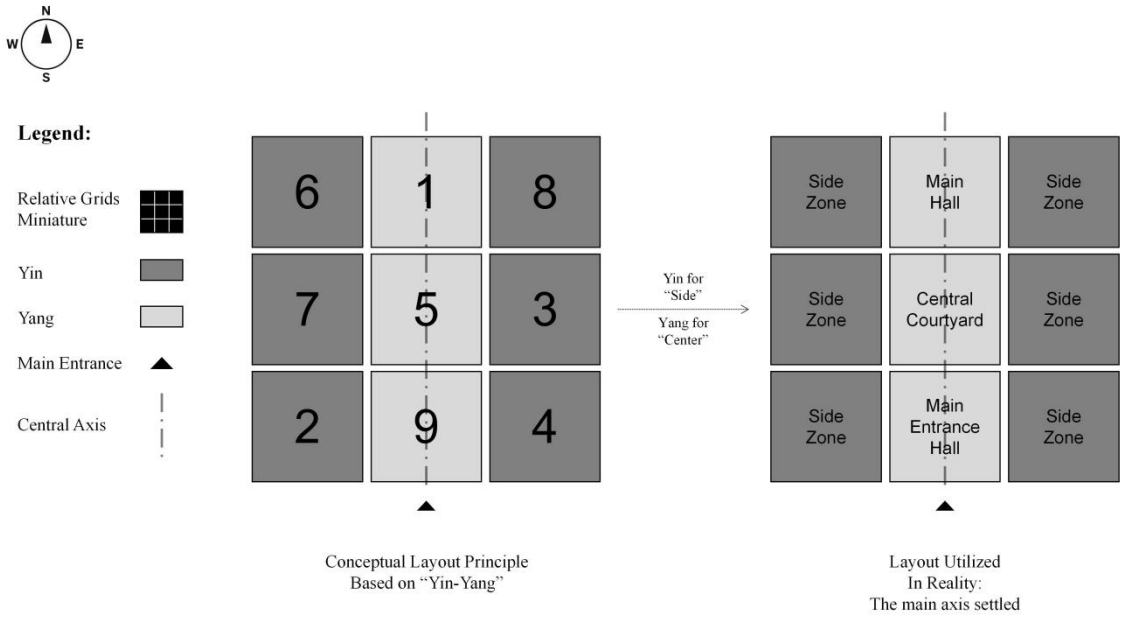

Figure 26: The Yin-Yang Relationship within the Cells 1, 9 in the Nine-Square Grid. (Setting the central axis)

Self drawn

- Functional Differentiation of the Entrance Zone — The Flanking Cells (2 and 4) Assigned Auxiliary Roles

After establishing the central axis and the hierarchical relationship between the northern Ancestor Hall and the southern main entrance, the two cells adjacent to the entrance—the fourth cell (southeast) and the second cell (southwest)—become the next units requiring functional definition. These two positions are not located on the main axis but rather flank it on both sides, close to the building's most active transitional zone in front of the entrance (Figure 27).

From the perspective of spatial attributes and the flow of Qi, these two positions exhibit the following characteristics:

(1) They are near the entrance and thus subject to frequent movement, noise, and external disturbances;

(2) They deviate from the main axis, and therefore do not align with the ceremonial axis that structures the interior hierarchy of the dwelling;

(3) They correspond to even numbers in the Luoshu numerical order, belonging to Yin positions—implying enclosure, stability, and support rather than authority or prominence.

Consequently, these two cells are not suitable for accommodating primary or honorific spaces. On

the contrary, within the overall hierarchical system, they gradually acquire a secondary character, serving as natural locations for auxiliary functions (which will be further specified in subsequent analysis).

By assigning these cells a lower spatial rank, the spatial grammar of the nine-square grid becomes further consolidated—that is, the deeper a space lies within the dwelling and the closer it is to the central axis, the higher and more central its status; whereas the nearer it is to the front edge, the more it tends to serve a supporting role.

- The Rear Corner Cells (8 and 6) as Residential Units

Following the front–back spatial hierarchy, the two rear corner cells—the eighth (northeast) and the sixth (northwest)—occupy a crucial position within the nine-square grid system. Although they do not lie along the central axis, they are situated at the innermost part of the dwelling and directly adjoin the northern Ancestor Hall (cell 1).

The characteristics of these two cells can be summarized as follows (Figure 27):

(1) Located in the corners, they naturally possess quietness and relative enclosure;

(2) Positioned on both sides of the axis, they do not assume the ceremonial function of the axial Ancestor Hall;

(3) Corresponding to even numbers (6 and 8), they belong to Yin positions in the Luoshu numerical sequence and are thus suited for enclosed and stable interior functions.

Accordingly, these two cells are generally interpreted as the main residential units in the rear section of the dwelling. Being located in a deep, calm, and protected zone, they hold a higher spatial status than the more exposed front corner cells (2 and 4) near the entrance. Although their exact functions (such as living quarters or bedrooms) are not yet conclusively defined at this stage, their adjacency to the Ancestor Hall already grants them greater priority and privacy within the overall plan, positioning them as the “inner-core” spaces of the house.

Furthermore, a distinct north–south contrast in Yin–Yang qualities can be observed among the four corner cells (2, 4, 6, 8). Since the south is Yang and the north is Yin, cells 2 and 4 belong relatively to Yang positions, while cells 6 and 8 occupy Yin positions. The southern corners (2 and 4) show more activity because they face higher levels of movement and sound and airflow which makes them better for auxiliary spaces like kitchens and service areas instead of residential areas. The northern sections 6 and 8 maintain Yin characteristics which create peaceful inner spaces that function as private areas for

bedrooms and studies to provide stable enclosed spaces for seclusion and relaxation.

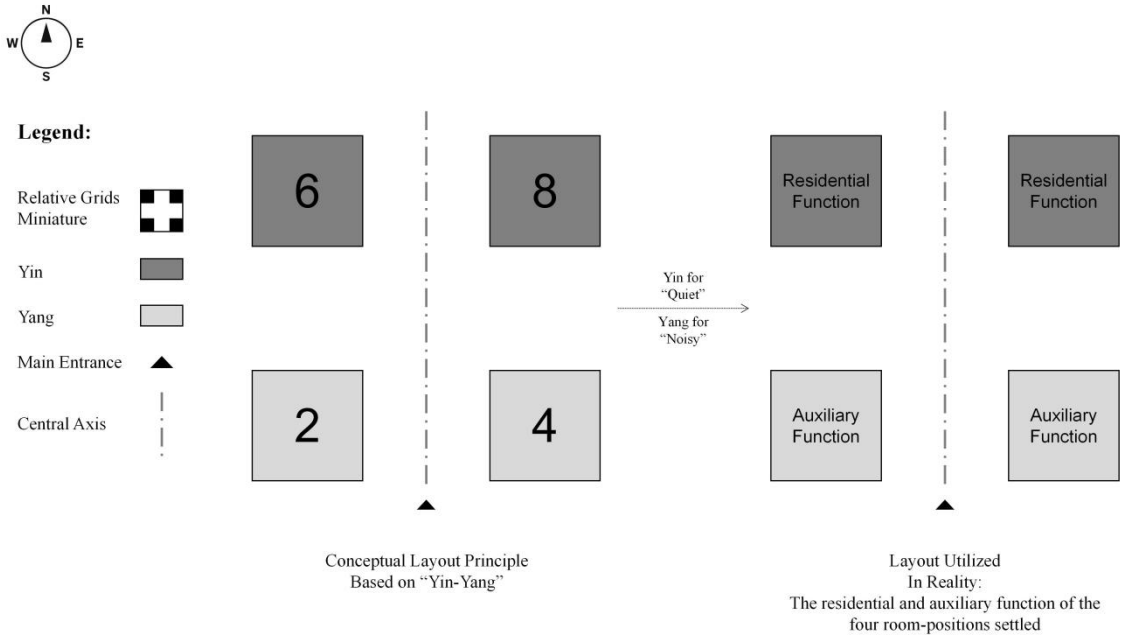

Figure 27: The Yin-Yang Relationship within the Cells 2,4,6,8, when the Main Entrance is Added in the Nine-Square Grid. (The rear 6/8 is allocated to residential functions—static; the front 2/4 is allocated to auxiliary functions—dynamic.)

Self drawn

- The Lateral Central Cells (3 and 7) as Transitional Zones Adjusted According to Hierarchy and Practical Needs

Once the hierarchical roles of the four corner cells are clarified, attention shifts to the two lateral central cells located along the east–west axis—the seventh cell (west side) and the third cell (east side). These two positions are adjacent to the central courtyard on one side, while simultaneously mediating between the lower-ranked front cells (2 and 4) and the higher-ranked rear cells (6 and 8). Although all peripheral cells may appear as "rooms" in the plan, their hierarchical meanings differ:

Cells 2 and 4, near the entrance, serve auxiliary or service-oriented functions;

Cells 6 and 8, near the Ancestor Hall, tend to accommodate the core residential functions.

Within this hierarchical gradient, cells 3 and 7 act as transitional intermediaries. Their role is to connect (Figure 28):

– the active, highly mobile front zones with the stable, protected rear zones.

Precisely because of this intermediary position, cells 3 and 7 demonstrate the greatest variability and adaptability in both architectural design and practical use:

– In many traditional dwellings, they are configured as corridors, passageways, or lateral “arm-like” extensions connecting multiple spatial depths, facilitating circulation and spatial flow;

– In some cases, when the front cells (2 and 4) cannot fully accommodate auxiliary functions, cells 3 and 7 are temporarily used for kitchens, storage, or other supporting activities;

– In other instances, when the residential capacity of cells 6 and 8 is insufficient, cells 3 and 7 can even serve as temporary living quarters.

– There are also examples where these two locations are fully enclosed or vertically extended to form solid rooms; yet even in such cases, their names, positions, and circulation functions continue to express their original transitional and buffering role within daily use.

This range of variations illustrates that although cells 3 and 7 do not belong to the primary 1–5–9 axial sequence, they remain indispensable to the overall organization of the nine-square grid. They sustain the continuity of circulation, the gradation of spatial hierarchy, and the functional transitions among all interior zones.

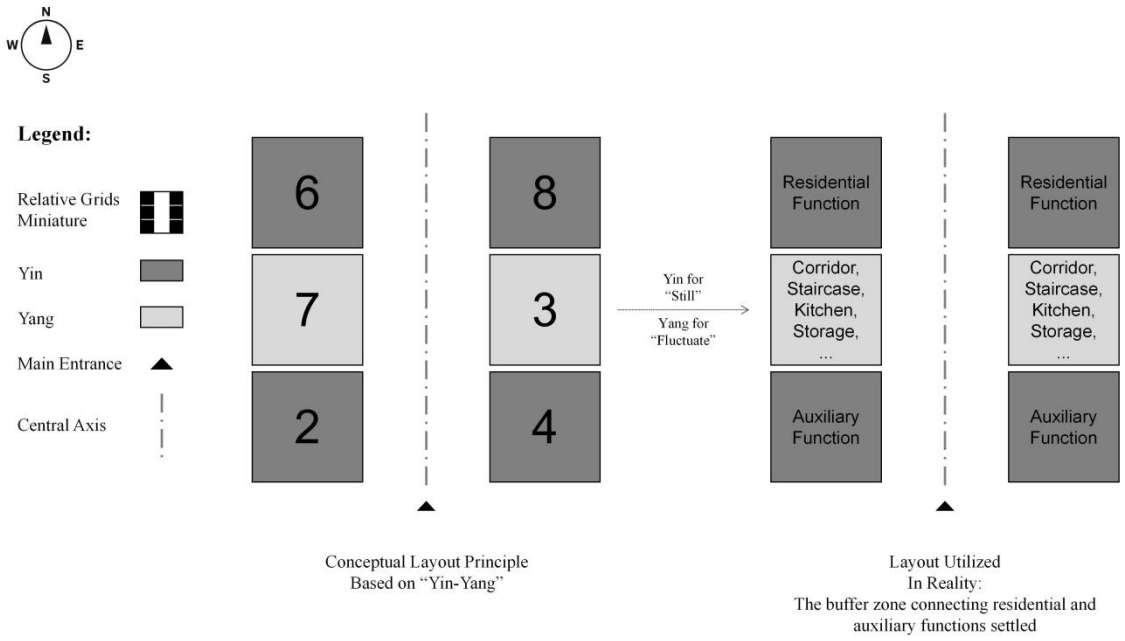

Figure 28: The Yin-Yang Relationship within the Cells 2,4,3,6,7,8, when the Main Entrance is Added in the Nine-Square Grid. (The 3/7 functions as a transitional buffer between residential and auxiliary uses, accommodating corridors, staircases, kitchens, storage, and related spaces.)

Self drawn

At this point, the functional logic of all cells within the nine-square grid has been essentially determined. Besides, once the functional roles of the nine cells are established, the order expressed by the nine-square grid is manifested not only in the plan but also in the elevation. The cells along the rear section of the central axis—namely, cells 8, 1, and 6, especially the Ancestor Hall located at cell 1, are usually higher in elevation or more structurally prominent, thus exerting stronger visual and spatial dominance over the front row (cells 2, 9, and 4). Likewise, the depth and number of stories of the rear row are often greater than, or at least not lower than, those of the front.

This vertical emphasis reinforces the hierarchical distinction implied by the plan: the rear and central parts correspond to ritual and authority, while the front and peripheral parts correspond to reception and subordination. In other words, hierarchy in the traditional dwelling is not only implied through circulation and position but is also physically manifested through volume and height, forming a spatial configuration characterized by “front low, rear high.”

Overall, the layout regulation of the nine-square grid is an internally coherent system of architectural organization generated from the Luoshu numerical sequence, integrating the distribution of Yin and Yang, spatial hierarchy, and directional symbolism.

2.3. Structural Variations of the Nine-Square Grid in Wufenglou

- Variational Principles of the Nine-Square Grid

The nine-square grid serves as the base design structure which different architectural styles modify through cell changes but they maintain their original spatial organization. Figure 29 illustrates how the nine-square grid incorporates open spaces (courtyard), semi-open spaces (hall, corridor), and enclosed spaces (room), as well as the horizontal and longitudinal variations in room arrangement. The main principles of variation can be summarized as follows:

Central cell (5): The position maintains its original form that operates as a complete open courtyard without both walls and roofing elements.

Northern cell (1): Similarly stable, it usually serves as the Ancestor Hall or main hall. In some cases, additional upper floors or small rear annexes may be added, but the primary function of this cell is rarely altered.

Southern cell (9): Serving as the entrance zone, it typically accommodates a gate hall. In certain

examples, its scale is reduced—from a full gateway structure to a minimal threshold or narrow entrance passage. In such cases, the overall plan may assume a "U-shaped" configuration, with the main building enclosing three sides (the rear and both flanks).

Northern flanking cells (6 and 8): The number of rooms and the degree of horizontal or longitudinal extension may vary, yet their essential role remains consistent—they generally continue to serve as the main living quarters, such as bedrooms or family living spaces.

Southern corner cells (2 and 4): Near the entrance, these cells also tend to be relatively stable in form and function, though variations in size or subdivision can occur. In some cases, these positions are partially reduced or even omitted to enlarge the entrance zone—particularly in layouts that emphasize openness along the central axis or frontal symmetry.

Lateral central cells (3 and 7): These are the most flexible and variable. They may be configured as: open corridors; enclosed rooms for secondary uses; subdivided into multiple smaller compartments; or staircase zones functioning as vertical circulation nodes connecting upper and lower levels. The number of rooms within these cells may also vary. As noted earlier, even as their precise dimensions and configurations evolve, cells 3 and 7 consistently retain their transitional character. Their significance does not lie in being central or subordinate, but in their connective role within the overall circulation system—linking front and rear, movement and stillness, thus mediating between spatial hierarchies.

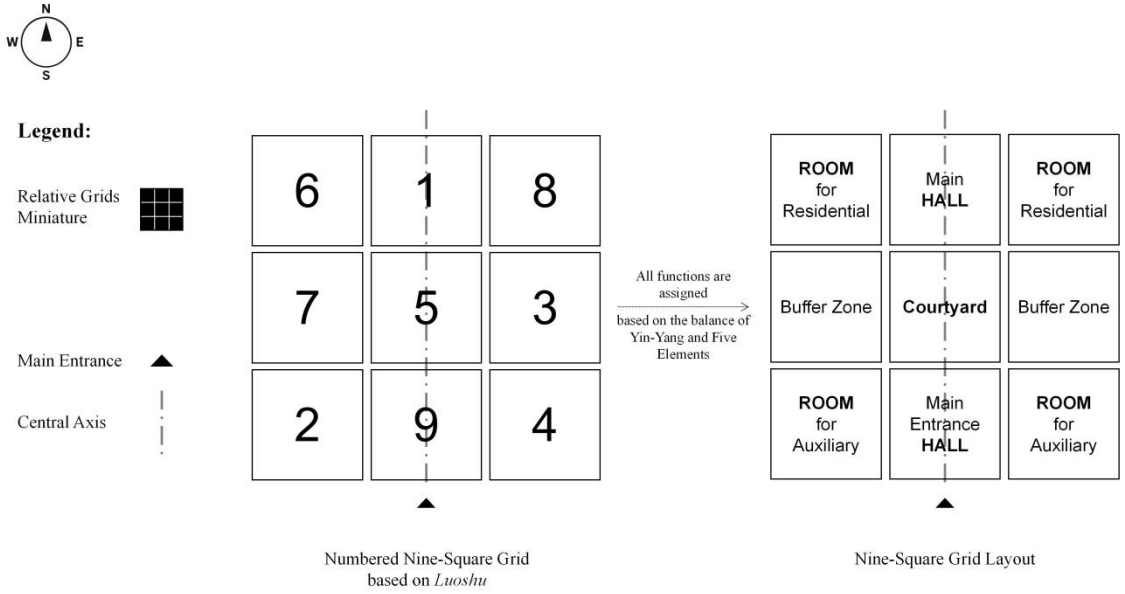

Figure 29: The "Nine-Square Grid" layout form.

Self drawn

In Figure 30, all variations are derived from the same nine-square grid layout. While the fundamental functional zoning of the grid remains largely consistent, the diagram illustrates how rooms can be added or subdivided without altering the overall logic of the grid. The central axis cells (1, 5, and 9)—which include the entry hall, the courtyard, and the ancestor hall—are always preserved as semi-open ritual spaces. They are not transformed into enclosed rooms on the ground level. Instead, the primary changes occur in the flanking cells (2, 4, 6, 8) and the side cells (3, 7), where rooms can be expanded, subdivided, or left as corridors depending on the desired configuration. This approach emphasizes that the nine-square grid layout follows a stable principle, and the variations are essentially about how and where to insert additional rooms or partitions while keeping the underlying grid logic intact.

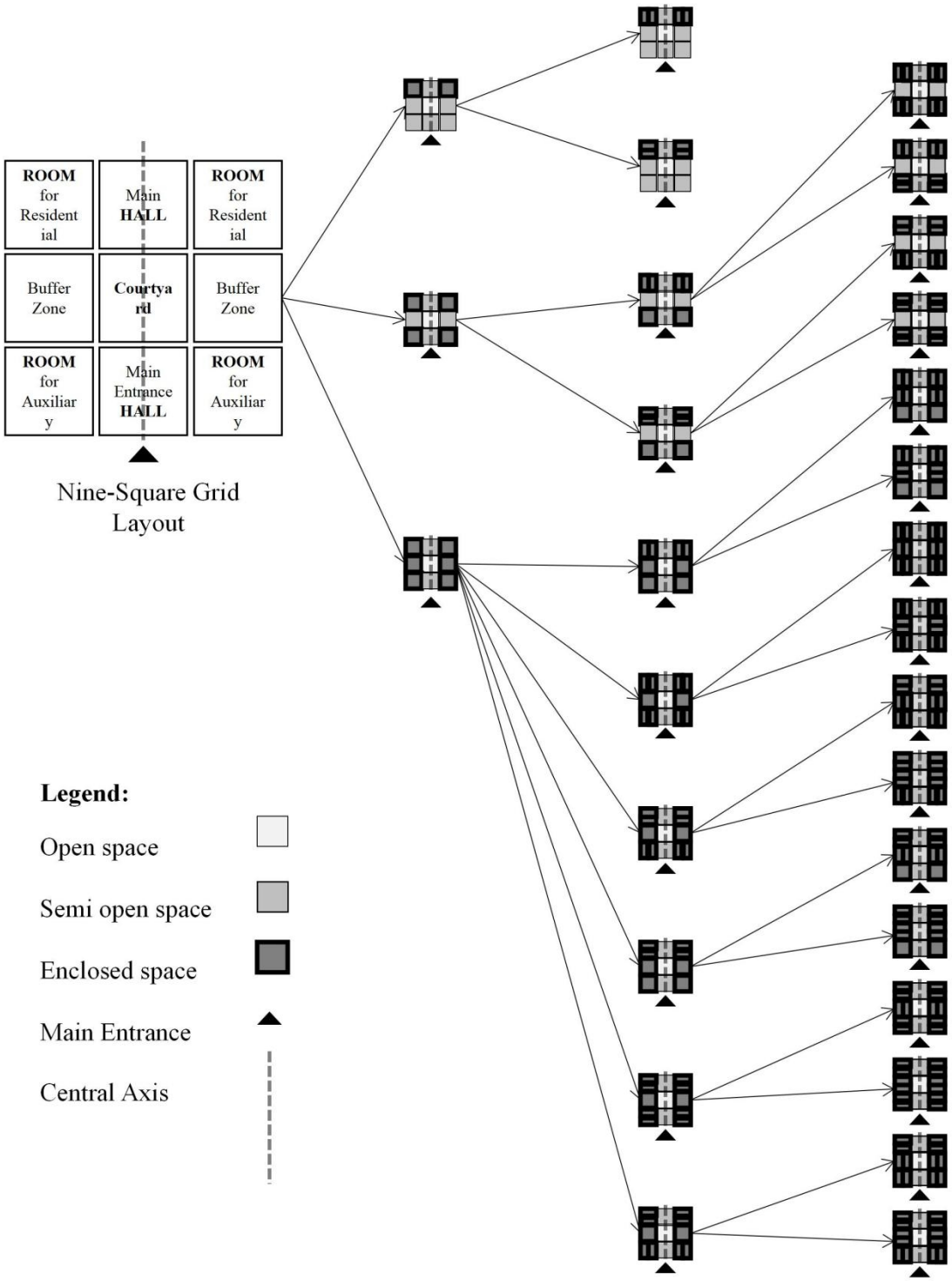

Figure 30: The Variation of the Nine-Square Grid Layout. Self drawn

- Expression of the Nine-Square Grid in the Wufenglou Plan

Whether the building is a Hakka Wufenglou or a Minnan Wufenglou, its central courtyard system, namely the axial arrangement of entrance, courtyard, and ancestor hall together with the surrounding side spaces, follows the spatial logic of the nine-square grid. The two traditions do not use this shared model in the same way: Hakka organization reduces residential use within the grid and turns it into a public ceremonial core, whereas Minnan organization absorbs the grid into the everyday residential plan through stair pavilion rooms and transitional side spaces.[50]

In the Hakka Wufenglou, the nine-square grid has undergone a functional transformation in which the residential use within it is largely reduced to temporary quarters reserved for the oldest members of the household. The entire nine-square grid structure functions primarily as a public ceremonial zone, distinct from the truly permanent residential quarters of the building.

In the Minnan Wufenglou, by contrast, positions 3 and 7 form a two-story volume containing the staircase space, whose height mediates between that of the front and rear sections. This structure, commonly referred to as the stair pavilion rooms in local language, remains a flexible and transitional component in function, retaining the intermediary character intrinsic to its position within the nine-square grid.

For a detailed discussion of the compositional differences between the Hakka and Minnan Wufenglou types and their respective nine-square grid configurations, see Chapter IV.

Figure 31 illustrates the basic plan types of dwellings described in Yangzhai Huixin Ji[51] that correspond to or resemble the Hakka Wufenglou and Minnan Wufenglou's Yangzhai (the house of living)[52] layouts. The plan associated with the Hakka Wufenglou (left) follows the three-hall-and-two-wing configuration, while the plans associated with the Minnan Wufenglou adopt the three-bay type (upper right) and the five-bay type (lower right). It can be observed that the nine-square grid occupies the central frontal zone of the entire building in the Hakka Wufenglou type, whereas in the Minnan Wufenglou type, it extends to encompass the entire basic plan of the dwelling.

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[50] Pan et al. 2013. pp. 104, 110, 116-124, 135-137.; Lin 1998. pp. 8-9.

[51] 阳宅会心集 Yangzhai Huixin Ji (Collected Insights on Yang Dwellings): An early Qing geomantic treatise on residential architecture, providing diagrammatic interpretations of domestic layouts.

[52] Yangzhai: Literally meaning "sunlit dwelling, or the dwelling of living" Yangzhai refers to the geomantic principles and design systems governing the houses of the living, as opposed to Yinzhai (houses of the dead, i.e., tombs). In traditional Chinese cosmology and fengshui theory, Yangzhai emphasizes orientation, balance of Yin and Yang, and the circulation of Qi to ensure harmony, prosperity, and well-being for the household.

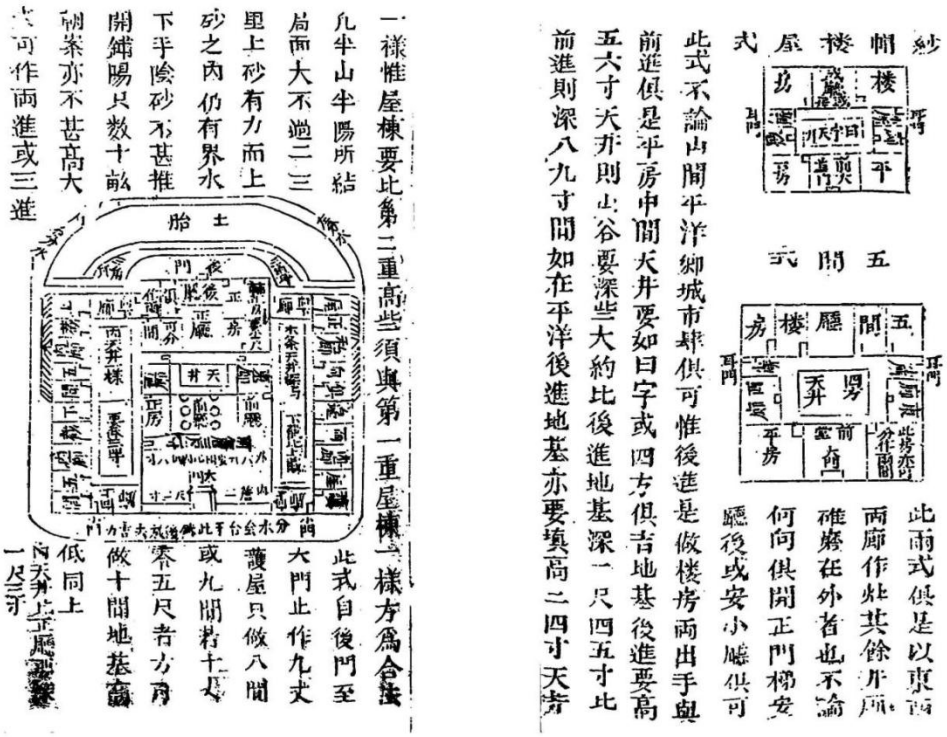

Figure 31: Conceptual plan drawings of three-hall-and-two-wing dwellings (left) and of three-bay (upper right) and five-bay (lower right) dwellings, as illustrated in Yangzhai Huixin Ji.

Source: Lin 1811 [53]

Figure 32 illustrates how the nine-square grid is represented at the center of both Hakka and Minnan Wufenglou. It gives an overview of where the grid is positioned in each type, which parts are enclosed rooms, semi-open spaces, or fully open areas, and how these distinctions are further expressed in plan, section, and overall roofed form.

[53] Lin 1811. Accessed October 10, 2024. https://www.95959.com/7322.html

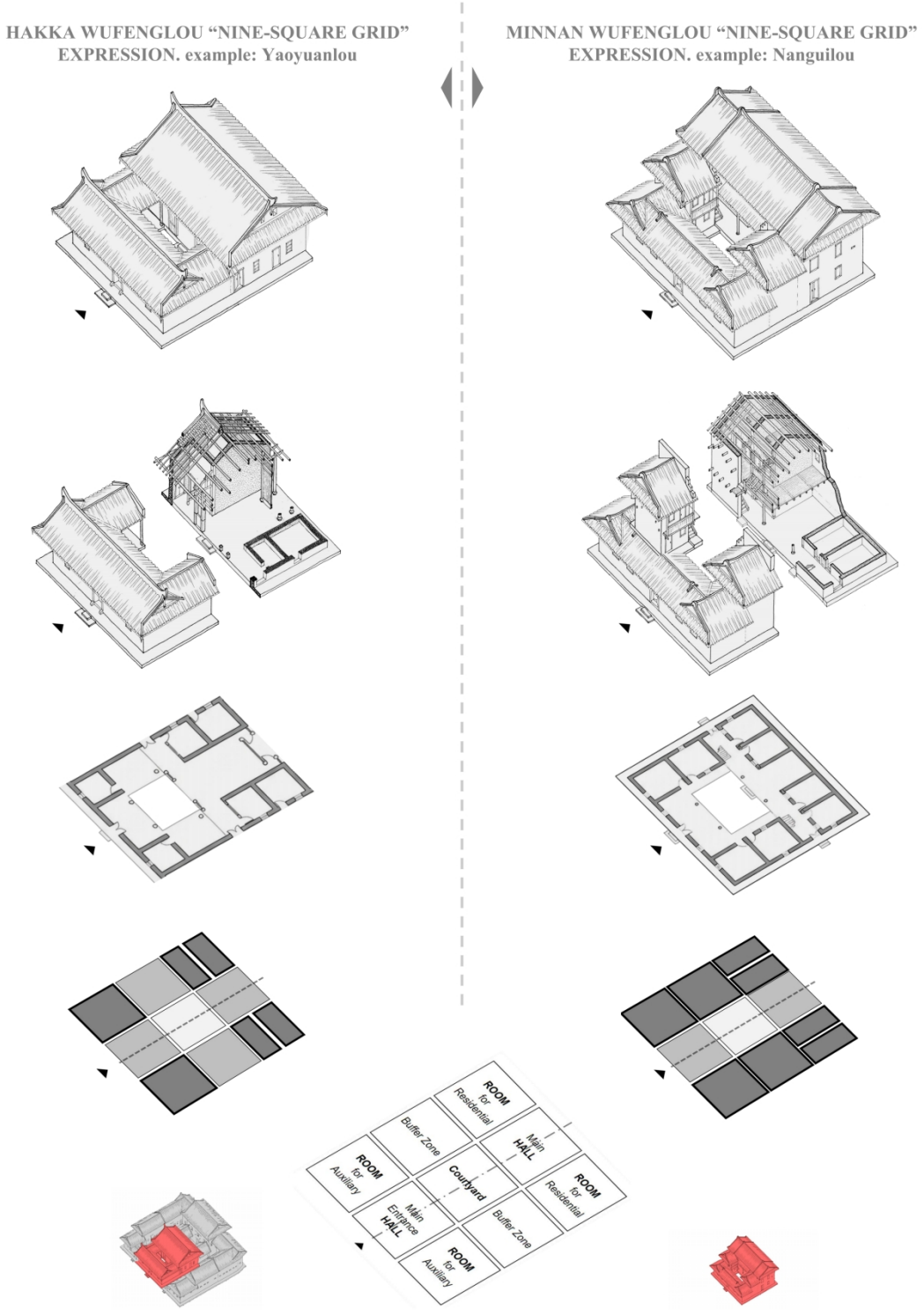

Figure 32: Representation of the Nine-Square Grid Layout in Hakka and Minnan Wufenglou

Self drawn

Traditional Chinese architecture includes multiple spatial principles but the nine-square grid stands out as a specific layout system which appears widely in buildings with a central courtyard and shows remarkable adaptability. The recognition of this architectural element does not require a particular building design because it exists as a spatial concept which can be applied to various settings. In this sense, the nine-square grid is emblematic: grounded in the Luoshu configuration of the Nine Palaces, it organizes space through the principles of Yin–Yang distribution and axial hierarchy. Although the individual cells may vary across regions and building types, their roles and relationships remain legible.[54]

The nine-square grid maintains ritual precision while allowing flexible spatial arrangements. The central cell (5) operates as an uncovered courtyard, while the four corner cells (2, 4, 6, 8) generate enclosed and relatively darker spaces. Together with the lateral cells (3 and 7), the central axis cells (1, 5, and 9) establish a continuous route from entrance to inner hall. Hakka and Minnan examples both preserve the relational order of the grid, yet they do so through different processes of extension, segmentation, reorientation, and functional adjustment. It functions as a generative framework for arranging courtyard, hall, side rooms, and transitional spaces: grounded in the Luoshu configuration of the Nine Palaces, it organizes space through Yin-Yang distribution and axial hierarchy while remaining open to local transformation.

Even in more complex plan systems such as the Wufenglou, the nine-square grid can still be distinctly identified as a locally embedded and organizing core. In other words, even when the entrance zone is compressed, the rear Ancestor Hall enlarged, or the lateral transitional spaces redefined, the building continues to follow the fundamental principles of “central openness, corner enclosure, axial hierarchy, and graded order.” Thus, the Wufenglou does not represent a wholly new configuration detached from the nine-square grid; rather, it constitutes an extension and superimposition of its logic under larger spatial scales and more complex functional requirements.

3. Orientation Description in Reality: Analogies to the Human Body

3.1. Orientation Norms Matter to Wufenglou’s Spatial Description

Before discussing the specific layout of Wufenglou, this section clarifies the logic of orientation in Chinese architecture. The concepts of front, back, left, and right are not determined by absolute compass directions, but by the internal logic of the building itself, especially the location of the main entrance and

[54] Knapp 1986. pp. 89-97, 108-114.

the direction of the main axis. This logic is based on an anthropomorphic understanding of architecture: the building is imagined as a human body standing upright with a front, a back, and arms outstretched to both sides. More specifically, it is imagined as a person standing with the back toward the rear wall and looking forward through the main entrance. Under this convention, left and right are determined from the standpoint of the building itself rather than from a map-based system of absolute orientation.[55]

This building-based orientation convention is not limited to Wufenglou or to a specific region; it is a common way of describing internal spatial order in traditional Chinese architecture. It not only reflects language habits, but also reflects a deep cultural logic - rooted in people's physical experience and spatial perception. However, for readers who are not familiar with this tradition, especially those who are accustomed to the map-based absolute orientation system, this orientation naming method may cause confusion in understanding. A building facing west on the geographic compass may still call its south facade "front" and define its "left" and "right" accordingly. In order to avoid ambiguity, this section specifically explains the cultural and cosmological basis behind this spatial language, involving the system composition of body cognition, Fengshui principles and the five elements order.[56]

This orientation framework will run through the description of the internal spatial relationship of Wufenglou in the following text. It is not only a clarification at the language level, but also a core perspective for understanding the spatial symbolic structure, functional hierarchy and architectural etiquette of Wufenglou. Regardless of its actual orientation, its cultural order can be fully understood based on this.

3.2. Orientation Defining Order

In Chinese traditional architecture, orientation is not determined by compass cardinal points but by building configuration, namely, the position of the main entrance and the layout of the central axis. Regardless of whether a building is oriented south, east, or otherwise, the side with the main door is called the front. According to this convention, all spatial relations within the building, including front, back, left, and right, are defined in relation to the person who would be facing out through the main entrance, not according to geography.[57][58]

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[55] Wu 2016a.; Wu 2016b.; Wu 2016c.

[56] Wu 2016a.; Wu 2016b.; Wu 2016c.; Knapp 1986. pp. 97, 108-114.

[57] Guo Rui has summarized the behavior of Chinese speaking habits to describe orientations, and mentions this method of determining the directions of front, back, left, and right based on the building's own orientation—specifically using the main entrance and central axis—is called the "intrinsic reference strategy." Guo

To express this orienting logic, Chinese spatial thinking commonly uses embodied analogy between building and human body[59]. Back-to-front you have the spine or body of the house and the two wings are like arms extended. The "left side" of the building can then be defined as the side to the left when you are inside the shell of the building looking out toward the main entry, while accordingly the "right side" is to the right. Such an anthropomorphic framework enables a stable sense of direction, even in the presence of real-world shifts, as discussed above.

As Figure 33 illustrates, this way of thinking about space is also encoded in the fengshui model of the ideal Four Celestial Animals (sixiang), understood both as cardinal directions and as cosmological forces. The Azure Dragon (Qinglong) is on the left (ideally east) and represents protection and healthy living; the White Tiger (Baihu) is on the right (ideally west) and represents power and strength; the Vermilion Bird (Zhuque), ideally to the south, corresponds to the front and symbolizes movement, openness, and vision; and the Black Tortoise and Snake (Xuanwu), at the rear (ideally north), represents support, depth, and defense, often overlapping with a mountain or protective rear wall. These symbolic animals together help to delineate a correct cosmological map with the building-as-body placed between them, grounded in a harmonious spatial field.[60][61]

2004.

[58] Fu Ying et al. describe the differences between Chinese and Western architectural spatial description. In Chinese traditional architecture, space is based on a two-dimensional coordinate system—it is essentially the art of orientation. That means using east, west, south, north, or left, right, front, and back as planar references to define orientation. In contrast, Western classical architecture is built on a three-dimensional coordinate system—it is the art of volumes. This is the fundamental difference.. Fu, Duan 2000.

[59] Cao Chunping has collected the human analog from the book Yangzhai huixin ji, see footnote 44 in this chapter. Cao 2003.

[60] In textual history, the term Four celestial spots (sixiang) first appears in the Xici appendices to the Zhouyi, where it still denotes four abstract phases of yin–yang rather than animals [Zhouyi, Xici, see footnote 2]. In the Quli chapters of the Liji, these images are concretised as four creatures—Azure Dragon, White Tiger, Vermilion Bird and Black Tortoise & snake—used to orient front, back, left and right around the human body and the building shell [Liji, Quli shang, see the next footnote]. With the astral–directional system in the Tianwen xun of the Huainanzi, they are finally fixed as emblems of the four cardinal regions—Dragon in the East, Bird in the South, Tiger in the West, Tortoise&snake in the North [Liu An (ed.), Huainanzi, see footnote 10]. Hence in Chinese spatial language these animals themselves often stand for directions in everyday usage: the "Azure Dragon position" (qinglong wei) is by definition the left side, while the "White Tiger position" (baihu wei) is the right.

[61] 礼记 Liji (Book of Rites) is a Confucian classic anthology of ritual texts, formed between the Warring States and early Han periods, describing Zhou-dynasty social customs, ceremonial rules, and spatial arrangements; its opening chapter "曲礼上" Qu Li I (Summary of the Rules of Propriety, Part I) sets out detailed prescriptions for bodily comportment, court protocol, and the ordering of positions in space, including the scheme later read as the four directional animals. Accessed February 10, 2025. https://ctext.org/liji and https://ctext.org/liji/qu-li-i

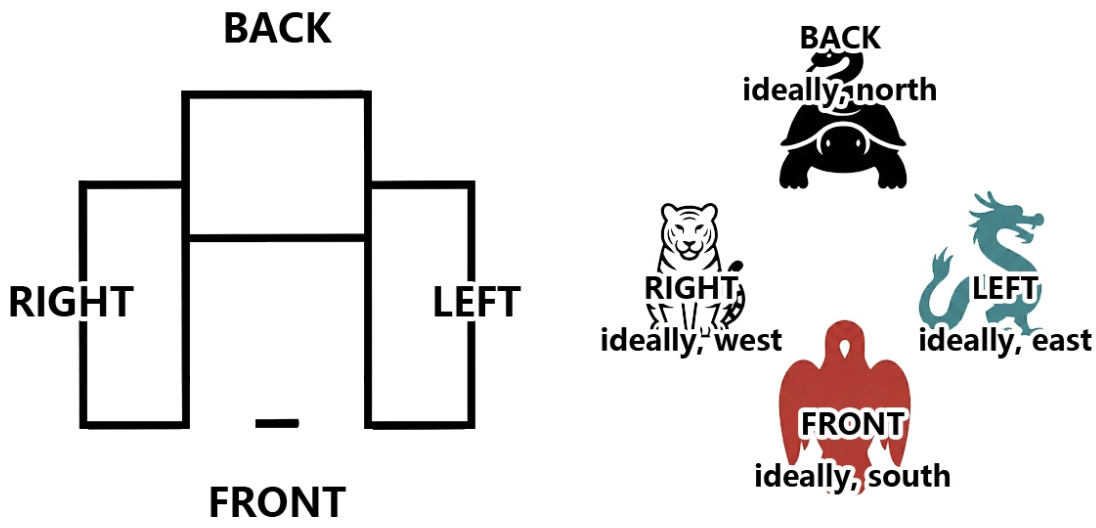


Figure 33: The Relationship between the Four Celestial Animals and the Four Orientations.

Self drawn

In the actual description of buildings, this metaphorical system provides a consistent way to define internal spatial order: the “front” aligns with the main entrance, the “back” lies opposite it, and “left” and “right” are described after the back position is settled, that is, left is the left side when one stands and looks from the back to the front, and the same with the right expression. Regardless of whether a building physically faces south, this anthropomorphic and cosmological framework governs how space is named, organized, and understood. (Figure 34)

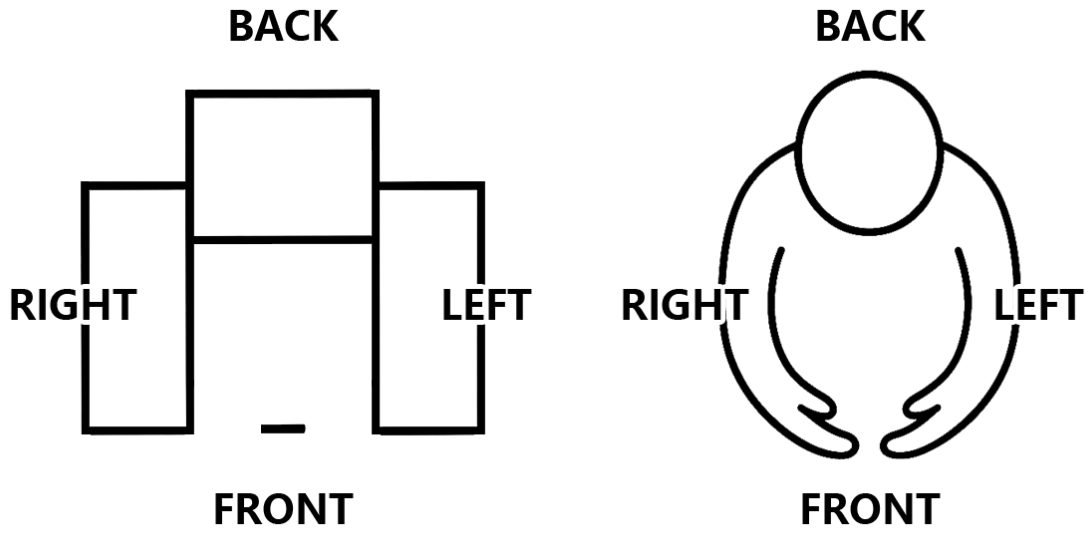


Figure 34: The Anthropomorphic Analogy of Architecture. Self drawn

3.3. Applying the Fengshui Principles to Non-South-Facing Layouts

While the ideal orientation in traditional Chinese architecture is to face south, symbolically aligned with brightness, warmth, and openness, real conditions often make such alignment impossible. Because of site constraints, neighboring structures, or natural terrain, many buildings must face east, west, or even north. In these cases, traditional architecture relies not on fixed geographic orientation, but on symbolic and structural logic to determine spatial directionality. Once the front of the building is defined by the position of the main entrance, the internal order follows: the back lies opposite it, and left and right are determined accordingly. In this way, the anthropomorphic reading of architecture, as a body with a face, spine, and arms, can still be maintained even when geographic orientation shifts.

The symbolic front–back relationship forms the basis of the fengshui concept of “backing the mountain and facing the water”[62], as shown in Figure 35. That is, once the front and rear of a building are established, the rear side (often symbolically associated with the north) should be positioned against a mountain, slope, high ground, or a constructed mound. This provides not only physical protection from prevailing winds and external disturbances, but also symbolizes the stabilizing force of the Earth element in Five Phase theory. When no natural hill is available, a symbolic mound—known as huatai (artificial rear mound)[63] —may be constructed at the rear to simulate the mountain's anchoring effect and to metaphorically "transform" the excessive Water attributed to the north into a stable configuration through the balancing influence of Earth.[64]

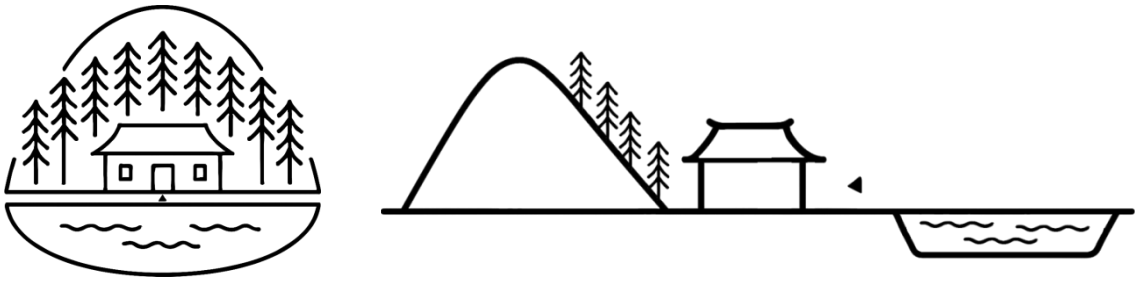


Figure 35: Ideal Fengshui Layout of a Building.

Self drawn

Conversely, the front of a building—often seen as a symbol of the south, associated with the element

[62] Yi, Yu, & Hong 1996, pp. 101-103.
[63] Huatai (taitu) refers to a small artificial mound built behind traditional Chinese dwellings, believed to symbolize fertility and the wish for many offspring. Wu 1998a.; Wu 1998b.; Wu 2012.
[64] Knapp 2005. pp. 55-60.; Xue et al. 2021. pp. 3-5, 11, 20-24.

of fire—is ideally matched with water because being near water helps to tame its fiery energy. Lakes, ponds, and even open fields can serve this purpose. A common feature is the half-moon-shaped pool (Banyuechi)[65], a shallow, crescent-shaped body of water located in front of the building. This feature helps accumulate and reflect light and Qi, and it also symbolizes the gathering of wealth (water is traditionally associated with wealth). Ideally, the symbolic hill at the rear should also be semicircular, so that the rear mound and the front pond together form a symbolic circle, symbolizing both the wholeness of the universe and the overall balance of the building.

In this system, Water (north) represents beginnings, concealment, and storage, while Fire (south) denotes culmination, visibility, and action. Even if a building does not literally face south, the symbolic functions of "front" and "back" can be preserved through spatial orientation and elemental balance. By treating the entrance side as the ideal south and the rear as the ideal north, and by applying anthropomorphic and cosmological principles, the structure maintains the balance of yin and yang and the five phases. This allows spatial motifs such as Nine-Square Grid to serve as foundational frameworks for more complex building types like the Wufenglou in reality, less influenced by terrain or orientation (Figure 36).[66]

[65] In traditional Chinese residential architecture, a "half-moon-shaped pool" (banyuechi) is a semicircular water feature placed in the yard in front of the building's entrance. It is intended to harmonize the flow of water and attract positive energy (Qi) into the home according to Feng Shui principles. Additionally, this half-moon-shaped pool corresponds to an artificial terrace or raised platform behind the building (huatai), creating a balanced spatial arrangement in front and back.

[66] Bu 2000a.; Bu 2000b.

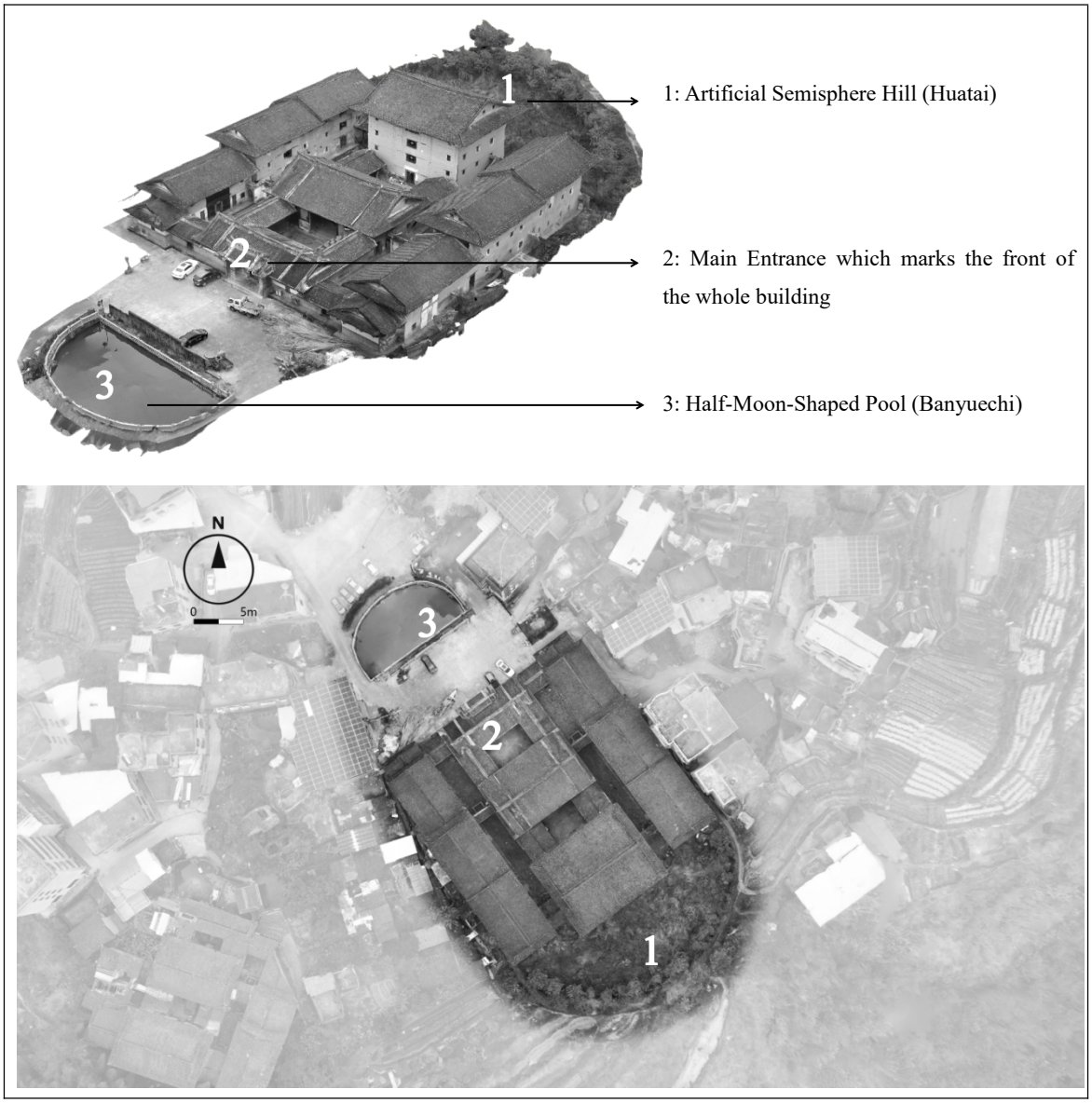


Figure 36: Hakka Wufenglou's Ideal Layout in Reality. Representative: Yulonglou

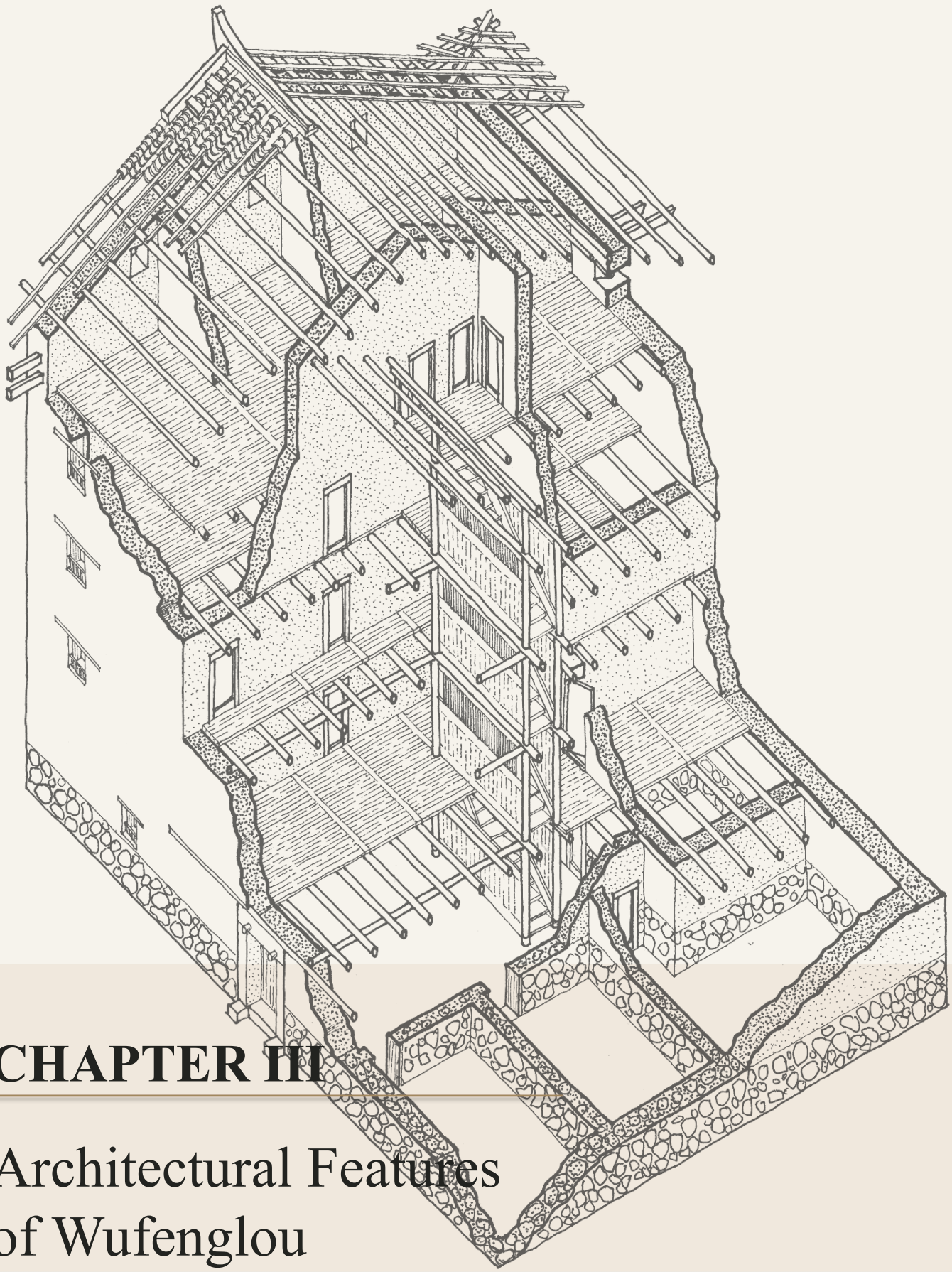
Self rendered drone relief in 2024

Chapter Summary

The spatial logic of Wufenglou is anchored not in fixed geographic orientation, but in a hierarchical consensus that preserves ritual order regardless of directional deviation. While south-facing (zuo bei chao nan) is the ideal cosmological orientation, corresponding to Fire, openness, visibility, and social reception, it is not the only basis for spatial legitimacy. When a true south-facing orientation cannot be achieved, the principle of backing the mountain and facing the water restores symbolic balance: a protected rear, whether a natural high ground or constructed mound/huatai, stabilizes Yin, while an open forecourt or half-moon pond regulates Yang and gathers Qi. Crucially, even when neither ideal condition is fully achieved, the internal order of the nine-square grid preserves hierarchy, circulation, and ritual precedence independently of the site's actual azimuth.

This principle derives from integrated cosmological systems—Yin–Yang duality, the Five Elements, and Qi regulation—but is operationalized materially through spatial syntax. The Nine-Square grid establishes a non-negotiable core grammar: 5 as the open Yang courtyard, 1 and 9 forming the ancestral axis (rear hall–front threshold), 6/8 as the protected residential core, 2/4 as auxiliary fringe, and 3/7 as transitional mediators. Hierarchy is encoded through front–rear (ritual rank), left–right (lineage order), and height gradients (rear-high front-low), while orientation language follows an architectural body logic—front, back, left, and right are defined by the building's own stance, not by the compass.

Thus, Wufenglou ' s fengshui principle is not only an orientation rule but a relational spatial constitution. Direction may shift, but the social and cosmological order embedded in the nine-cell system does not. The model demonstrates that cultural spatial coherence in Wufenglou is constructed internally, maintained symbolically, and expressed architecturally through invariant hierarchy rather than geographic precision.



CHAPTER III

Architectural Features of Wufenglou

CHAPTER III. Architectural Features of Wufenglou

After the terms and cosmological rules have been set out, the argument returns deliberately to the buildings themselves, where the typological question can be tested through form, construction, and spatial order rather than through terminology alone. This chapter compares Hakka and Minnan Wufenglou in Fujian and argues that, despite regional and constructional differences, they should be understood as belonging to a unified typological lineage. The basis for this claim is not surface resemblance, nor a loose similarity of appearance. It is found instead in shared spatial logic, structural practice, environmental adjustment, and socio-ritual order. The chapter first maps their distribution along the Ting-Jiulong River basin, and then connects that geographical setting to the architectural conditions repeatedly found in these buildings: stone footings, thick rammed-earth walls, stepped massing, axial courtyards, deep eaves, water control, ventilation, and the damp mountain environment. On this basis, Wufenglou is examined neither as a Tulou subtype nor simply as a defensive compound, but as an individual multi-storey, non-circular rammed-earth courtyard residence. Its defining features are a five-volume central axis, a nine-grid core, a front-low rear-high section, calibrated side wings, and privacy thresholds from the entrance to the rear halls. Its construction process, moving from orientation and foundation rituals to chongqiang, xianjia, heji, xietu, and room allocation, further reveals a synchronized relation among cosmology, labor organization, and structural logic. The later sections therefore turn to the technical and spatial details through which this logic is made visible, including drainage, moisture control, rammed-earth/timber load bearing, local roof-truss lineages, extension techniques, spatial hierarchy, ornament, and dimensional protocols.

1. Distribution Areas of Fujian Wufenglou

Fujian Wufenglou are not confined to one dialect region, nor do they form a narrow line of distribution. They occupy a wider regional area, from the hilly parts of western Fujian to the foothills and plains of southern Fujian[1], roughly following the Ting River[2] – Jiulong River[3] basin, extending from

[1] Dai 2000.; Dai 2012.
[2] Ting River, on the other hand, is a river along the border of western Fujian and Jiangxi. It mainly runs through the Longyan area and is historically known as an important migration route for the Hakka people.
[3] Jiulong River is a major river located in southern Fujian, China, flowing through the Zhangzhou area and eventually emptying into the South China Sea. It is one of the region's important waterways, significantly influencing

Longyan[4] and Zhangzhou[5] to the western edge of Quanzhou[6] (Figure 37). This zone lies at the junction between inland low mountains, river valleys, and the coastal plains. It is characterized by cohesive clay soil, with stone and timber easily obtainable, and is influenced by the humid subtropical monsoon climate of southern China, marked by heavy rainfall and strong winds. Such environmental conditions compelled builders to adopt a series of stable architectural strategies: raising the stone foundation to prevent dampness, using thick rammed-earth walls for overall structural support, applying deep eaves and multiple ridges to force water drainage, arranging the building mass to rise step by step from front to back, and enclosing an internal courtyard to regulate light, ventilation, and water flow. Consequently, the Wufenglou is constructed with locally available mountain soil, while also incorporating base-protection strategies designed to resist moisture infiltration and capillary dampness during the rainy season. These construction methods were repeatedly reproduced in different settlements and gradually solidified into a recognizable residential type.[7]

local agriculture and economy.

[4] [Gazetteer of Tingzhou Prefecture, Complete Edition], 1967.; [Gazetteer of Tingzhou Prefecture, Qing Edition], 2012.

[5] [Gazetteer of Zhangzhou Prefecture, Zhengde Edition], 2012.; [Gazetteer of Zhangzhou Prefecture, Wanli Edition, 2012.

[6] [Gazetteer of Quanzhou Prefecture, Wanli Edition], 1985.; [Gazetteer of Quanzhou Prefecture, Qianlong Edition], 2000.

[7] Knapp 1992.

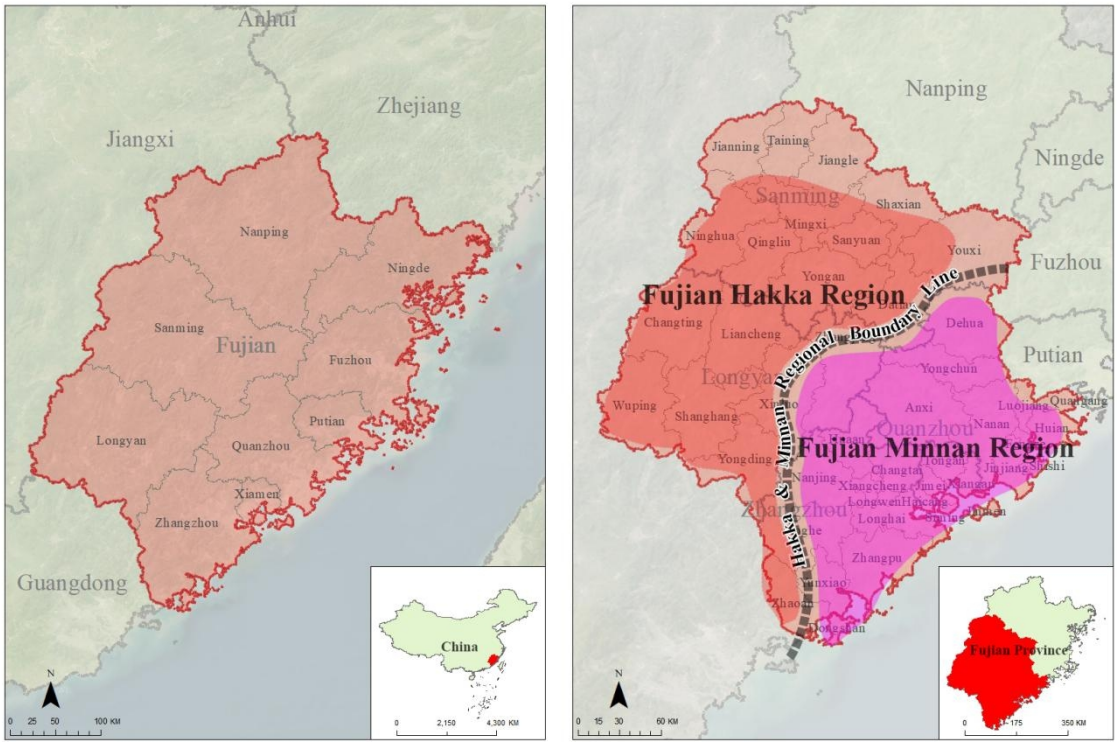


Figure 37. Fujian Hakka and Minnan Region Differences.

Self drawn

Compared with the Tubao[8] and Zhuangzhai[9]—fortified communal compounds in the mountainous areas of western Fujian, the circular/square Tulou[10] dwellings common in the valleys of southwestern Fujian, and the multi-courtyard single-storey dacuo and paicuo[11] mansions on the coastal plains of southern Fujian, the Wufenglou is neither a purely defensive enclosure nor a single-ringed circular building. Rather, it should be understood as a stepped multi-storey rammed-earth courtyard residence, whose form is organized through a clear and repeatable arrangement. In its configuration, five main building volumes are aligned along a central axis, while a nine-square-grid courtyard functions as the spatial core around which the internal order is structured. Although multiple entrances may appear along the façade, the main gate retains a fixed position: it is placed in the central, lowest, and foremost bay. From this point, the longitudinal axis establishes a sequence in which the massing ascends from front to

[8] Dai, Chen 2014.; Li 2010.
[9] Li 2018.
[10] Huang 2020.
[11] Dacuo, paicuo, congcuo, baocuo et al, are a method of calling certain type of dwellings in Minnan language, in which cuo means dwelling (s). Qiu et al. 2021

back, so that ritual hierarchy, airflow, drainage, privacy, and family habitation sequence are not treated as separate concerns, but are brought together within one continuous spatial order.

This axial and stepped organization appears in both Hakka and Minnan regions. For this reason, Wufenglou is not simply a subsidiary variant of one regional or ethnic tradition, but an independent typological lineage across the cultural contact zone between west and south Fujian. It should be emphasized that even within the same natural region, or even within the same village — such as Dadi Village in Xiandu Town — Wufenglou and Tulou may coexist, yet their internal housing organizations differ entirely. Whereas Tulou arranges dwelling units concentrically around a central courtyard, Wufenglou develops through successive built volumes extending backward along a longitudinal axis, with space and function arranged in a clear hierarchy. The distinctive features of Wufenglou will be further discussed in the following sections.

Figure 38 presents two axonometric drawings: Yaoyuanlou as an example of Hakka Wufenglou and Nanguilou as an example of Minnan Wufenglou. They are placed at the beginning of this discussion to provide a visual key for the later chapters. In the following comparison of Hakka and Minnan Wufenglou, this figure will be used to identify the main parts of the structures and to clarify the terms used in the analysis.

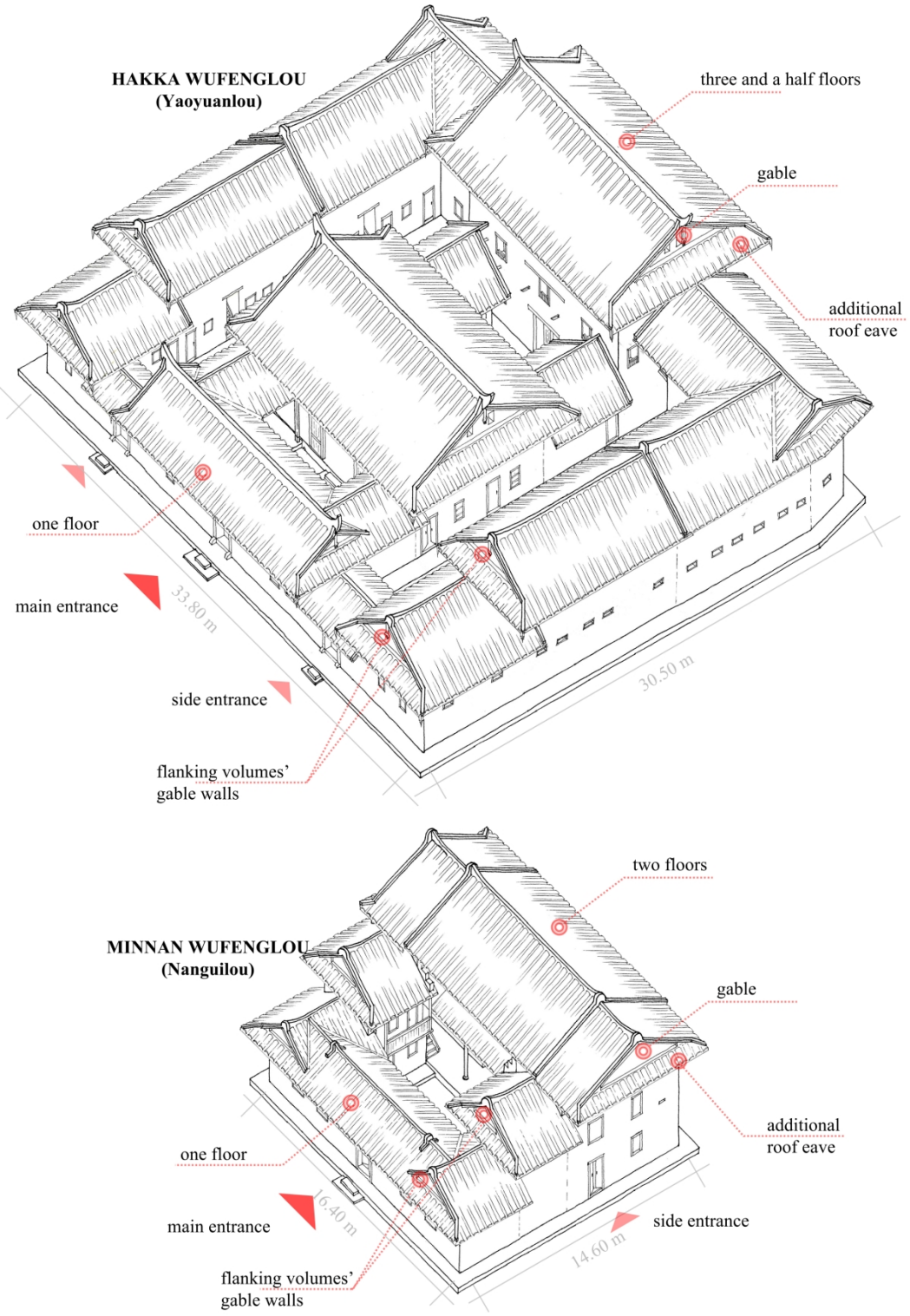


Figure 38. Fujian Wufenglou Features in General. Example: Yaoyuanlou, Nanguilou

Self drawn

2. Layout of Fujian Wufenglou

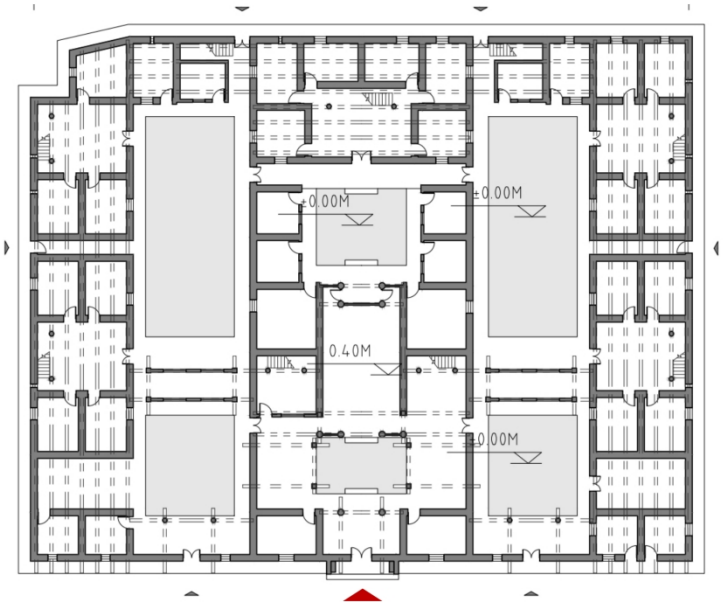
- Multiple Entrances, with the Principal Entrance Centered on the Main Façade

Every Wufenglou necessarily has multiple entrances; however, the main entrance is always positioned at the front end of the central axis and is invariably accompanied by an interior gate hall directly connected to it. The remaining secondary entrances are symmetrically or correspondingly distributed along the front eaves of the lateral wings. Examples include Huaichuntang in Youyuan Village, Hongfang, Longyan[12], and Fuanlou in Zhaoshan Village, Xiandu, Hua'an. See Figure 39.

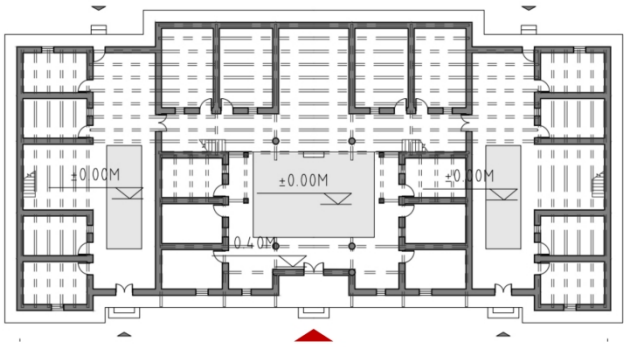
As described in Chapter II, all directional descriptions of the building are based on the orientation of a person standing at the main entrance facing outward. In this position, the person's left side represents the building's left side, the right to its right side, and the line running through the center of the main entrance defines the building's central axis.

Typically, excluding the forecourt, semicircular pond, or the gatehouse that often appears outside the forecourt in Hakka Wufenglou, the main entrance is regarded as the foremost point of the entire building. A Wufenglou generally has at least three entrances — one main entrance and two secondary entrances flanking it at the front façade — and in larger examples, the number can exceed seven: three at the front (one main and two subsidiary), one on each lateral side, and two at the rear, together forming a complete circulation network linking the front, back, and sides of the dwelling.

[12] Youyuan Village was transferred in February 1958 from Gaobei Township of Yongding to Hongfang Township of Longyan County. This administrative change is recorded on page 22 of the 1994 edition of the Yongding County Gazetteer.



Huaichuntang (Hakka Wufenglou) Ground Floor Plan



Fuanlou (Minnan Wufenglou) Ground Floor Plan

Legend:

Main Entrance

Side Entrance

0 5M

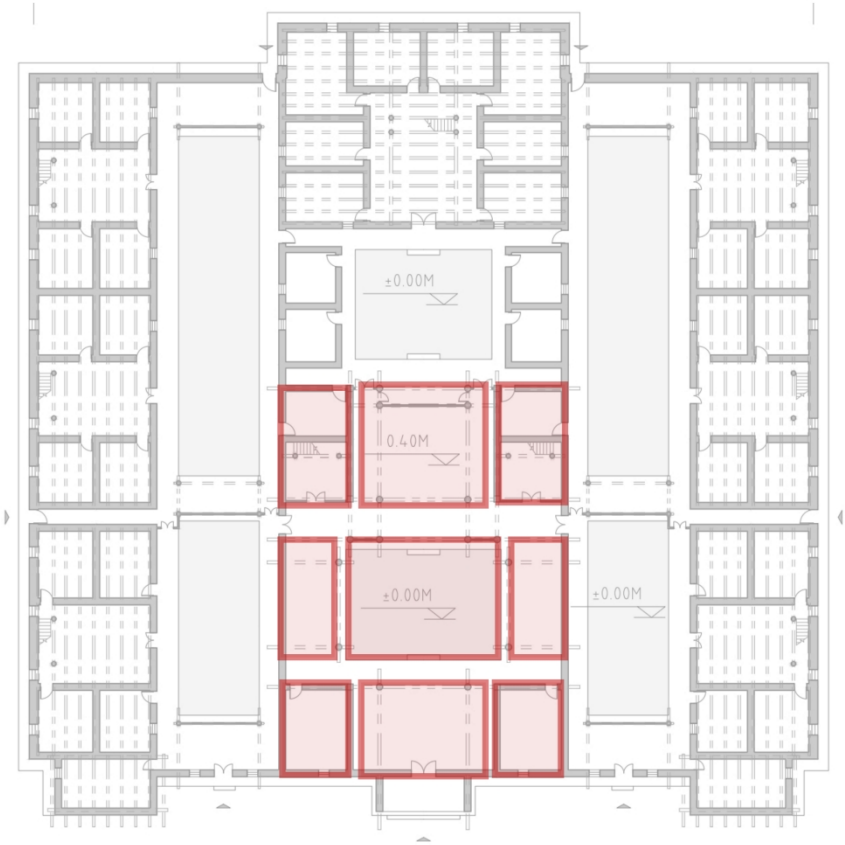
Figure 39. Wufenglou's Main Entrance and Side Entrances. Examples: Huaichuntang, Fuanlou.

Self drawn

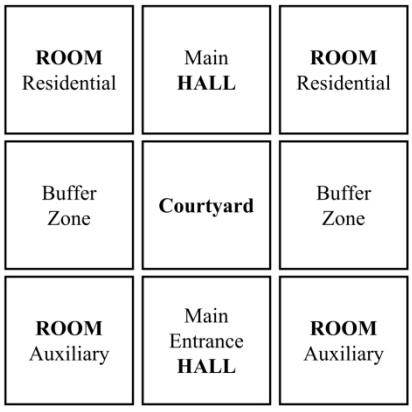
- Central Courtyard Layout Based on the Nine-Square Grid Principle

The central courtyard of Wufenglou follows the nine-square-grid spatial principle found in traditional Chinese residential architecture. The main entrance leads into the first courtyard, which functions as both the structural and the operational center of the building. Along the main axis, the entrance hall faces the courtyard and the ancestor hall stands immediately behind it, forming the principal ritual space of the house. On both sides of the ancestor hall, rooms are arranged symmetrically; beside the entrance hall, the flanking spaces may either contain rooms or remain open as extensions of the entrance zone. Corridors or side chambers are usually placed on the left and right sides of the courtyard to connect the front and rear parts of the house, together forming a nine-part spatial system that balances Yin and Yang forces. The circulation pattern therefore turns around the central courtyard in a rectilinear configuration.

Despite the clear differences in housing module and exterior forms between Hakka and Minnan Wufenglou, which is detailed discussed in Chapter IV, both share the same central underlying structural logic derived from the nine-square grid pattern. See Figure 40, Figure 41.



Nine-Square-Grid Layout
presents in
Yulonglou (Hakka Wufenglou), Ground Floor Plan



Standard Nine-Square-Grid Layout

Figure 40. Wufenglou's Nine-Square Grid Layout in the Central Courtyard. Case 1. Example: Yulonglou (Hakka Wufenglou).

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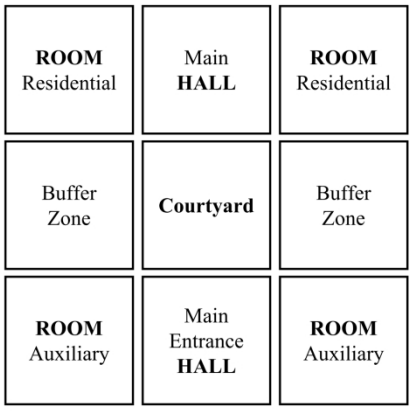
Nine-Square-Grid Layout
presents in
Liuzhaowu (Minnan Wufenglou), Ground Floor Plan



Standard Nine-Square-Grid Layout

Figure 41. Wufenglou's Nine-Square Grid Layout in the Central Courtyard. Case 2. Example: Liuzhaowu (Minnan Wufenglou).

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- Axially Symmetrical Basic Schema of Five Architectural Volumes

As discussed in Chapter I, the name Wufenglou can be understood in Chinese as "a building of two storeys or more composed of five phoenixes." The concept also draws symbolic inspiration from earlier northern Chinese forms of Wufenglou, such as palaces and city gates, where the organization of five volumes was linked to the image of five phoenixes.

The Fujian Wufenglou continues this symbolic logic in its spatial arrangement: five main building volumes unfold sequentially along a central axis, forming a stepped silhouette that is lower in the front and higher in the back; simultaneously, the independent roofs of each building resemble bird wings, reinforcing the image of "phoenix spreading its wings."

As is shown in the exploded view of Figure 42, these five volumes differ in their names and composition between Hakka Wufenglou and Minnan Wufenglou. In Hakka areas, they are typically composed of three volumes along a central axis—the entrance hall, ancestor hall, and main building—along with side buildings on either side. In Minnan, however, they are enclosed by corner rooms on either side of the main entrance (positions 2 and 4 in a nine-square grid) and two-story rooms on either side of the courtyard (positions 3 and 7 in a nine-square grid), forming a large volume together with the ancestor hall and rooms at the far end (positions 6, 1, and 8 in a nine-square grid). These differences will be explained in detail in Chapter IV, in the section comparing Hakka and Minnan Wufenglou.

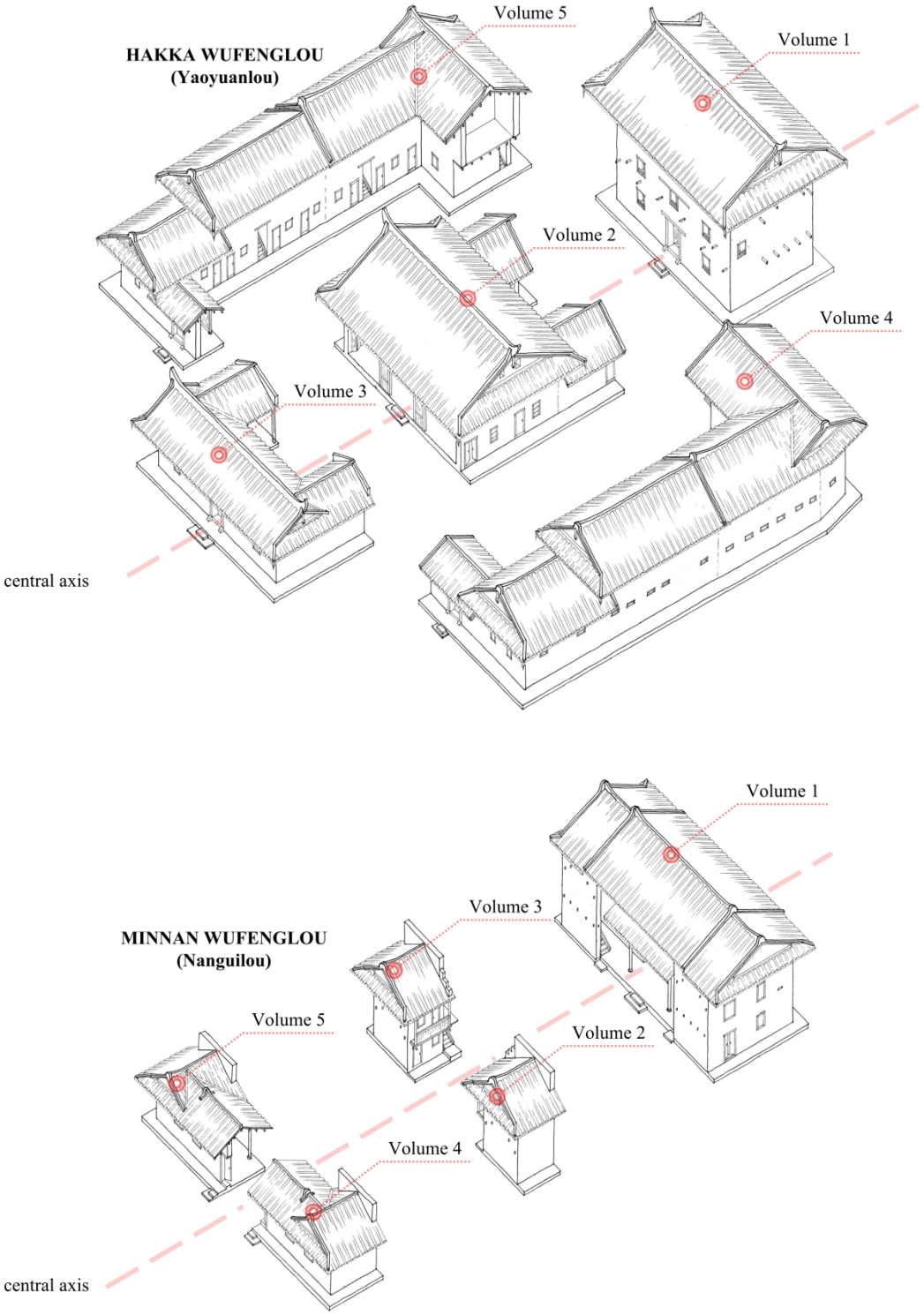

Figure 42. Wufenglou's Symmetrical Five-Volume Layout in Exploded View. Examples: Yaoyuanlou, Nanguilou.

Self drawn

- Stepped Section: Front-Low / Rear-High

Traditional Chinese residential architecture generally emphasizes a hierarchical progression of space. Even when the total number of floors is uniform, architects deliberately create a visual rhythm of front-low and rear-high in elevation. Wufenglou is a particularly distinct example of this principle, because the number of stories, not merely the overall height, is always different between the front and rear sections. Along the central axis, the building volumes rise step by step from front to back: the entrance hall volume is the lowest, usually one story in a standard Wufenglou, while the rearmost volume reaches two stories or more. The side volumes also increase in height progressively, standing higher than the entrance hall but lower than the rear volume, with a minimum difference of one storey, and together they create an articulated and rhythmic skyline.

This stepped elevation is not merely a structural or aesthetic arrangement but a spatial manifestation of ritual hierarchy. It also resonates with the natural topography and cosmological symbolism of mountain and water—the ideal configuration of "backing mountains and facing waters" (see Chapter II). Through this alignment, the building seems to emerge naturally from the ground, ascending gradually to establish a dynamic formal transition between the highest mountains at the rear and the lowest water surfaces at the front.

Figures 43 and 44 respectively provide four examples of Hakka and Minnan Wufenglou, using front elevation drawings to illustrate their characteristic of being lower in the front and higher in the back. In these diagrams, the front parts are drawn with darker lines and the rear parts with lighter lines, thus representing differences in height and depth.

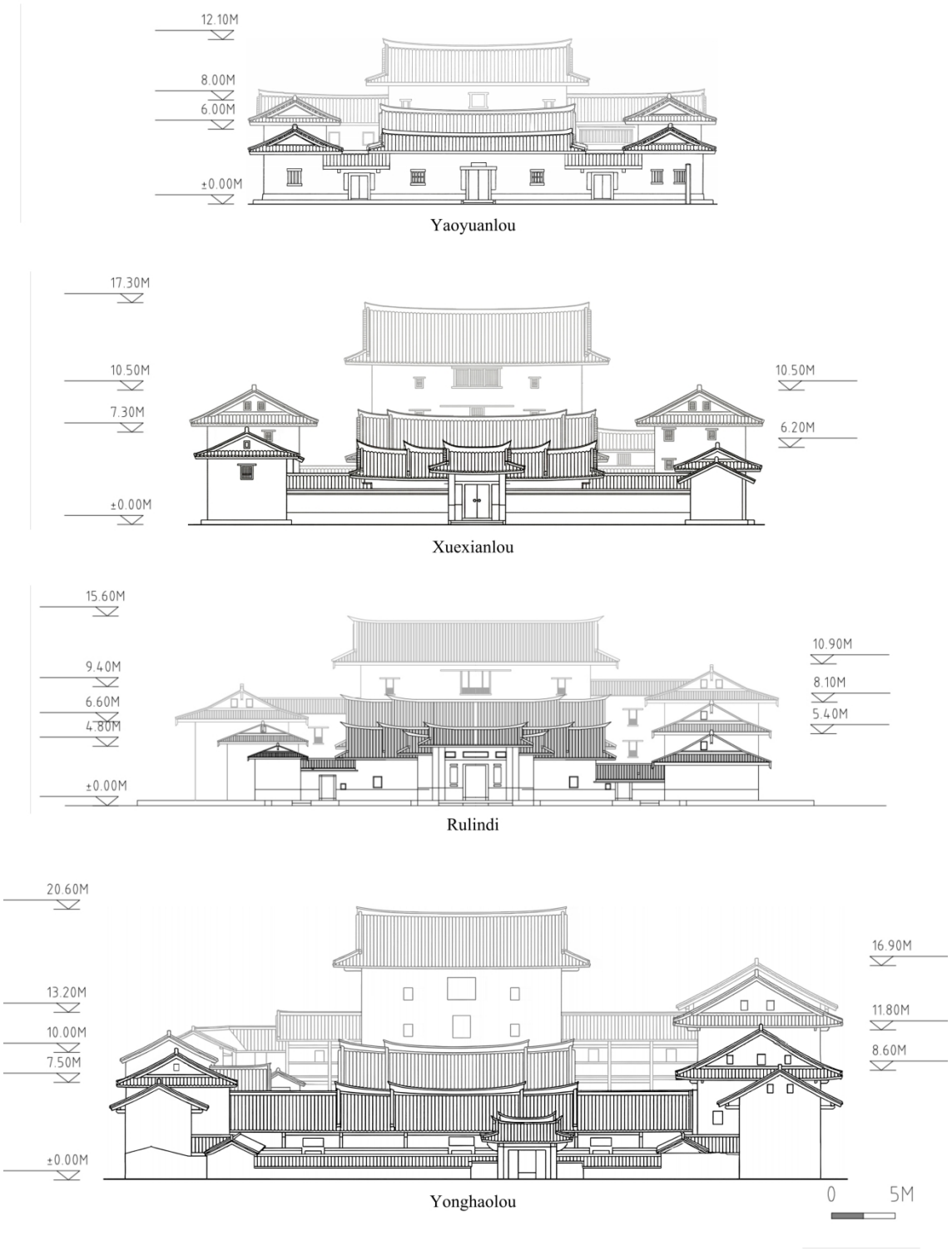

Figure 43. Hakka Wufenglou's Front Facade.

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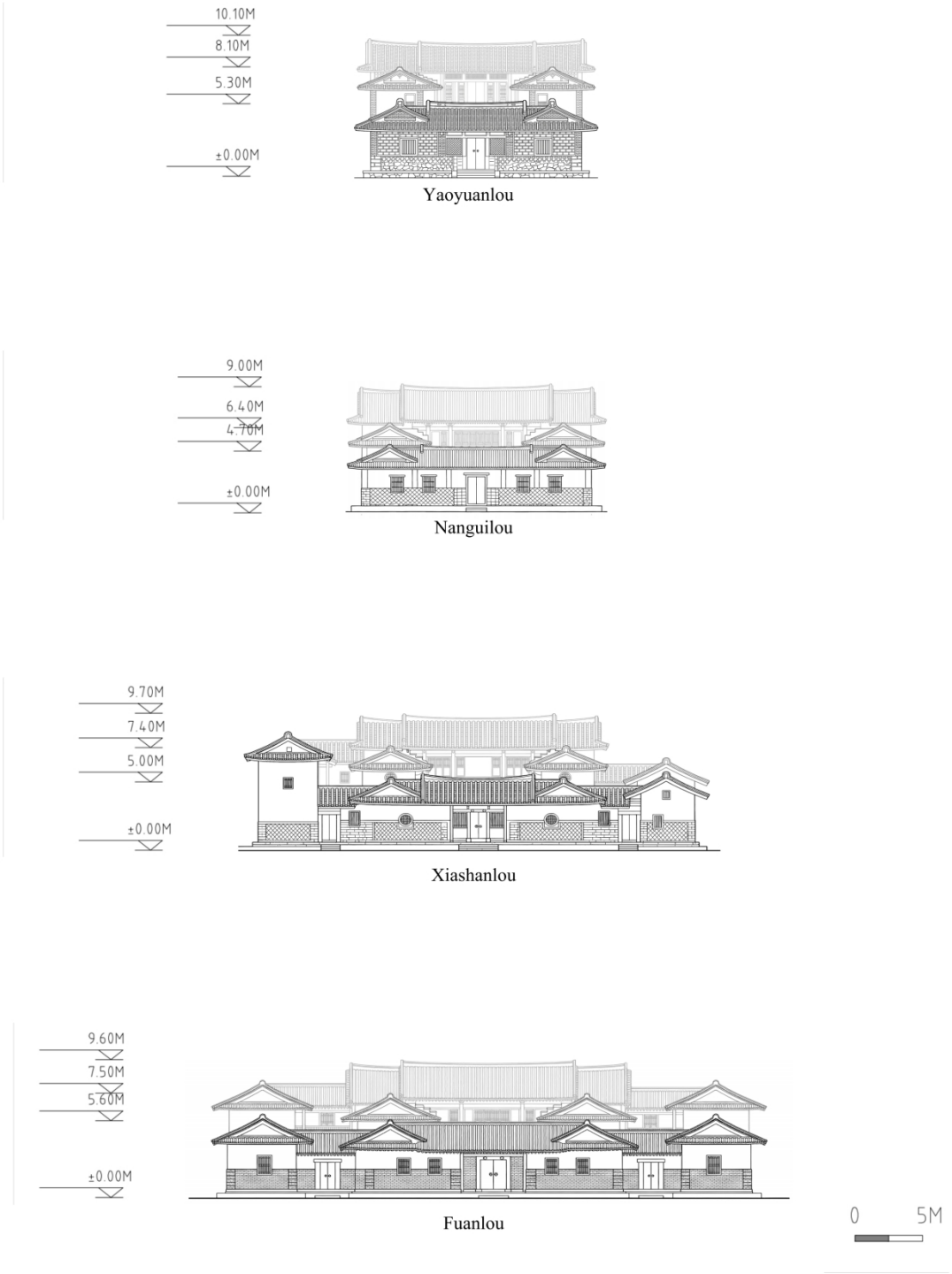

Figure 44. Minnan Wufenglou's Front Facade.

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- Forward-Stepped-Down Gables on Both Sides

In addition to the overall stepped variation in the heights of each volume, one of the most distinctive features of the Fujian Wufenglou is the staggered arrangement of the roofs and gable walls along its two lateral sides. On both the left and right, each side features at least one level of vertical offset in the gable height, oriented toward the front of the building (Figure 45). This staggered configuration gives the lateral façades a stepped silhouette that echoes the spatial progression along the central axis. It reinforces the rhythmic character of the composition and, through its formal directionality, subtly indicates the functional and hierarchical distinction between the more public front zone and the more private rear section of the dwelling.

Yulonglou (Hakka Wufenglou) Side Gables

Fuanlou (Minnan Wufenglou) Side Gables

Figure 45. Wufenglou's Forward-Stepped-Down Gables on Sides. Examples: Yulonglou, Fuanlou.

Self taken in 2024

- Hierarchy-based Functional Arrangement

(1) The "One-Bright, Two-Dim" (yiming liangan) Rule

Wufenglou follows the spatial grammar of "one-bright, two-dim" (yiming liangan)[13]. This does not refer to a literal count of one bright room and two dim rooms, but to a complementary pair of spatial domains: a central bright band for outward communication, ventilation, daylight, and ritual activities, and two lateral dim bands for private residential and service functions. The terms "one" and "two" indicate hierarchy rather than room number, establishing an organizational principle of axis-centered dominance and bilateral subsidiarity, and regulating exposure, movement, visibility, and thermal conditions through yin–yang modulation.

In the basic three-, five-, or seven-bay layout of Minnan Wufenglou (See Chapter IV), the ancestor hall facing the courtyard or forecourt becomes the public core for worship, reception, and passive climatic exchange, while the secondary bays on both sides host bedrooms, studies, and storage. As the plan expands horizontally or develops into multiple depth sequences, new programmatic units are consistently absorbed into the central-bright, lateral-dim order: the central axis maintains ritual continuity, ventilation, and circulation coordination, while the side wings accommodate increasingly graded layers of domestic privacy and service support. See Figure 46.

[13] One-bright, two-dim (Yiming, liangan) denotes an axis-centered spatial principle in which a central bright zone organizes circulation, light, ventilation, and public or ritual use, while two lateral dim zones accommodate residential and service functions. This is a traditional concept in Chinese architecture, integrating the principles of yin and yang by placing open, public spaces in the center and private spaces on both sides.

Figure 46. “One-Bright, Two-Dim” (yiming liangan) Rule in Minnan Wufenglou. Example: Longshantang

Self taken in 2025

In the Hakka Wufenglou housing unit structured by the “bay-hall-vertical start” principle (distinct from the ancestor hall - side rooms layout, see Chapter IV), the rule of yiming liangan is equally explicit even when positioned off the main building axis. Within each unit, the central hall and shared stair core compose the bright zone, hosting vertical circulation, social encounter, and interstory airflow; the surrounding bedrooms and craft-storage rooms form the dim zone. This creates a recurrent unit logic of circulation-and-gathering as core, living-and-service as ring, enabling acoustic buffer, securable circulation, and phased evacuation on every floor. See Figure 47

Figure 47. “One-Bright, Two-Dim” (yiming liangan) Rule in Hakka Wufenglou’s Individual Housing Volume.

Example: Yulonglou

Self taken in 2024

The entrance sequence reiterates the same grammar: the entry hall belongs to the bright domain, orchestrating reception, view framing, and air change, whereas kitchens, storage, or guard rooms integrated at its flanks belong to the dim domain, designed for close service without interfering with guest movement, smoke control, or humidity isolation. Thus, the household threshold establishes the basic partition of ritual vs. domestic, clean vs. auxiliary, movement vs. stillness.

At the scale of the entire building massing, the same logic governs the inter-block hierarchy. The central axis binds the entrance hall, courtyard, and ancestor hall into a continuous public, kinetic, and environmental spine, where ceremonies, assemblies, hospitality, and cross-climate ventilation converge. The lateral wings host the quiet, inward, and supporting programs, including sleeping quarters, studies, workshops, storage, and odor- or humidity-intensive kitchens, positioned at short operational reach but buffered from the public core. This produces the stratified order of “ritual on the axis, dwelling on the wings, labor and storage to the rear or lower levels.”

Accordingly, "one-bright, two-dim" (yiming liangan) is not a numeric statement but a spatial syntax rooted in yin–yang balance, integrating hierarchy (axis–wing), environment (light–air–shadow), and function (public–private–service). It operates seamlessly from the minimum structural cell of three to seven bays to multilayered and multi-depth compositions, marking Wufenglou as a canonical manifestation of this shared organizational logic in Chinese vernacular architecture.

(2) Gradual Intensification of Hierarchy and Privacy from Front to Rear

Along the depth axis, Wufenglou forms a spatial sequence that rises from front to rear. From the main entrance to the rear main block, both the platform level and roof ridge rise incrementally, producing a stepped hierarchy. This arrangement is not only a response to topography, drainage, and daylight performance, but also a spatial mechanism of ritual order and access control[14]: the deeper a space is positioned, the lower its frequency of external access, the more concentrated its ownership, and the higher its privacy and resistance to visual and circulatory penetration. Taking Nanguilou, a Minnan Wufenglou, as an example (Figure 48), the spaces at the front main entrance are rarely arranged as main bedrooms which require high privacy and vision, and are therefore assigned to more subsidiary functions. Bedrooms are mostly placed in the rear main house or, temporarily, in the titingjian[15]. Even in Hakka Wufenglou cases with rear or side entrances, this overall gradient still applies. In Yulonglou, a Hakka Wufenglou residence (Figure 49), the axial sequence progresses from enclosing wall, entrance hall, ancestor hall, courtyard, to the rear upper hall, maintaining a continuous front-to-rear ascending hierarchy that signals increasing interiority and spatial authorization.

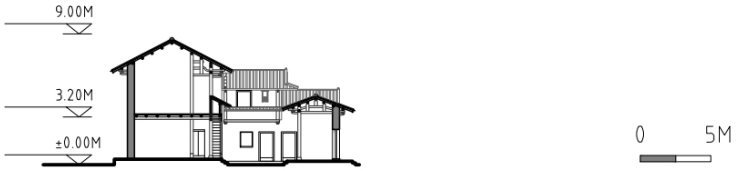

Figure 48. Minnan Wufenglou, Nanguilou's Cross Section.

Self drawn

[14] The rule of expressing social hierarchy through building height is already stated in the Liji (Book of Rites), chapter Liqi: "Where height signifies honor, the hall of the Son of Heaven is nine chi (a traditional Chinese unit of length), that of the feudal lords seven chi, high officials five chi, and lower officials three chi."
This shows that building height functioned as a direct marker of ritual rank. Accessed March 19, 2025.
https://ctext.org/liji

[15] Titingjian, literally "Stair pavilion rooms" are a pair of volumes in front of the main house of a Minnan Wufenglou, detailed explained in Chapter IV.

This depth-based order generates a clear privacy gradient aligned with function. The entrance hall operates at the highest level of public accessibility, mediating arrival, reception, and circulation between interior and exterior. Progressing inward, semi-public family activities replace external communication. The ancestor hall still supports high-mobility gatherings, receptions, and negotiations. In Minnan Wufenglou, spatial expansion shifts laterally and vertically at this point: the upper floor accommodates the most private household rooms, and its elevated level reinforces privacy hierarchically beyond the entrance layer. In Hakka Wufenglou, the depth sequence continues rearward, where functions shift from collective family interaction to internal household use. Spaces above the third floor or in the deepest rear hall serve as ritual-authority loci and core family living quarters, with reduced access range, prolonged occupancy, and increased entry thresholds.

Figure 49. Hakka Wufenglou, Yulonglou's Cross Section.

Self drawn

The courtyard as a buffer-filter node segments each layer of halls, attenuating sound, visibility, and circulation at every transition, reinforcing an ordered progression of open at the front, compressed toward the rear. Despite compositional differences between Hakka and Minnan Wufenglou massing (see Chapter IV), the rule of increasing privacy from front to rear remains consistent. This also produces a defensive gradient: the frontal zone is legible and manageable for visitor recognition and traffic distribution, while the rear becomes progressively elevated, less accessible, more private, and more secure, forming a compound effect of increasing height, decreasing permeability, growing privacy, and strengthening safety.

Typologically, this spatial and defensive synchronization is not incidental but systemic. Through a legible axis, hall-centered organization, and rear elevation strategy, Wufenglou integrates ritual visibility, family governance, dwelling, and logistics into a continuous public-to-private gradient. Thus, the ascending from front to rear arrangement not only expresses symbolic hierarchy but translates the rule of the deeper, the more private and secure into an operational spatial and constructional strategy.

(3) Left as Superior, Right as Secondary: Household Branching and the Implicit Arrangement of Side Buildings

In traditional dwelling orientation, the main entrance is always taken as the frontal reference; when facing forward, the left-hand side is defined as "left" and the right-hand side as "right." Within this system, "left is superior, right is secondary" becomes a key principle for spatial organization and hierarchical allocation.[16] In the cosmological framework of the Four Celestial Animals —Azure Dragon (left, or preferably east), White Tiger (right, or preferably west), Vermilion Bird (front, or preferably south), Black Tortoise (rear, or preferably north)—the left corresponds to Azure Dragon and the right to White Tiger, a directional hierarchy that underpins spatial order and auspicious balance (see Chapter II). This asymmetrical code informs not only household division and occupancy rank but is also subtly embedded in the massing and construction details of Hakka Wufenglou.

In the axis–wing layout of Hakka Wufenglou, the side wings commonly exhibit two modes of expression: As Figure 50 presents, one is strict bilateral symmetry to maintain ritual order; the other preserves symmetry structurally while introducing subtle left-biased adjustment—where the left wing may be slightly higher, marginally wider, or accentuated through minor calibration in platform height, eave line, step count, or bracket craftsmanship, embedding hierarchy through graded material and tectonic refinement. This principle is echoed in a common proverb derived from geomantic order: after acknowledging the symbolic roles of Azure Dragon and White Tiger, it cautions that architectural bias must avoid right-side dominance—expressed popularly in local language as "Better the Azure Dragon rise ten thousand feet than the White Tiger exceed it by half an inch."[17] Architectural cases such as Peijing Hall in Xipi, Yonghaolou in Xinmin, and Yaoyuanlou in Gaopi conform to this spatial tendency.

In Minnan Wufenglou, the spatial hierarchy continues to follow the rule of "axis as primary, wings as subsidiary," with an additional ethical calibration privileging the left wing. Beginning from the central axis of the main block, the left-side rooms are preferentially allocated to the eldest son or the senior household branch, while junior or newly separated branches typically occupy the right. In situations

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[16] In both the 周礼·考工记 Zhouli Kaogongji (Rites of Zhou: Record of Trades) and the 礼记 Liji (Book of Rites), there are recorded principles that the left side is considered more honorable and the right side less honorable. The Zhouli describes this as placing the ancestral temple on the left, and the altar of the soil on the right. Meanwhile, the Liji notes that the east is ideally the superior direction, thus the left side is associated with the east, and the right side with the west, as explained in Chapter II. Accessed March 19, 2025. https://ctext.org/zhou-li ; https://ctext.org/liji .

[17] Local proverb following the Fengshui principles. Xu 1999.

requiring clear hierarchical articulation, this order is made spatially legible by subtle enlargement of bay width or depth on the left, or by slight elevation of its platform. Even in renovations or extensions, the implicit principle of “left expandable, right restrained” is often upheld to preserve the ethical structure of spatial order.

The left-right system in Wufenglou operates beyond directional purposes because it establishes a complex ownership and social status framework. The left side of the building contains primary functions which face outward and promote social interaction but the right side contains secondary functions which operate from within and provide service. The spatial order of Wufenglou emerges from the synchronized management of building height and construction details and small vertical differences which convert the ethical principle of left superiority over right into functional spaces. The design of Wufenglou unites family rank with walking routes and building design to create a unified spatial framework.

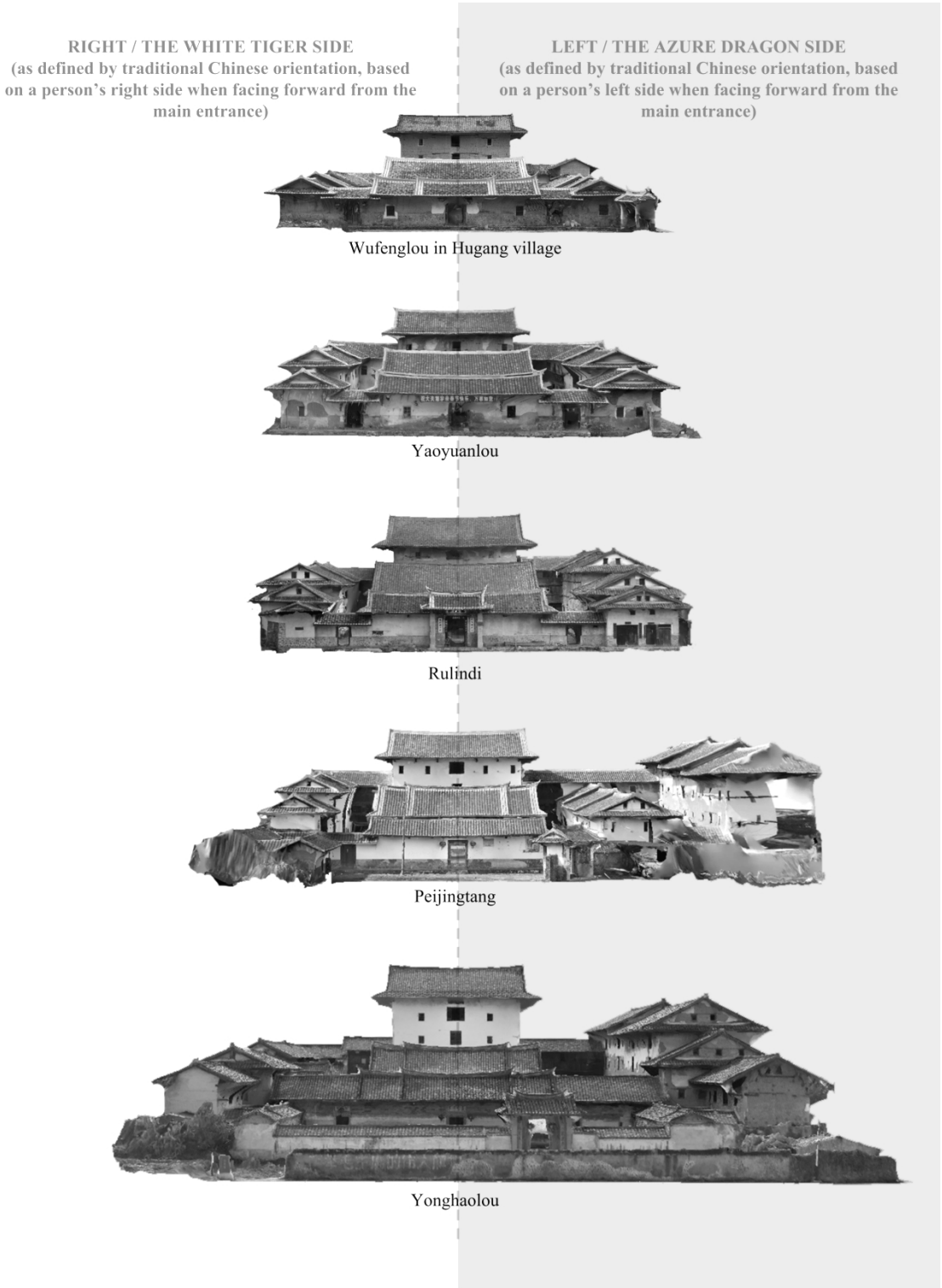

Figure 50. Manifestation of "Left as Superior, Right as Secondary" in the Elevation of Hakka Wufenglou

Self rendered drone reliefs in 2024

(4) Dimensional Governance of Key Architectural Parts

In Wufenglou—across both Hakka and Minnan lineages—beyond the general ordering principles of axis–wing hierarchy, front–rear elevation, and left–right ranking, there exists a set of tacit yet strictly enforced dimensional protocols transmitted by craftsmen. These rules govern the proportion of the ancestor hall, depth control, overhead daylight admission, and roof pitch articulation. Shared principles are introduced first, followed by the Minnan-specific constraint.

First, concerning the proportion of the ancestor hall. In both Hakka and Minnan Wufenglou, the hall must read as vertically dominant rather than laterally spread; it may be deep but must not appear wide and low. Craftsmen summarize this as "suppress width, not depth," requiring the visual primacy of height—from column base to ridge purlin—so that the ritual hall does not collapse into a flattened, low, laterally heavy figure.

Second is the Minnan-exclusive over-extended arms taboo (shenchangshou), a rule discouraging disproportionate frontal elongation. The combined depth of the forward block and the titingjian must never exceed the depth of the ancestor hall and its forecourt, otherwise the plan is said to form an undesirable overreach, symbolically likened to outstretched arms signaling beggary. This taboo enforces two constraints: (1) side volumes must not extend excessively forward, and (2) the courtyard must not narrow into a longitudinal throat-like form, commonly characterized as a "snake-body, duck-neck constriction," a spatial condition believed to exhaust resources and impair prosperity.

Third is the rule known as "unobstructed sky glimpse", locally termed jianbai. When standing at the deepest point inside the ancestor hall and looking forward, one must be able to glimpse a line of true sky above the roofline of the preceding block. A fully occluded view—no sky seen—is considered unfavorable. To secure this condition, cascading dimensional limits follow: the roof ridge of the preceding block must not exceed the eave line of the ancestor hall, the eave itself must not be artificially lowered, and the courtyard must not become excessively deep or narrow; otherwise, the central hall risks turning into a sealed, dim chamber boxed in by the frontal volumes.

Fourth, roof construction follows the shared principle of yin–yang roof slope articulation rather than geometric symmetry. The pitch facing the ancestor hall or courtyard is treated as the yang side and is set slightly higher, steeper, and shorter, while the opposite (yin) side may run longer and shallower. Craftsmen condense this proportional ethos into three paired directives: "front high, back low; front short, back long; front bow, back arrow." The reverse configuration—lowering or over-extending the front while

tightening the rear—or forming inverted pitches, in local language called “inverted pitch” or “overturned lion” orientations, is explicitly proscribed.

3. The Construction Process of Fujian Wufenglou

Before actual construction begins, every Wufenglou requires the consultation of a fengshui master to determine the most auspicious central point and orientation of the site. Only after completing the groundbreaking and foundation ritual can the building process formally start. According to local terminology, construction proceeds through five principal stages:

(1) Dashijiao — laying the stone footing to stabilize and protect the foundation;

(2) Chongqiang[18] — rammed-earth walling using layered compaction;

(3) Xianjia — pillar and beam erection to integrate timber and earthen structures;

(4) Heji[19] — ridge joining, marking the completion of the roof;

(5) Xietu — the final ritual of offering thanks to the earth upon completion.

After completion, the sequence continues with the installation of the main door, the placement of deity or ancestral tablets, and the house-entering ceremony. The allocation of rooms follows, centered on the ancestor hall and arranged according to generational seniority; when necessary, lots are drawn to divide rooms fairly. At this point, both ritual order and daily life functions are fully established, and the dwelling officially enters into use.

- Site and Orientation Selection

First, site selection and orientation — Wufenglou adheres to the integrated logic of the Form School (Xingshipai)[20] in fengshui, which emphasizes harmony between landform and orientation. The process begins with reading the surrounding topography and hydrology, prioritizing the principles of “backing mountains for support, having an open Mingtang (bright forecourt)[21] in front, being flanked by protective arms on both sides, being close to water but avoiding direct contact, maintaining a front-low and rear-high terrain, and enabling the storage of wind and accumulation of Qi[22].” Among these, the Mingtang

[18] Chongqiang, Also called Xingqiang, literally “walking the wall”, representing the process of building the rammed earth wall.
[19] Also called Chushui, both are one of the steps in closing the roof ridge, to name the whole process.
[20] Form School (Xingshipai): A major fengshui school emphasizing the reading of landforms, mountains, and water systems to determine auspicious orientation and spatial configuration.
[21] Mingtang: The open space in front of a dwelling or palace serving both ritual and environmental functions.
[22] See Chapter II.

refers to the open space in front of the main façade, serving both ceremonial and climatic functions.

Subsequently, the internal geometry and Qi flow are determined through the alignment of the house center[23], central axis, and compass calibration (luopan, see Figure 51)[24]: the house center defines the main axis, the luopan refines the precise orientation and directional subdivision (fenjin)[25], and micro-adjustments are made according to monsoon direction, sunlight, and runoff paths to optimize the alignment of the entrance, courtyard, and halls. The preferred orientation is toward the south, ensuring sunlight in winter, shading and ventilation in summer. Where topographic or environmental constraints exist, orientations toward the east, west, or slightly north are occasionally adopted, though a due-north orientation is rare, according to Yongding Historical Records.[26] [27]

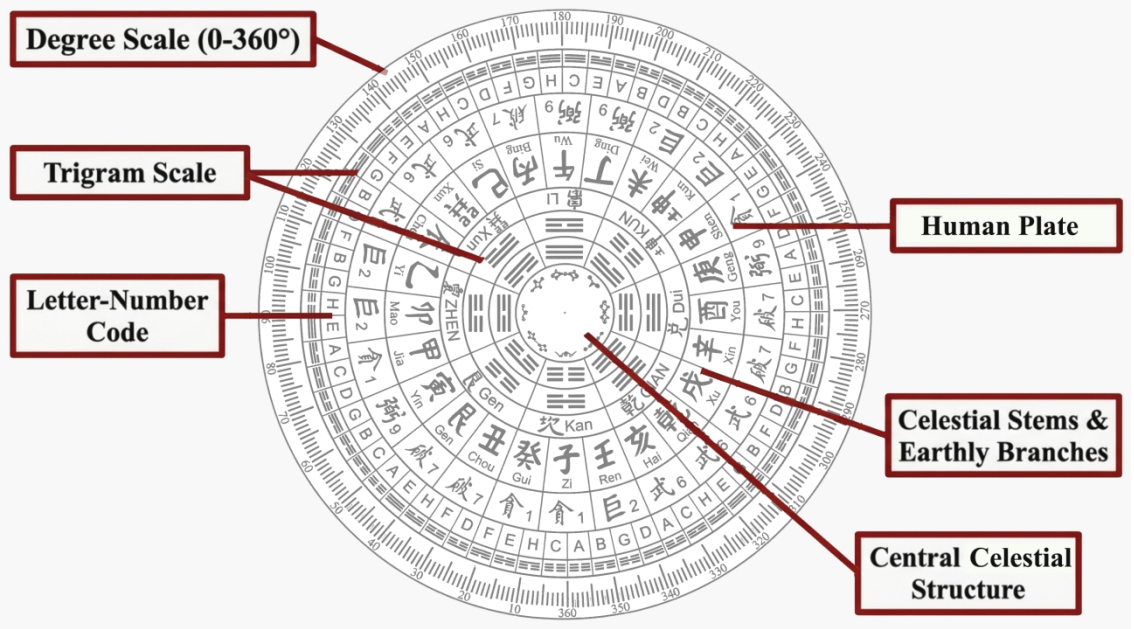

Figure 51. Schematic diagram of a Luopan.

Self redrawn from the source https://www.pinterest.com/pin/26669822785611087/ , accessed in Oct. 09, 2025

[23] The "house center" here refers to the central point within the Nine-Square Grid principle layout, specifically the position labeled "5" in that grid. As discussed in detail in Chapter II, this point corresponds to the courtyard or "sky well" in traditional Chinese architecture. Once this central point is established, it serves as the starting anchor for all subsequent building logic in both spatial layout and construction sequence. Therefore, determining the house center is crucial to the entire Wufenglou building process.

[24] Luopan: The Chinese geomantic compass used to determine precise orientation.

[25] Fenjin: The method of subdividing compass degrees in fengshui to identify exact auspicious directions.

[26] Yongding Historical Records, Vol. 12 notes that before building the Wufenglou, Yulonglou, the clan invited a fengshui master for an on-site survey. The master proposed two orientations—"facing east" or "facing north"—after assessing near-field openness and distant mountain alignments; following discussion led by Xuezhou Gong, the first owner and the clan chief of Yulonglou the family chose "sitting south, facing north," with the main gate oriented north. This account succinctly documents the full procedure of Hakka Wufenglou site selection and orientation.

[27] CPPCC Yongding County Committee, Literature and History Materials Committee (ed.). 1993. pp. 97-101.

Then, selection of auspicious dates. After the site center and orientation are determined, the Wufenglou, like most traditional Chinese dwellings, proceeds according to the principles of traditional timing called Zerixue[28], a system that aligns each building stage with favorable times and directions derived from the Lunar Almanac (also called the "Imperial Almanac" or Huangli, see Figure 52)[29]. In this practice, specific auspicious dates and hours are assigned to major procedures: beginning construction by breaking ground, erecting the main posts and beams, installing the entrance door, and finally moving into the house. For large compounds, timing is sometimes further differentiated among the architectural segments—the front range, ancestor hall, and lateral wings—so that construction unfolds sequentially under an organized framework of auspicious time and spatial orientation.

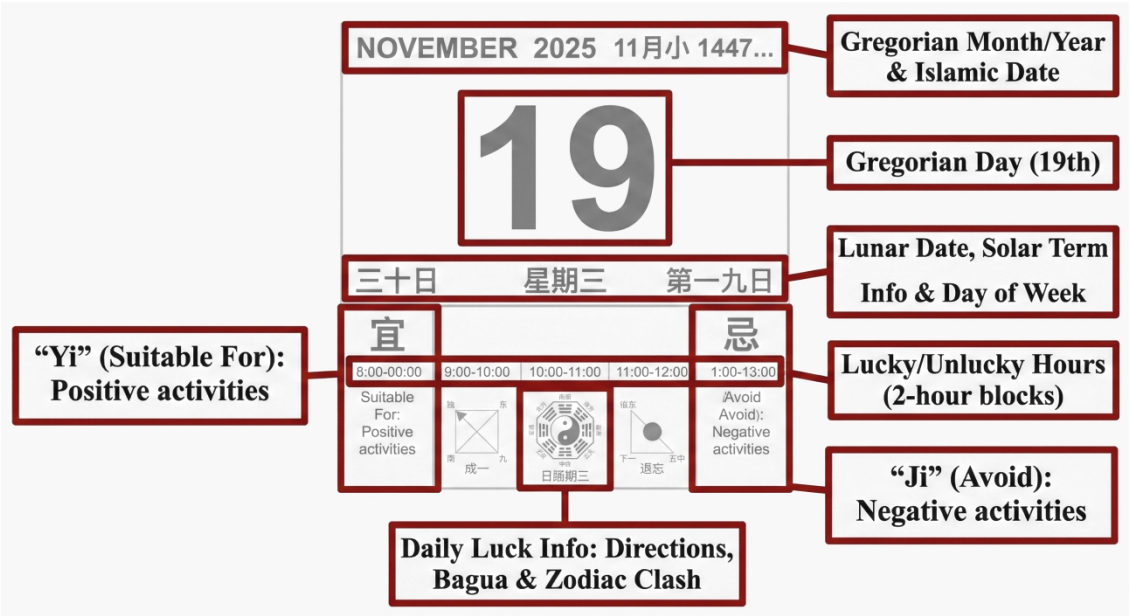

Figure 52. Schematic diagram of a Huangli.

Self drawn

Culturally and organizationally, this timing system should be understood not as a form of superstition, but as a ritualized temporal management tool through which uncertainty is mitigated and coordination is maintained between labor, material delivery, and ceremonial rhythm. Once site assessment and orientation have been completed, it is applied to key construction milestones, giving them a codified

[28] Zerixue: A general term referring to the traditional practice of synchronizing architectural work with cosmological and calendrical calculations to ensure harmony between time and space.
[29] Huangli: The traditional Chinese lunar almanac that prescribes auspicious dates, directions, and activities for daily and ceremonial use.

relationship between time, ritual, and workmanship. Although this timing system does not alter the structural or physical mechanics of construction, its role remains significant: it reinforces technical stability and social cohesion by bringing cosmic order and human labor into an integrated sequence.

- Groundbreaking and Foundation Ritual

On the day of the groundbreaking ceremony, a small altar is set up at the center of the site to announce the start of construction. Incense is offered to the Earth Deity[30] and the Foundation Spirit[31], with the rule that incense sticks must be placed once and not reinserted. The house owner or master builder then strikes the first hoe along the central axis, followed by marking the four corners or auspicious spots to symbolize the opening of the foundation. Immediately after, workers stretch the layout lines, clear the surface, and dig the foundation trench, creating a seamless transition between ritual and construction.

In many regions, a minor ritual called xiaji (setting the foundation, see Figure 53)[32] follows, during which grains, colored stones, or coins are buried in the four corners or under main columns[33] before backfilling and compacting the soil. Construction then proceeds with the foundation and pillar-setting stages. From this day onward, regular offerings to the Foundation Spirit—typically on the 2nd and 16th days of each lunar month—continue until the beam-raising, door installation, and final house entry, serving both to stabilize the workforce and coordinate labor and materials.

Common taboos include avoiding attendance by those whose zodiac signs conflict with the owner's, mourners, or women in confinement. The ceremony must not be delayed to ensure a smooth process, and workers are traditionally treated to a communal "opening banquet" afterward.

Although the Wufenglou consists of multiple building volumes arranged along a central axis, the ritual procedure remains the same. The groundbreaking usually follows the sequence of the central axis, ancestor hall, and four building corners, sometimes divided across different sections of the building. Subsequent construction proceeds through the standard steps of foundation, wall building, pillar setting, beam raising, door installation, and house entry—consistent with the procedures of traditional heyuan,

[30] Earth Deity (Tudigong): Traditional local earth god presiding over land and construction rituals.
[31] Foundation Spirit (Dijizhu): A domestic spirit believed to inhabit and protect the house's foundation. Different from Earth Deity.
[32] Xiaji: A ritual of placing symbolic objects under the foundation to bless stability and prosperity.
[33] The "main column (zhuzhu)" typically refers to the most important column located along the central axis of the ancestor hall. This pillar serves as the structural and symbolic core of the family dwelling, representing the central support of the entire household.

dacuo, and Tulou dwellings.

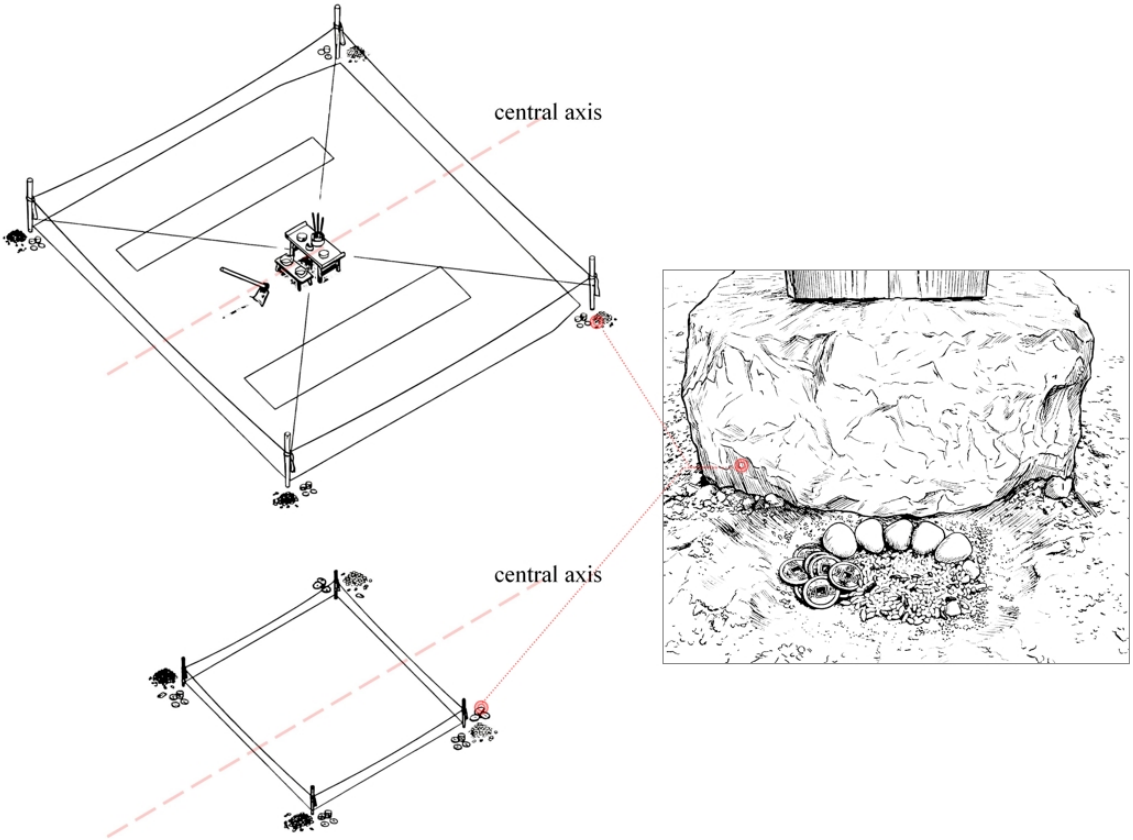

Figure 53. Conceptual figure of the foundation ritual

Self drawn

- Stone Footing (Dashijiao)

Immediately after the groundbreaking ritual, construction enters its first technical phase. The site is leveled and cleared of surface soil, roots, and debris; foundation trenches are then excavated along the pre-established central axis and layout lines.

The key procedure begins with placing large cobbles or rough stones on the bearing soil to form a permeable rubble base (rubble/stone strip footing). Smaller stones are inserted to fill gaps and compacted. At corners and door sides—zones of concentrated stress—block stones known as jinjiao[34] are added to enhance shear and impact resistance. To prevent capillary moisture, builders often construct a ring-shaped drainage trench or sloped runoff edge or clay mortar. This isolates the rammed-earth or composite walls above from surface water and backflow. Corner joints and wall bases are reinforced with dense stonework

[34] Jinjiao or Jinjiaoshi is a stone component placed at the corners of a building to support and stabilize the corner pillars. This stone piece helps reinforce the structural integrity of the building, ensuring that the corners remain sturdy and well-supported.

and lime joints to resist settlement and erosion. See Figure 54, 55.

Empirical studies of Wufenglou show that foundations commonly use locally sourced river stones, with continuous perimeter drainage around the wall base. The lower wall section is often raised 1–1.5 meters by a stone or rubble-mortar "foot wall," above which the rammed-earth body is constructed. This three-tier sequence, stone base → mortar leveling → rammed-earth wall, embodies the traditional system for moisture resistance, erosion control, and load transfer.

At this stage, site elevation, drainage, bearing limits, and wall alignment are permanently fixed, providing stable references for the next procedures: erecting columns and rammed-earth walling. Structurally, this phase transforms the geomantic and axial order established during fengshui orientation into a workable system of construction and moisture management.

Anonymous Hakka Wufenglou in Xinmin village

HAKKA WUFENGLOU STONE FOOTING (SHIJIAO)

MINNAN WUFENGLOU STONE FOOTING (SHIJIAO)

Nanguilou

Figure 54. Shijiao, stone base of a Wufenglou

Self taken in 2024

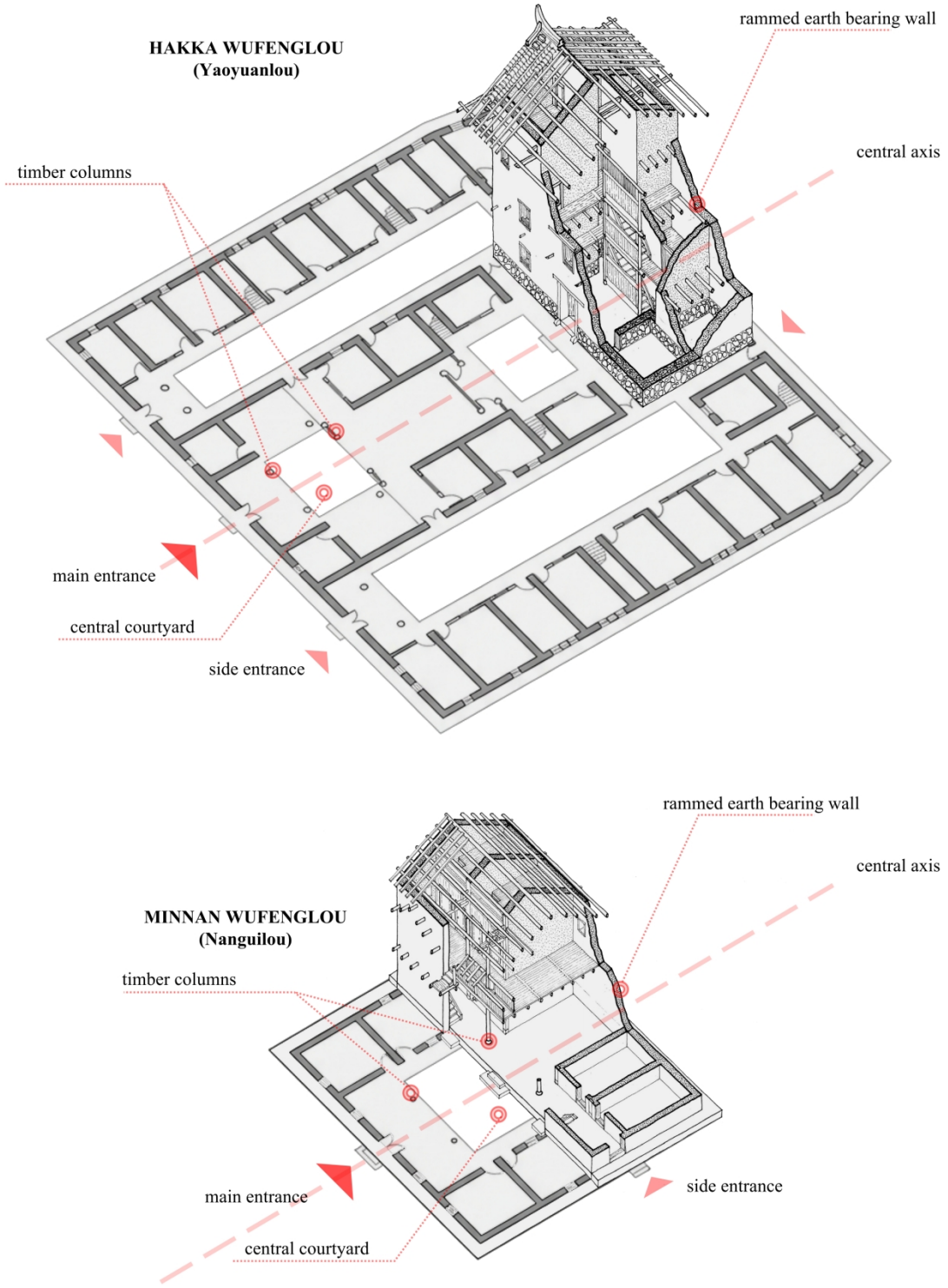

Figure 55. Dashijiao (Footing) of a Wufenglou

Self drawn

- Rammed-Earth Walling (Chongqiang)

After completing the stone footing and layout, construction proceeds to the main stage—rammed-earth walling. Two parallel timber panels (banmu)[35] are erected along the wall lines and tightly braced with cross bars and ropes. Between these panels, the prepared earth mixture is poured layer by layer and compacted with wooden tampers (chongzi)[36], working from the edges toward the center. See Figure 56, 57.

Each formwork panel, typically made of 5–7 cm thick fir planks about 40 cm high and 1.5–2 m long, produces one compacted layer. After every 40 cm course, the panels are lifted and re-secured, continuing upward until reaching one floor in height. Each layer must be "solid–flat–aligned"[37]: firmly compacted, leveled, and roughened to improve interlayer bonding. Split bamboo strips (zhujin, see Figure 58)[38] are inserted horizontally within each course as tensile ties, their ends interlocking with the next lift. In some cases, branches or gravel are added to enhance cohesion and drainage. This repetitive rhythm of ramming and lifting yields a continuous, stratified wall surface, preserving the construction's texture and serving as a guide for embedding door frames.

[35] Banmu: Wooden formwork panels used in ramming.
[36] Chongzi: Wooden tamper tool to ram the earth.
[37] Local language of construction
[38] Zhujin: Bamboo reinforcement strips inside the wall.

Figure 56. The Process of Walling (Chongqiang) of a Wufenglou

Self taken in 2024

Figure 57. The Rammed Earth Wall of a Wufenglou

Self taken in 2024

Figure 58. The “Zhujin” Element in the Wall of a Wufenglou

Self taken in 2024

Different from Tulou walls, which gradually taper upward—each story receding inward about 15 cm to reduce weight and accommodate expected wall shrinkage (a method known as rangqiang, literally “the wall letting space”[39])—Wufenglou maintains nearly uniform thickness from base to top. Its walls are reinforced by both transverse and longitudinal load-bearing partitions, ensuring even force transmission across its axial volumes.

To counter Fujian’s humid climate, Wufenglou employs moderate eave overhangs, sloped stone bases, and lime-jointed footings, forming a triple-layer defense against moisture. Because fresh rammed earth is vulnerable to rain, wall construction proceeds only in dry weather, pausing between lifts until each layer is completely dry. Once a wall section reaches full height, the upper beams (locally: Geshan, see Figure 59[40]) are embedded directly into the wall top, locking their ends within the compacted layer. After sufficient drying—often several months—the next level is raised above, following the same

[39] Rangqiang: Tapering technique used in Tulou to offset wall shrinkage and reduce weight. The technique is mainly used in Hakka and Minnan Tulou. Huang 2010; Huang 2020.
[40] Geshan: Beams supporting the floor of each span

process.

Figure 59. “Geshan” Beam Structure in Wufenglou

Self taken in 2024

In Wufenglou, floors are formed on the beams between opposing rammed-earth walls and covering them with wooden planks, sometimes finished with floor tiles. Door and window openings follow the "set–remove–install" principle[41]: reinforced with dense bamboo strips and timber lintels on both sides, with adobe bricks pre-set for temporary infill during ramming, and protected by small beams above to prevent lateral collapse (Figure 60). After drying, the temporary supports are removed and the openings are refined for installation.

Figure 60. Adobe bricks pre-set in the window frame for temporary infill

Self taken in 2025

[41] Local language of construction

- Pillar and Beam Setting (Xianjia)

When the overall height of the housing part is determined, and the rammed-earth walls of the entrance hall and ancestor hall have reached the designed elevation and fully dried, construction proceeds to the first major phase of timber work—framing and beam erection. Following the layout lines, the wall tops are leveled and notched to receive column bases and beam seats. At an auspicious moment, the first principal column is raised from the front entrance side; its foot is set firmly into the footing stone or wall bearing point, while its head is temporarily braced with diagonal supports and ropes. This stage uses traditional timber frameworks to organize the truss system— general pillars (zhu) and beams (liang), special beams such as studs (muleng)[42], lintels (guoliang)[43], and door or window frames—all joined with sunmao (mortise-and-tenon joinery)[44][45]—to collaborate structurally with the rammed-earth walls. The system provides horizontal restraint for the wall body, defines load transfer for the floor plane, and prepares the geometric alignment for the subsequent roof framing and ridge-beam setting. See Figure 61, 62.

In both general vernacular building practice and within the Wufenglou system, the rhythm of "rammed-earth wall → timber framing → roof assembly" remains consistent. Timber elements are often pre-fabricated for quick on-site assembly using joinery and temporary bracing, giving the structure both seismic flexibility and reversibility.

Organizationally, Wufenglou construction follows the principle where the ritual axis are put first, structural rhythm steady:

For the ritual core—entrance hall and ancestor hall—construction alternates between completing each level of rammed-earth wall and immediately performing truss structure for that same level, ensuring that the axial section gains rigidity and stability synchronously. While for the housing part, progress depends on season and drying periods: the walls and beams rise together level by level, while final roof work concentrates at the top, optimizing scaffolding, material turnover, and vertical transport.

Both strategies serve the same structural logic:

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[42] Muleng: A horizontal wooden element that directly braces and stabilizes the walls of a house. In other words, the mu leng supports the wall structure itself.

[43] Guoliang: A beam that spans between vertical posts or columns, or over openings like doors and windows. It specifically supports loads from above and transfers that load to the vertical supports.

[44] Sunmao: It refers to the traditional Chinese mortise-and-tenon system, a joinery technique that connects wooden components without nails or metal fasteners, relying on precisely carved interlocking parts for both strength and flexibility.

[45] UNESCO. 2009.

(1) Preventing shear expansion or cracking from “wet-on-wet”[46] ramming by ensuring each wall tier dries before timber installation;

(2) Reinforcing openings and wide spans by densifying wood studs, lintels, and bamboo strips embedded within the wall to control deformation and enhance seismic performance;

(3) After each level’s timber framework is stabilized, the process continues to roof framing ritual, completing the load path from wall compression through floor diffusion to roof closure.

[46] Local language of construction

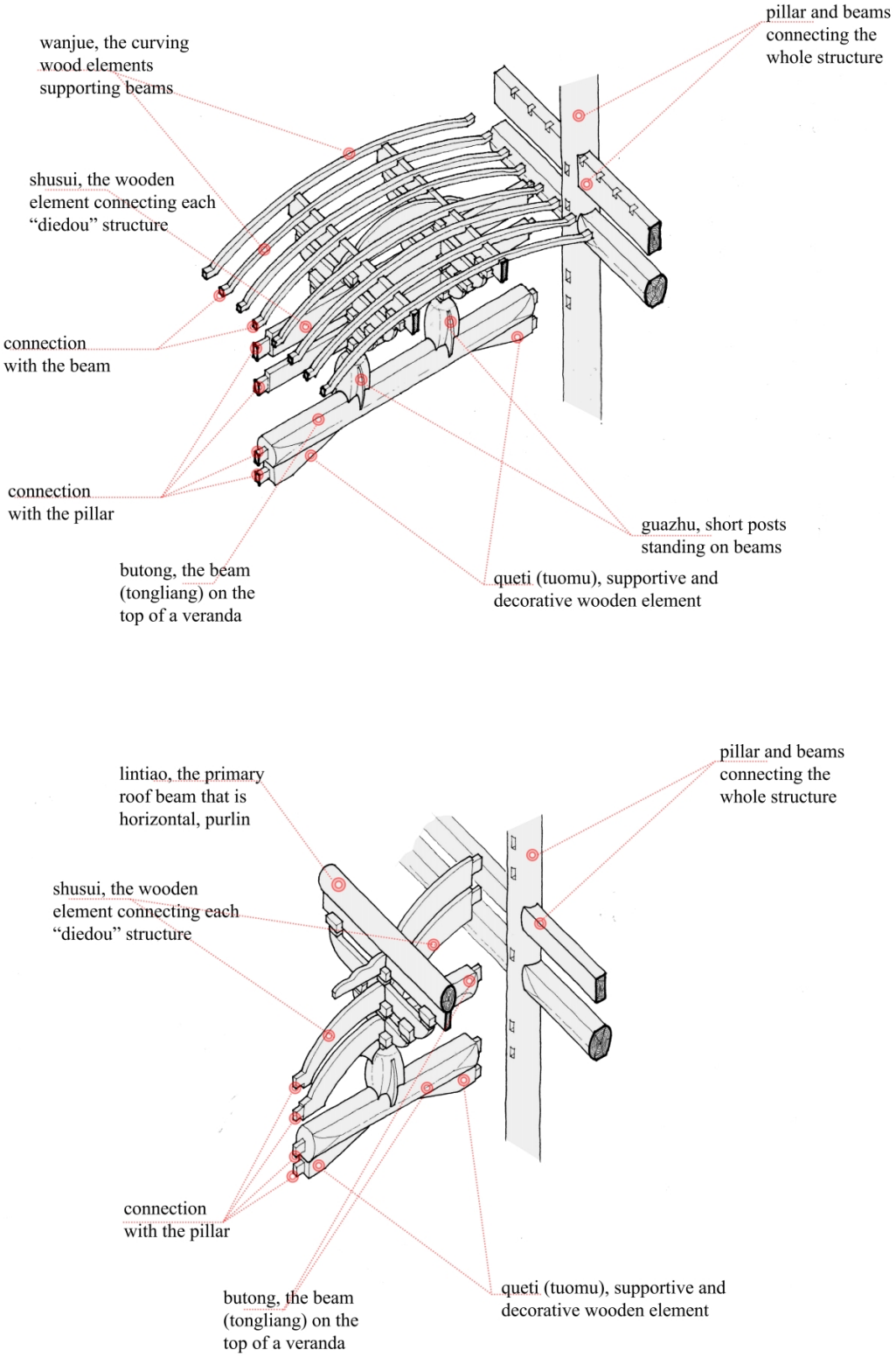

Figure 61. Timber Structure in the Construction Process. Two examples above the veranda (Xuanlang)

Self drawn

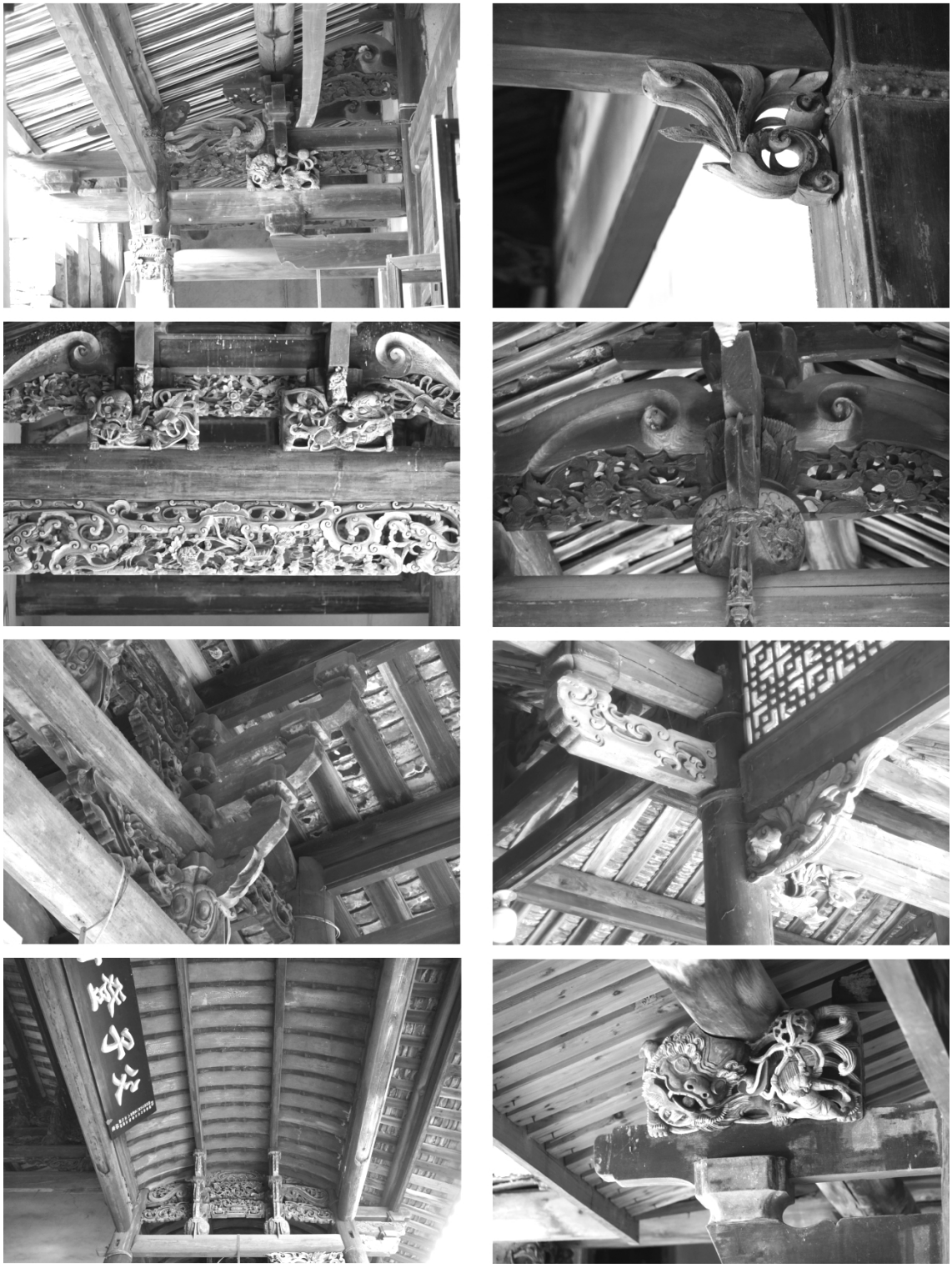

Figure 62. Different Timber Joint Structures in Wufenglou

Self taken in 2024, 2025

- Roof Assembly (Heji)

The construction process advances to roofing after the rammed-earth walls and timber framework of each volume achieve their maximum height and complete drying process. The roofing system at Wufenglou features a traditional double-sloped overhanging design known as xuanshan roof[47] which extends both eaves and gable ends beyond the building perimeter. The roof framework takes shape through the placement of purlins which guide the rafters to create the roof slope and determine the ridge line. At an auspicious moment, the main ridge beam is set in place (Shangliang, the ridge-raising ceremony[48]). Roofing boards (or eave boards) are then laid, followed by tiles installed row by row from the eaves upward until the ridge closure is completed and the roof is fully weather-tight (Chushui[49]). With the sequence Shangliang — tiling — ridge closure completed, the primary structure is finished. The project then proceeds to eave finishing, ridge ornaments, roof inspection, and interior/exterior finishing works, followed by the Closing Ritual, and only afterward the final temporal milestones of installing the main gate, placing ancestral tablets, and moving-in.[50]

Figures 63, 64, and 65 respectively show the gable structures of Hakka and Minnan Wufenglou, as well as how the wooden elements at the roof corners are handled. Figure 66 shows the roof assembly process (heji) as it is nearing completion in the construction of a Wufenglou.

[47] Xuanshan: A traditional Chinese double-sloped roof with overhanging eaves on all sides. See Chapter I.
[48] Shangliang: Ceremonial placement of the main ridge beam, marking the structural completion of the roof.
[49] Chushui: Traditional construction term meaning the moment when the roof becomes fully watertight and capable of shedding rainwater.
[50] Cao 2006.; Lin 1998. pp. 17-21, 28-31.

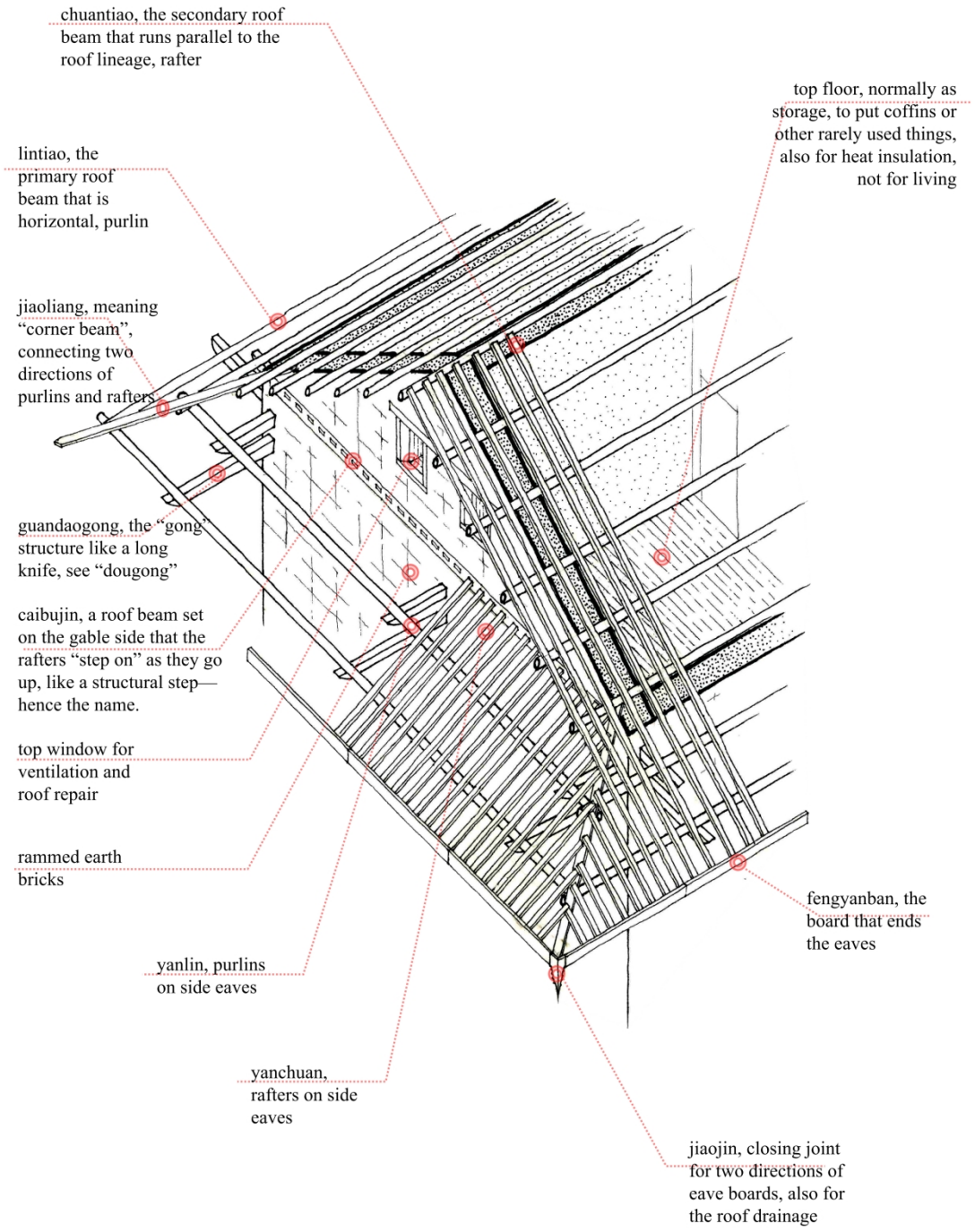

Figure 63. Hakka Wufenglou gable structure.

Self drawn

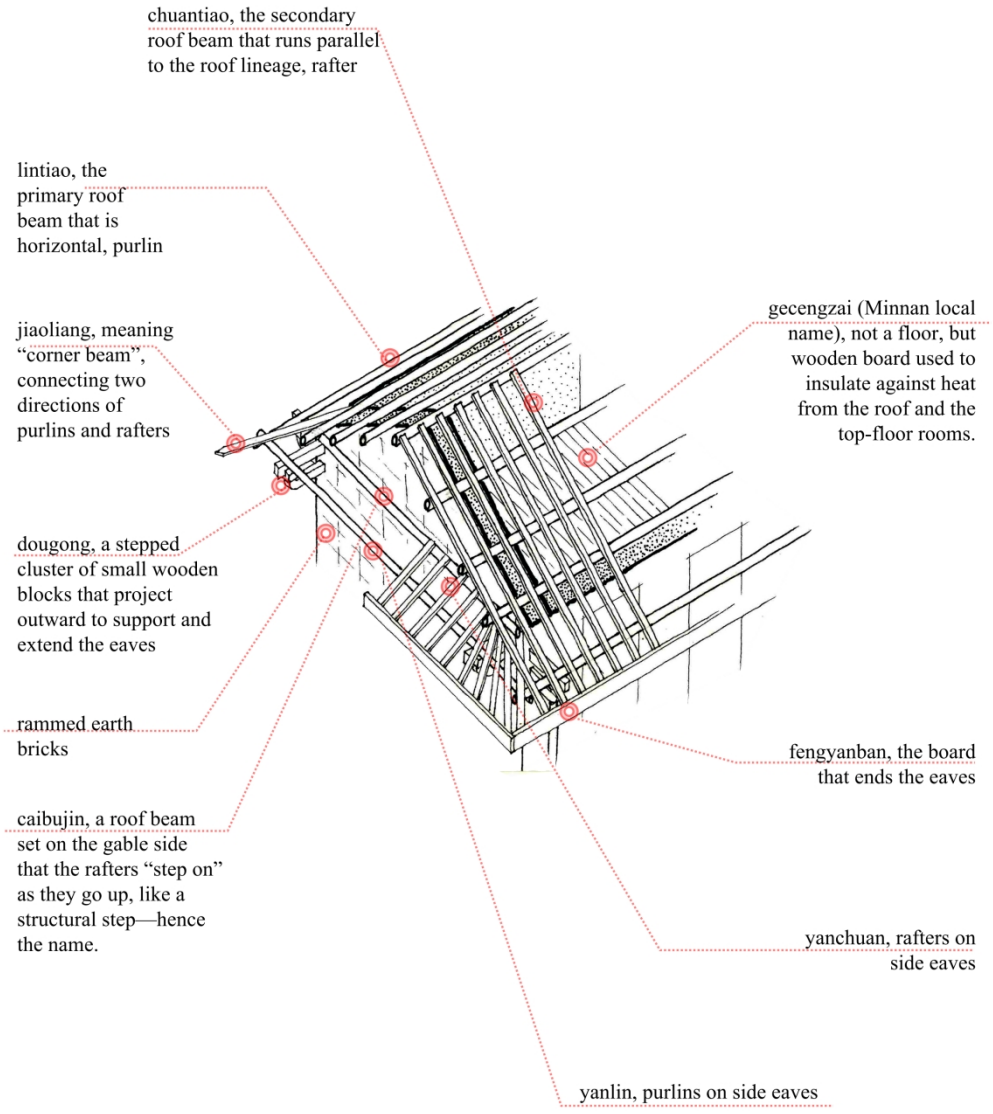

Figure 64. Minnan Wufenglou gable structure.

Self drawn

Anonymous Hakka Wufenglou in Xinmin village

HAKKA WUFENGLOU CORNER JOINT STRUCTURE OF THE ROOF

MINNAN WUFENGLOU CORNER JOINT STRUCTURE OF THE ROOF

Anonymous Minnan Wufenglou in Hulin village

Figure 65. Corner Joint Structure of Wufenglou's Roof

Self taken in 2024

Figure 66. The process of the roof assembly, a Minnan Wufenglou under construction in Dadi Village

Self taken in 2024

- Closing Ritual (Xietu)

The Xietu ritual known as “giving thanks to the earth” becomes essential after the building reaches completion and roof closure to show appreciation to both the earth deity and all construction workers. The roof completion ceremony occurs either at the time of roof completion or on a suitable date that follows. The homeowner sets up an altar table to welcome a Daoist priest[51] who will lead the religious ceremony. The priest performs a ritual of thanks to the earth deity for safeguarding the construction site while asking for permanent foundation stability through his offerings and incense and sacred prayers.

The homeowner shows appreciation to all workers involved in the construction through religious rituals and material rewards which honor both the earth deity and the people who worked on the project. The Xietu ritual marks the official readiness of a new house for public celebration because residents must avoid all festivities until this ritual is finished. For this reason, Xietu is frequently performed immediately before or together with the moving-in ceremony.

With this, the entire Wufenglou is considered fully constructed. Figures 67 and 68 respectively show the completed Hakka and Minnan Wufenglou, including the ground and top floor plans, as well as various

[51] Daoist priest (Daoshi): Refers to an ordained ritual specialist within the Daoist religious tradition. A Daoshi performs liturgical ceremonies such as purification rites, house blessing, foundation rituals, and memorial services. Their authority comes from initiation into a Daoist lineage and the transmission of ritual texts, talismans, and liturgical protocols.

sectional views.

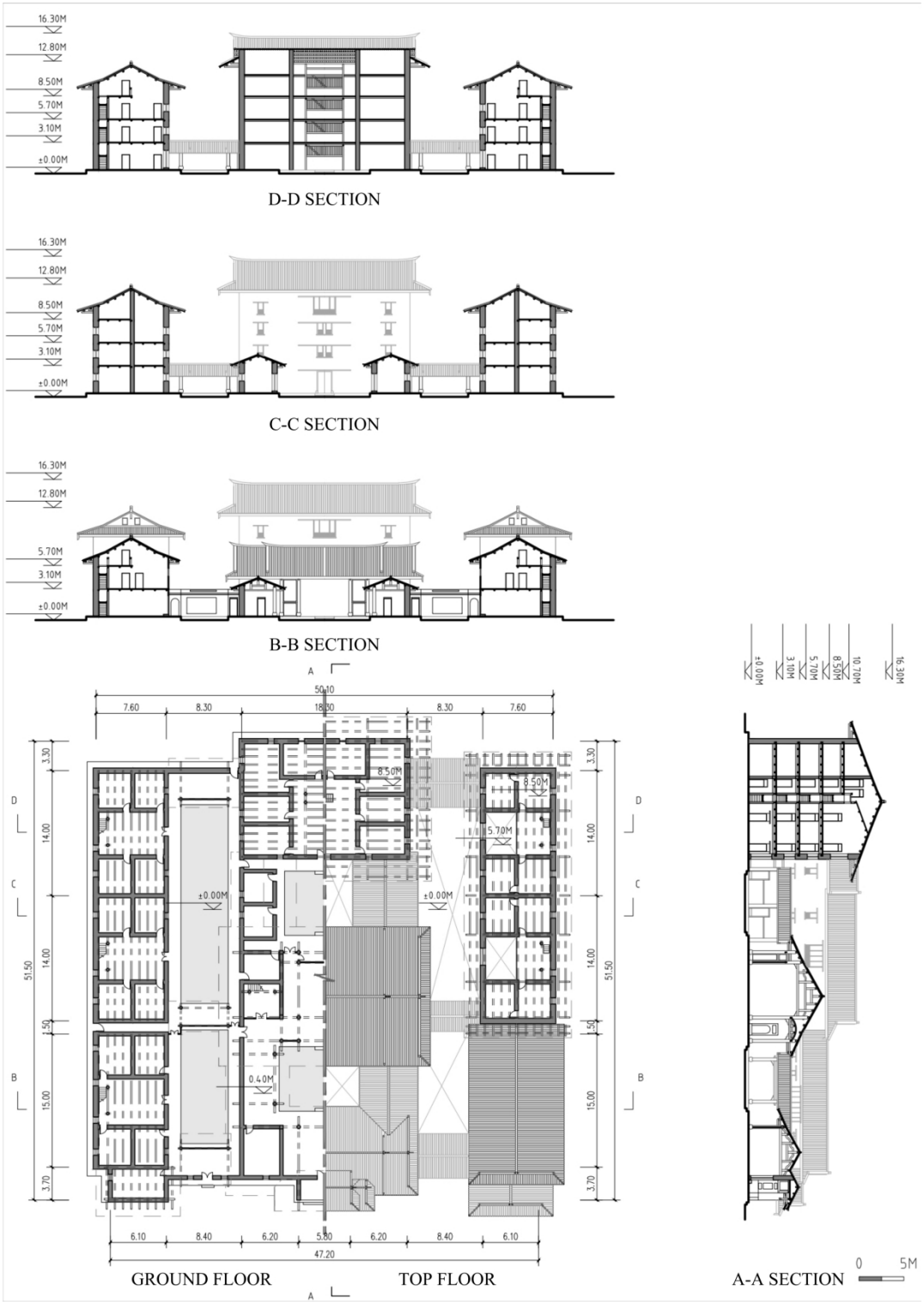

Figure 67. Structural Mapping of a Hakka Wufenglou, Yulonglou

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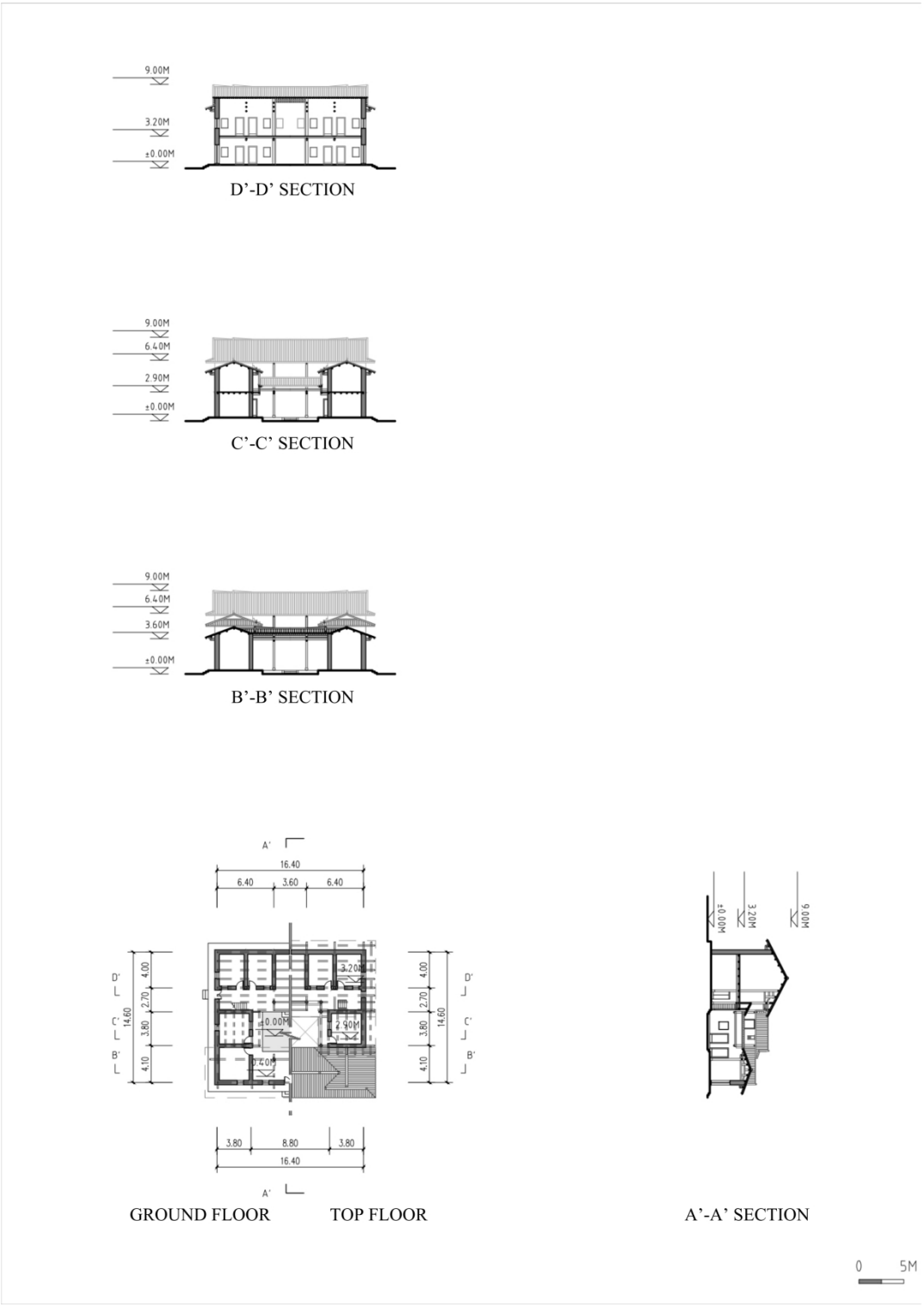

Figure 68. Structural Mapping of a Minnan Wufenglou, Nanguilou

Self drawn

- After Completion: Entering and Assigning Rooms

After completion of construction and decoration, a ceremonial move-in is performed, commonly called “Jinxincuo”in Minnan region or “Ruwu”, Hakka[52]. Once the main structure is finished, the door and the ancestral/household deity altar are installed first. At an auspicious time, the front door is mounted, door guardians and couplets are applied, signifying protection and good fortune. The head of the household opens all doors and lights throughout the house — a gesture known as “opening the house to bring light”

The Move-in ceremony begins when deities and ancestors enter the niches before the family members. The incense burner and ancestral tablets receive new red cloth which people use to transport them into the ancestor hall for altar installation. Offerings are made sequentially to Heaven, the local earth deity, and the spirit of the foundation. Depending on regional custom, this may include a gate-god (Menshen)[53] offering or purification at the four corners (Sijiao Jingzhai)[54].

Every person who enters the house must bring something valuable, traditionally referred to as "Kaimen qibao (7 precious items for opening doors)[55]". The new household energy begins when people enter with lit lights and incense and firecrackers explode. The family must use a temporary incense burner until they find an appropriate day for the altar installation and move-in ceremony.

After the entry ritual, key domestic actions follow:

- Bed placement at a chosen auspicious hour (often symbolically “set in place by drawing the contour but not finalized” until the correct moment).

- Kitchen activation, by lighting the stove and cooking a sweet food (sweet soup or tea) to signify harmony.

- Crossing a charcoal brazier to “drive away the old and welcome the new,” and sharing sweets with neighbors and craftsmen.

Room allocation is performed on the same day or on a later chosen date. In Wufenglou, allocation follows the ritual hierarchy of the central axis:

- The ancestor hall remains the ritual and decision-making core.

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[52] Jinxincuo/Ruwu: Jin and Ru, are Chinese verbs meaning “to enter”, and the word “house” are called Cuo in Minnan, Wu in Hakka in their local language systems.

[53] Protective deity images posted on both sides of a door to ward off evil spirits and mark the entrance as ritually guarded.

[54] Sijiao Jingzhai: A short cleansing ritual that presents offerings or incense at the dwelling’s four corners (and sometimes centre) to appease local spirits and remove inauspicious influences.

[55] Kaimen Qibao: A folkloric set of seven everyday auspicious items (e.g., fuel, rice, oil, salt, condiments, vinegar, tea) carried across the threshold at move-in to symbolize sustenance and household prosperity.

- Elders and the household head occupy the principal rooms (on/by the axis, facing light and ventilation).

- Descendants and collateral branches are assigned to side rooms in order of seniority.

- Service functions (kitchen, storerooms) are placed on both sides.

To balance ritual hierarchy and fairness, the usable rooms are defined according to the spatial order, and then room selection within each generation is determined by drawing lots. The process preserves the circulation routes and ritual axis while embedding family hierarchy in spatial occupation.

With this final ceremony, the full cycle of Wufenglou — from siting and foundation ritual to roof completion and ritual occupancy — is formally completed.

4. Key Construction Systems

4.1. Drainage and Water-Proof System

- Roof Drainage

Wufenglou, like Minnan and Hakka vernacular dwellings, generally adopts a double-sloped curved ridge with a relatively steep roof pitch: the roof curvature, formed through jukai or juzhe (the slope change of the roof, see Figure 69)[56], descends from steep at the crest to gentler at the eaves, enabling rapid drainage while reducing splash-back and eave return flow (supported by the synergy between curved slope and the water-cut drip edge system). The four-sided eaves of each building volume also allow continuous circulation around the building during rainfall.[57]

[56] Jukai/Juzhe are Minnan carpentry terms corresponding to jujia and jujhe: techniques for setting the roof pitch and its curvature by "raising the frame" to a prescribed height and then "folding/adjusting" the slope in steps. By controlling the height differences between successive purlin lines, builders generate a convex roof profile that drains quickly in humid monsoon climates while avoiding excessive eave splash-back. This structural form is recorded in the Yingzao Fashi (Treatise on Architectural Methods or State Building Standards), compiled by Li Jie in 1103 during the Northern Song dynasty. Accessed September 11, 2023. https://ctext.org/wiki.pl?if=gb&remap=gb&res=716382. Hereafter abbreviated as Li 1103.

[57] Cao 2006.; Lin 1998. pp. 17-18, 28-29.

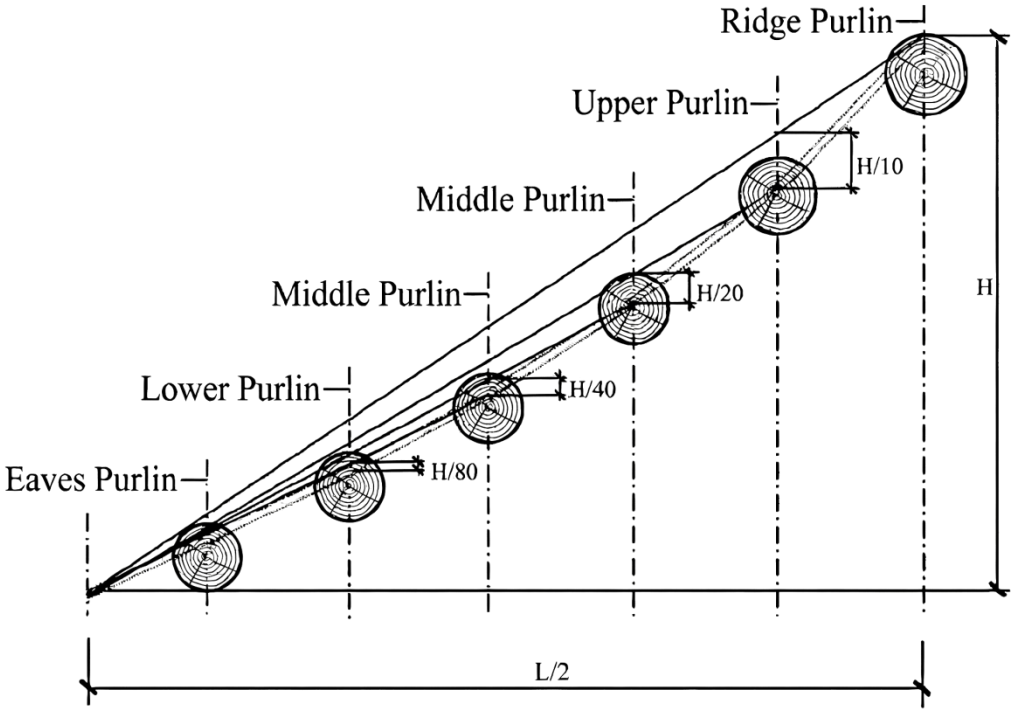


Figure 69. "Juzhe" Structure Conceptional Scheme

Self drawn

Tiles and eave drainage are the most refined components of the roof system. Roofs are typically laid with curved pan tiles or flat tiles, relying on pitch and tile interlocking for runoff. At the eave edge, a combined "water-collecting and water-cutting threshold" is formed by two water guiding elements: wadang[58], and dishui (Figure 70)[59]: wadang seals and stabilizes the edge to guide water to the eaves, while dishui, with its downward lip, cuts capillary backflow to prevent splash and damp penetration into the wall. Together, wadang and dishui form a continuous logic of water collection, diversion, cutoff, and discharge, embodying both environmental rationality and the southern aesthetic principle of hydrological expression through form.

[58] Wadang are the eave-end tiles that cap and stabilize the outermost tile course; dishui (dishuiwa) are drip-edge tiles placed immediately below/at the eave to cut water off the roof surface. Together they form a "collect–guide–cut" edge: wadang gathers and directs runoff to the eaves, while dishui breaks capillary backflow so water drips clear of the wall.

[59] Ibid.

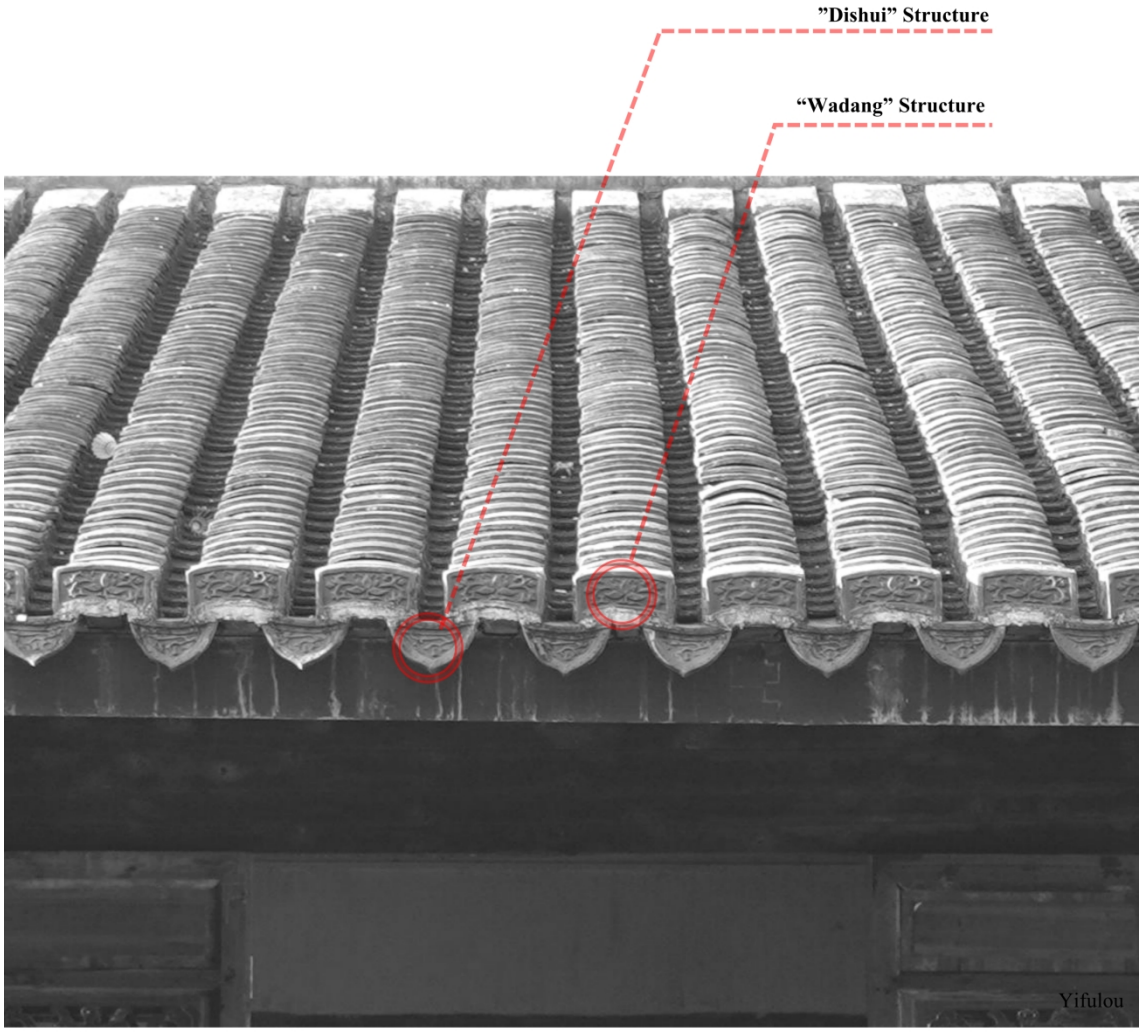


Figure 70. "Wadang" and "Dishui" Structure. Example: Yulonglou

Self taken in 2024

To enhance wind–rain resistance, Minnan buildings frequently sheath rammed-earth walls with hung flat tiles[60] or fish-scale tiles[61], locked with lime mortar, locally known as Chuanwashan[62]: flat tiles produce a "gray grid with white joints" appearance, while fish-scale tiles resemble layered armor — serving both waterproof protection and regional stylistic identity. This technique is common in Minnan and Putian areas of Fujian. See Figure 71.[63]

[60] Fish-scale tiles are small overlapping tiles laid in dense staggered courses resembling scales; hung flat tiles are thin rectangular flats fixed to the wall surface in rows. Both are used in Chuanwashan as waterproof cladding; the former emphasizes layered texture and impact resistance, while the latter creates a regular gridded skin.
[61] Ibid.
[62] Chuanwashan refers to a Minnan wall-sheathing method in which thin flat tiles are hung on the exterior wall like a "tile coat," usually bedded in lime mortar. It protects rammed-earth or brick walls from wind-driven rain and salinity, and produces the characteristic gray tile surface with white lime joints.
[63] Lin 1998. p. 28.; Zheng 2018. p. 89.

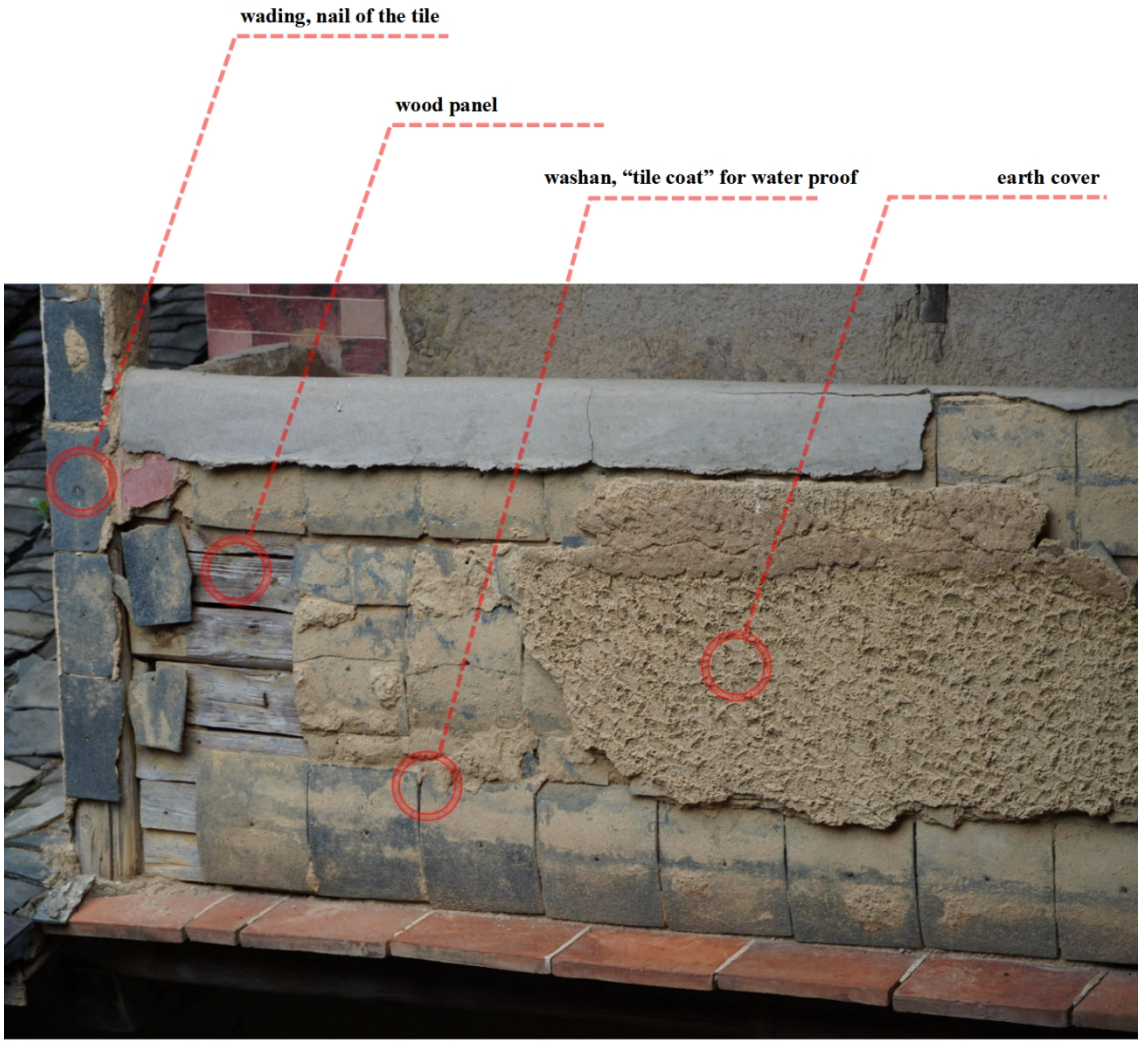


Figure 71. Chuanwashan in Minnan Wufenglou. Example: Yifulou

Self taken in 2024

- Interior Waterproofing

Fangjianqiang (Splash-guard wall, see Figure 72)[64]: a low raised ridge or short wall constructed at the interior zone exposed between the upper and lower eaves, where the overhang of the upper eave does not fully cover. Its function is to intercept rainwater or mud splashes falling from the roof or rebounding from the ground, preventing direct impact on the wall surface or intrusion into the interior. This element can be observed on both sides of the ancestor hall roof in Hakka and Minnan Wufenglou, where a Fangjianqiang is installed and often finished with lime-plaster relief and polychrome ornamentation. Through this device, dripping water or wind-driven mist does not cling to or seep along the wall surface, thereby protecting the interior wall of the ancestor hall from dampness.

[64] Fangjianqiang is a low splash-guard wall or raised ridge built at the exposed band between upper and lower eaves where rain can strike the wall directly. Its purpose is to intercept drip and mud splash, keeping the main wall face dry; in Fujian earthen dwellings it is often lime-plastered and visually integrated with ancestral-hall gables.

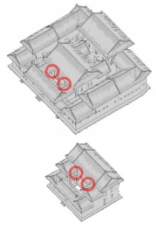
Yonghaolou

Yaoyuanlou

HAKKA WUFENGLOU SPLASH-GUARD WALL (FANGJIANQIANG)

MINNAN WUFENGLOU SPLASH-GUARD WALL (FANGJIANQIANG)

Nanguilou



Liuzhaowu

Figure 72. “Fangjianqiang” structure in Wufenglou.

Self taken in 2024

Figure 73 presents that inside Wufenglou, particularly at the corners of walls on the second floor and above, a funnel-shaped drainage design is often used. This funnel shape channels wastewater directly to the outside, preventing it from flowing into the courtyard and reducing the hassle of carrying water downstairs for disposal.

Figure 73. Interior Funnel Shaped Waste Water Drainage. Example: Nanguilou

Self taken in 2024

Gereban (Thermal/insulation buffer board, see Figure 74)[65]: this refers to a stratified layer installed between the roof structure and the interior space (e.g., rammed earth bedding layer, raised cavity layer, timber board layer, or insulating layer). Its original function is thermal regulation, reducing solar heat transfer and maintaining a cooler interior in summer and warmth in winter, yet it also indirectly impedes moisture and humid air from penetrating into the interior. In Wufenglou, especially within the residential housing part, this layer is placed between the roof beams and the top floor, to reduce heat conduction and moisture infiltration. The stratified or suspended layer also buffers thermal and moisture shocks induced by rainfall, and by forming an air gap or insulating zone, decreases the probability of roof water or

[65] Gereban (locally called gecengzai in Minnan) denotes an insulating buffer layer inserted between roof structure and interior ceiling. It may be formed as a compacted earth bedding, a ventilated air cavity, or a timber-board/raised deck layer; the most common vernacular solution is a double roof skin with an air gap, which moderates summer heat and reduces rain seepage.

seepage entering interior spaces.

Figure 74. Gecengzai in Minnan Wufenglou.

Self taken in 2025

- Courtyard Drainage System

As discussed in Chapter II, the movement of Qi (flow of vital energy) structures spatial order and informs hydraulic sequencing; this principle is equally expressed in courtyard drainage logic. In traditional Chinese architecture, water is treated as symbolic wealth, and rainwater or waste water is therefore often collected momentarily before release. In Wufenglou, the courtyard functions simultaneously as a light well, ventilation core, and hydraulic collector. The concept of Sishuiguitang (four-sloped roofs channeling water into the central courtyard)[66] governs the initial stage of collection.

Drainage then follows the principle of Fangshui[67]. For this reason, channels are organized in segmented and curved routes, and outlets rarely discharge linearly.

Courtyard drainage commonly employs a three-node concealed conduit sequence: Hankong[68], Hanjing[69], and Hankou[70]. The intake is often fitted with a Shuigoudu[71]. See Figure 75.

Interior runoff and domestic waste water are first collected through hidden channels beneath interior halls and corridors, directed into the courtyard system, and discharged outward through the Hankong → Hanjing → Hankou sequence. In some documented Hakka cases, turtles were placed in channels to graze on algae and assist in keeping channels clear, a local environmental practice rather than a universal standard.

To ensure drainage efficiency and protect interior dryness, floor and courtyard surfaces are graded with slight inclines, following a “higher inside, lower outside” micro-topography. Splash aprons or pebble buffer strips are often laid at threshold transitions, and courtyard platforms may be subtly elevated, reducing splash-back, capillary rise, ponding, and moisture return to wall bases.

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[66] Sishuiguitang describes a courtyard drainage system, in which roof slopes on four sides channel rainwater inward to the central patio/tianjing before it is released through concealed drains. The system combines climatic logic (collecting and slowing runoff) with the symbolic idea of “water/wealth returning to the hall.”

[67] Fangshui in Fujian vernacular practice refers to the conceived floor-level drainage routing diagram: water paths are designed to bend and segment rather than run straight, reducing velocity and symbolic “wealth outflow,” and coordinating with courtyard outlets.

[68] Hankong is the surface inlet opening that admits water from the courtyard pavement into a hidden conduit; hanjing is a small intermediate sump or settling pit that slows flow and traps debris; hankou is the outlet where the concealed drain reconnects to external ditches. This three-node sequence is typical in Fujian courtyard houses for keeping the patio dry while preventing blockage.

[69] Ibid.

[70] Ibid.

[71] Shuigoudu is a removable stone plug/cover fitted at the courtyard inlet (often at hankong) to seal the drain in dry periods and open it during storms. It prevents odor, pests, or reverse seepage while allowing controlled release of collected rainwater.

“Hankong” of a Wufenglou (Yulonglou)

“Hanjing” of a Wufenglou (Yulonglou)

“Hankou” of a Wufenglou (Yulonglou)

Figure 75. “Hankong”, “Hanjing”, “Hankou”, in Wufenglou’s Courtyard Drainage System

Self taken in 2024

4.2. Load-Bearing System

- Rammed-Earth Walls with Timber Beam Structure

The structural framework of Wufenglou is fundamentally a rammed-earth load-bearing system, in which both the exterior envelope and the internal partition walls of the housing units are constructed as fully load-bearing rammed-earth walls, while timber beams act only as secondary spanning members that distribute loads between wall bodies (Figure 76); only in the entrance hall and the ancestral hall are internal timber columns introduced for localized roof and spatial support. In the residential wings, the rammed-earth walls carry most of the compressive load, while timber beams help distribute these forces and contribute to overall stability.[72] The exterior and interior walls lie perpendicular to each other and maintain the same thickness so that they function as wall piers resisting both axial compression and shear forces. In other words, the residential wings behave as a wall-based structural body, while timber members mainly mediate floor and roof transfer into the rammed-earth mass. The wall thickness in Minnan regions reaches between 350–450 mm, while Hakka districts use walls that are 450–650 mm thick; in both cases, the thickness remains below one meter, unlike the thicker Tulou wall system.

Inside the building, longitudinal and transverse load-bearing walls form a short-span force network. Individual housing units (housing units) typically adopt a 2–4 m span per bay. Floor loads are discretized by short timber beams and transferred directly into wall-embedded bearing pockets, which provide reliable reaction surfaces and mechanical interlock. This embedded interface ensures compression resistance, slippage control, and uplift restraint between beam ends and wall bodies, guaranteeing continuous and stable load transfer from floors and roofs into the rammed-earth structure, and further down to the stone footing and foundation. (Figure 77)

Door and window openings represent critical zones for local stress redistribution. Hidden bamboo splints and timber studs (muleng) around openings work together with lintels to limit shear deformation and lateral displacement. At building corners, intersecting bamboo reinforcements are often embedded to enhance interlocking and crack resistance. Notably, Wufenglou achieves the function of ring beams by using the continuous interconnection of joists, floor decking, beams, and secondary tie members. These elements collectively provide horizontal constraint and help to diffuse loads across the walls, effectively fulfilling the role that ring beams would normally play. See Figure 78.

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[72] Wall piers in Wufenglou are thickened wall segments or perpendicular wall stubs acting like short masonry columns within a rammed-earth system. They stabilize long walls, resist in-plane shear, and provide bearing pockets for timber beams. These thick walls arrange Wufenglou's housing spaces.

Visible horizontal stratification lines correspond to layer-by-layer ramming sequences, while holes left from scaffolding during construction reveal the original working platforms required for formwork progression. Although process-derived, these traces visually express the material layering and structural logic, underscoring the system's governing principle: rammed-earth walls carry primary compression, wall piers resist shear, and beam ends transfer loads directly into the wall mass.

Along the ceremonial axial core (entrance hall–ancestral hall–flanking corridors), the system operates as a coupled structure: perimeter wall mass delivers stiffness and shear resistance, while short-span timber beams provide controlled load distribution and restraint, together ensuring the stability and proportional order of the ritual spatial sequence.

Figure 76. Fully load-bearing rammed-earth walls of a Wufenglou’s housing units.

Example: An abandoned Wufenglou portion in Xinmin village

Self taken in 2025

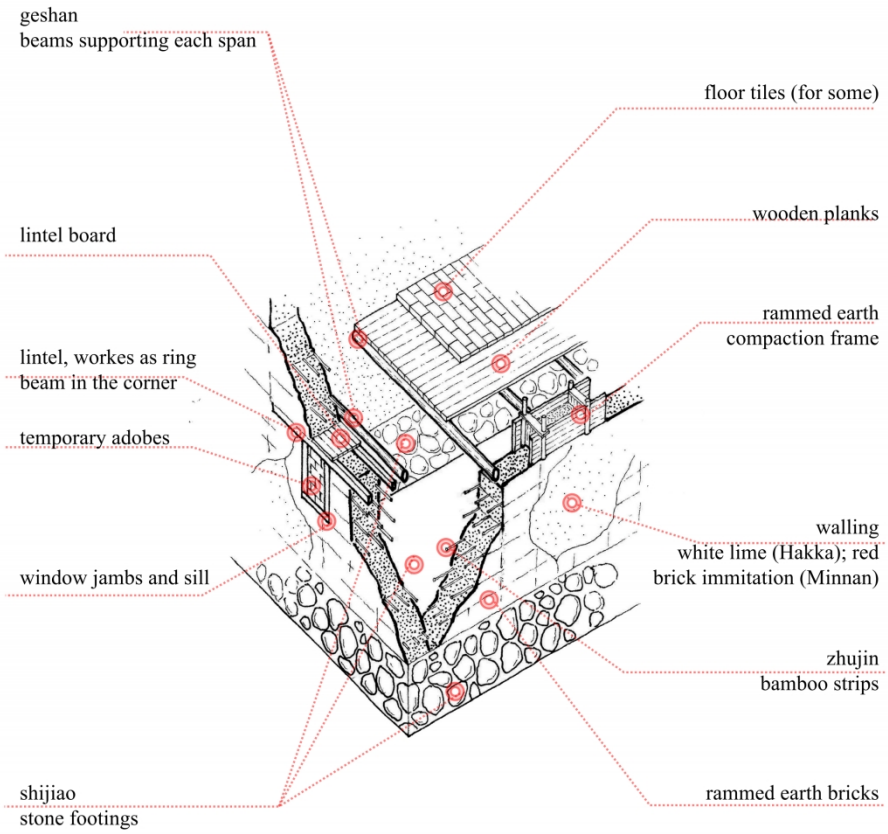

Figure 77. Rammed earth wall load bearing system of a Wufenglou

Self drawn

Figure 78. Wufenglou's Wooden Joints that Achieve the Function of a "Ring Beam"

Self taken in 2024

- Timber Post and Beam Structure

The rammed-earth load-bearing envelope runs parallel to a timber post-and-beam system which extends through the ritual spaces of the building including the entrance hall and ancestral hall and front Xuanlang (veranda, see Figure 79)[73]. From the bottom, the Zhuchu (stone base)[74] supports the timber posts, which provide expanded bearing areas while controlling moisture transfer and enabling future component replacement and disassembly for conservation-friendly restoration work. Posts carry horizontal and vertical beams, forming a two-directional load distribution network along both bay width and building depth. Floor loads are transferred through secondary joists to primary beams, where the integrated floor boards provide effective horizontal restraint, working in tandem with the rammed-earth walls to resist lateral forces.[75]

At the upper level, structurally, Liang (spanning the bay along the building's long side) and Fang (perpendicular to Liang, spanning building depth and forming a closed ring-beam-like loop) act as principal load-bearing members, together with Lin (primary roof beam) and Chuan (secondary roof beam). wooden elements, when present, are generally small-scale transitional or ornamental components rather than primary load bearers, yet at specific locations—such as supporting the lowest overhanging eaves purlin—they provide auxiliary structural assistance to control deflection and stress concentration. In the Diedou system (Explained in detail in the following section), wooden units contribute localized vertical support within the roof framework.

Collectively, the timber system establishes a clear and short load path in the vertical direction, while providing lateral constraint and energy-dissipating capacity through its articulated connections to floor assemblies and surrounding walls. This synergy allows Wufenglou to maintain structural stability in large span spaces without interior rammed-earth bearing walls, such as the entrance and ancestral halls, achieving an integrated load path from roof and floor assemblies to wall foundations while preserving tectonic legibility and repairability.

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[73] Xuanlang denotes a covered front veranda or axial corridor bay, usually timber-framed, that mediates entry, reception, and climatic buffering between exterior forecourt and interior halls.
[74] Zhuchu are stone column bases set under timber posts. They spread load, isolate ground moisture, and allow replacement of decayed posts without disturbing the plinth.
[75] Cao 2015.; Liang 2006. pp. 14-16, 20-23.

Figure 79. Timber Post and Beam Structure in the Entrance Hall and the Veranda.

Example: Rulindi (Hakka Wufenglou)

Self taken in 2024

4.3. Truss and Roof System

- Truss Types

As a vernacular building type shared by both Minnan and Hakka traditions, Wufenglou shows, in its roof systems, a clear condition of structural hybridity together with a strong capacity for localized adaptation. This is especially visible in the principal ceremonial spaces, including the entrance hall, ancestor hall, and their adjoining corridors, where the roof frame commonly employs a mixed Tailiangshi – Chuandoushi framework rather than relying on a single structural mode. In this arrangement, the canonical timber tectonic grammar of traditional Chinese architecture is not simply repeated in abstract form, but is worked into the actual constructional language of Wufenglou. At the same time, within local carpentry lineages, this hybridization continued to develop into regionally specific variants such as Chaliangshi and Diedoushi, which mediated between ancestral structural logics and localized craftsmanship. In contrast, the roof construction of fully rammed-earth housing units adopts a Gelinshi (purlin-on-wall system), in which the roof purlins are laid directly atop load-bearing earthen walls, minimizing reliance on internal timber frames.

In this study, following the Chinese traditional roof-framing logic, we define the purlin (Lintiao)[76] as the primary roof beam running perpendicular to the load-bearing gable wall, while the rafter (Chuantiao)[77] is a secondary member laid along the roof pitch to support the roofing layer. Note that in some constructional literature, the hierarchy is typically the reverse—rafters are treated as the primary sloped members and purlins as secondary horizontal members—so we adopt the Chinese convention throughout to avoid confusion. That is, purlin for the load-bearing system, working as the primary roof beam laid on the rammed earth wall or pillars; rafter for locating and bearing the tiles, working as the secondary roof beam laid on the purlin.

(1) Tailiangshi and Chuandoushi: The Two Most Fundamental Roof-Truss Forms in Chinese Traditional Architecture

Two principal roof-truss families underpin traditional Chinese timber construction: Tailiangshi and Chuandoushi. Tailiangshi is characterized by successive beam stacks and short columns (often expressed

[76] Purlin: Merriam-Webster Dictionary defines “purlin” as “a horizontal member in a roof.” Merriam-Webster.com Dictionary. Accessed May 18, 2024. https://www.merriam-webster.com/dictionary/purlin

[77] Merriam-Webster Dictionary defines “rafter” as “any of the parallel beams that support a roof.” Merriam-Webster.com Dictionary. Accessed May 18, 2024. https://www.merriam-webster.com/dictionary/rafter

in local carpentry as Guazhu)[78] arranged along the building depth at column capitals; purlins and the roof covering are borne atop this composite beam-and-post arrangement, yielding a frame logic in which "beams support purlins, and posts support beams." This form, which facilitates large clear spans and significant vertical clearance, is especially prevalent in large-scale northern palaces and ancestral temples.[79]

By contrast, Chuandoushi is defined by the placement of posts beneath the purlins and by tie-beams that pass through the intercolumn spaces; roof loads are transferred directly from purlins to posts, and the through-tie elements knit posts into discrete bays. The Chuandoushi assemblage is lighter in section, composed of finer members, and affords superior cross-ventilation—qualities that suit southern climatic and domestic building traditions. Its gable geometries tend to be more flexible, and eaves are frequently cantilevered using diagonal struts (rather than large-scale Dougong[80]) to accomplish overhangs and transitional detailing. See Figure 80.

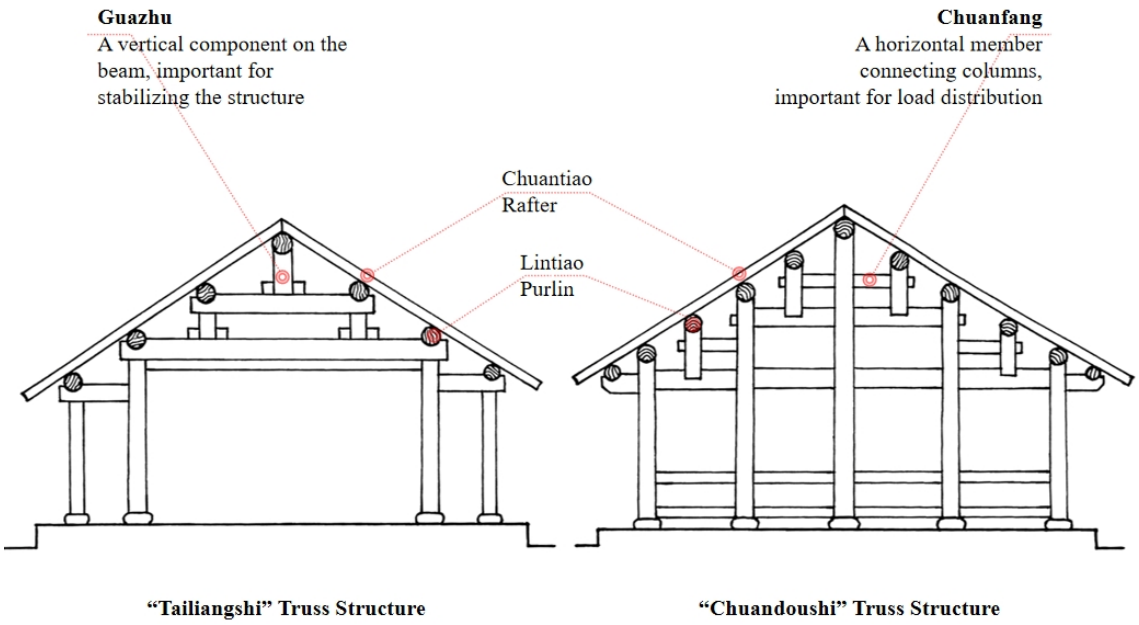

Figure 80. "Tailiangshi" and "Chuandoushi" Truss Type Conceptual Diagram. Self drawn

[78] Guazhu are short posts standing on beams, commonly used in tailiang-type frames to raise successive purlins and refine roof curvature.
[79] Yao 1959. pp. 4-8, 12-15.; Liang 2006. pp. 14-16, 20-23.; Lin 1995. pp. 61-65, 73, 81.
[80] Dougong are bracket sets composed of dou blocks and gong arms that transfer roof loads and cantilever eaves.

(2) Chaliangshi: A Type Mixed with Tailiangshi and Chuandoushi

In the architectural lexicon of Hakka and Minnan building traditions, Chaliangshi[81] refers to a roof frame in which one or both ends of a primary beam are inserted directly into the body of the column rather than resting on top, forming a defining beam–column embedded joint (Figure 81). Under each roof purlin, a supporting post—eave post, mid-post, or Guazhu—is typically aligned. The Guazhu stands atop a tie beam whose ends are mortised into the adjacent side columns, while the outermost pair of Guazhu bears on the lowest main beam, which is similarly tenoned into the front and rear eave columns. To enhance gable-plane stiffness, a full-height central post is often introduced within the gable frame, effectively creating a two-and-a-half-bay composite bent that improves overall stability and lateral resistance. [82]

The classification of Chaliangshi should avoid establishing it as an independent third system because it unites the through-tie system of Chuandoushi with the vertical load-bearing system of Tailiangshi to create a single hybrid tectonic system. When a post stands directly below a purlin, loads travel axially through the post to the foundation; where no ground post exists, the load path becomes purlin → short columns (Guazhu) → inserted beam (Chaliang) → side columns → foundation, where beam bending and embedded joints operate together to complete structural load closure.

In Wufenglou, this beam-insertion assembly is most common in the entrance and ancestor halls, where roof structures are typically left as exposed roof framing throughout, allowing the timber roof frame to remain fully legible from the interior, supporting efficient span-to-footprint ratios and facilitating long-term joint accessibility and repair (Cheshangmingzao)[83]. In summary, Chaliangshi is both a clearly identifiable beam–column insertion typology and a transitional structural form between Chuandoushi and Tailiangshi, distinguished by beam-end column insertion, Guazhu-on-beam support, full-height gable posts, and their associated load paths.

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[81] Some scholars, such as Liu Dunzhen (Liu, 1957), consider this structure to be a direct variant of the Tailiangshi. Others, like Sun Dazhang (Sun, 2001), believe that the “Chaliangshi” structure is a hybrid of the traditional Tailiangshi and the Chuandoushi. Cao Chunping (Cao, 2010) also regards the “Chaliangshi” structure as a form that retains both the Tailiangshi’s “guazhu” structure and the Chuandoushi’s “shushui” structure. Therefore, this text adopts the term “Chaliangshi” for this structural system.

[82] Lin 1995. pp. 61, 63, 67, 81, 87.; Lin 1998. pp. 17-20.

[83] Cheshangmingzao: Making the roof structure fully visible indoors for easier maintenance.

“Chaliangshi” Truss Structure of an Abandoned Hakka Wufenglou in Sheqian village

“Chaliangshi” Truss Structure of an Abandoned Minnan Wufenglou in Dadi village

Figure 81. “Chaliangshi”truss type

Self taken in 2024, 2025

(3) Diedoushi: A Structure for Horizontally and Vertically Supporting Purlins on Truss

Diedoushi[84] refers to a roof-framing technique in which Dou, Gong, and Fang (small timber blocks) are stacked above column heads or beams to form a vertical supporting and height-adjusting cluster. Its core function is to elevate, level, and distribute roof loads from the purlins (or secondary beams) downward through stacked compression units—purlin → stacked Dou units → column or inserted beam end—operating primarily through short-member axial compression. This mode of "stacked Dou units replacing Guazhu" is widely found in southern Han timber practice, especially in Minnan, Kinmen, and Taiwan, and is commonly described as Diedoushi (distinct from Chuandoushi). The system accommodates deep eaves, wide roof spreads, and fine-grained eave-line height modulation, delivering both structural performance and ornamental expression. See Figure 82, 83.[85]

Diedoushi is structurally coupled with Chaliangshi. While Chaliangshi is identified by beam ends inserted into columns, allowing roof loads to transfer through a bending path of Guazhu → inserted beam → column, Diedoushi replaces Guazhu with a stack of compressive Dou units (whose lowest piece may retain the reduced-column form of Guazhu and is sometimes carved as the Lion-Elephant Base for combined structural and symbolic function). This produces a hybrid load path—bending distribution through inserted beams combined with multi-stage vertical compression through stacked Dou units—capable of supporting larger roof spans, extended eaves, and double-eave overhangs. As part of the Dougong bracketing register system, its component logic and dimensional hierarchy are explicit; both Dou and Gong act as modular load-transmitting units at column heads and at cantilevered eave transitions.

In essence, Diedoushi is not an independent primary truss system, but a nodal bracketing unit technique that realizes vertical load pathing and eave transition through stacked compression members, often operating in conjunction with Chaliangshi or Tailiangshi to meet large-span, deep-eave, and height-adjustment demands. It is most prevalent in Hakka Wufenglou, and also appears in the oversized entrance hall of some large Minnan Wufenglou.

[84] Diedou is a stacked dou-block cluster placed above a post or beam end to incrementally raise, level, and support purlins, enabling deep eaves and fine roof-line modulation.
[85] Lin 1995. pp. 61, 65-67, 73, 79.; Lin 1998.

Figure 82. “Diedou” Structure. Example: Peijingtang (Hakka Wufenglou)

Self taken in 2024

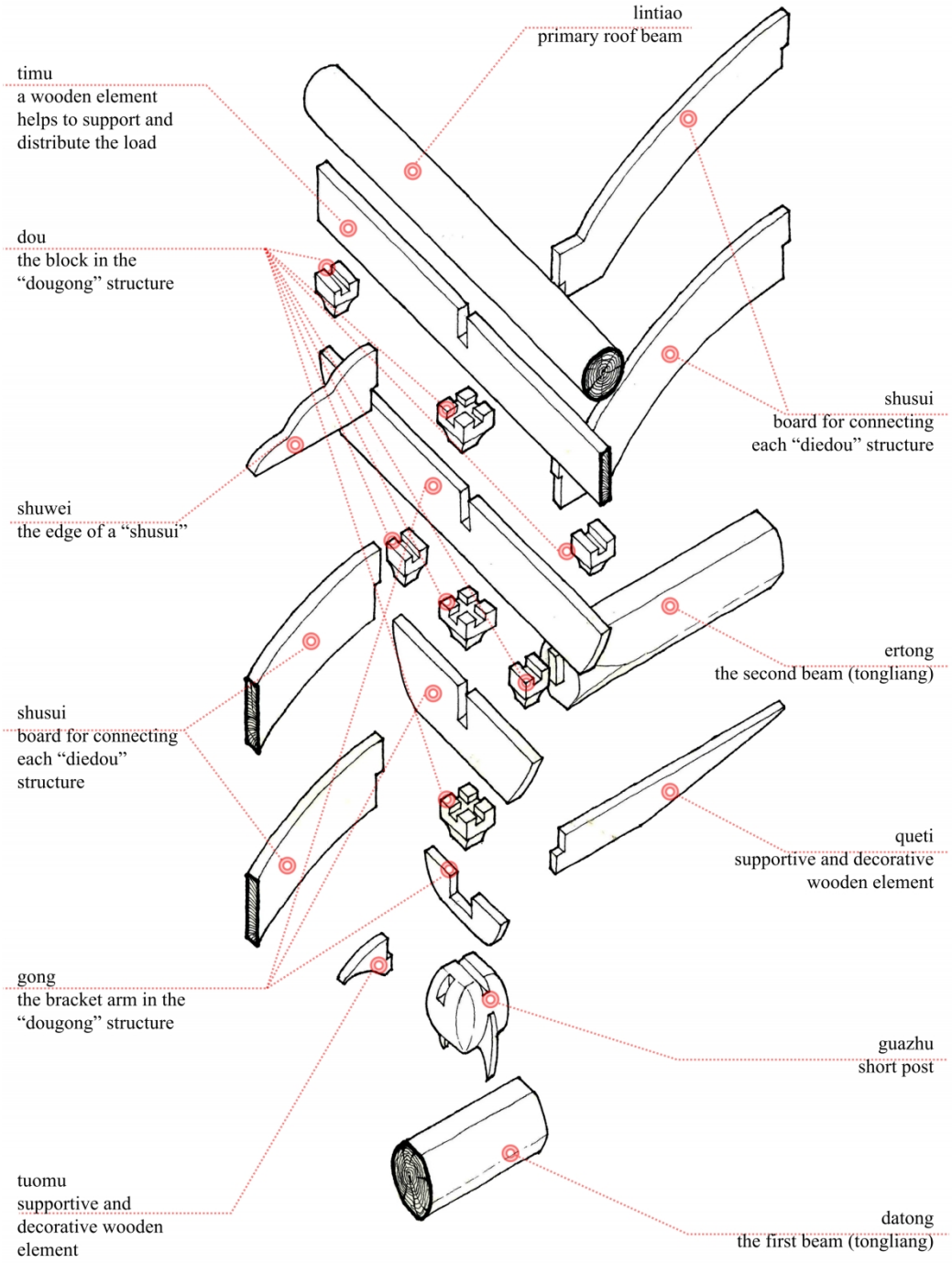

Figure 83. Exploded View of a “Diedou” structure

Self drawn

(4) Gelinshi[86]: Purlin-on-Wall System

In the housing units and along the flanking side walls of ancestral halls in Wufenglou, a beam-on-wall purlin system is commonly used for suspended-gable roofs (Xuanshan). This system is defined by a dual-slope roof, where the primary purlins sit directly on the top of rammed-earth load-bearing walls, with eave overhangs typically spanning 0.8–2 m (Hakka 1.5-2m, Minnan 0.5-1m). The structure is concise and mechanically efficient, offering stable drainage and strong compatibility with massive rammed-earth gables. A key identifying feature of suspended-gable roofs is that the eaves project at the gable ends. Roof loads are transferred through wall-supported purlins, while extended ridge purlins cantilever to form the gable overhang, preventing water runoff from clinging to the gable surface. See Figure 84.

In Wufenglou, this system undergoes a localized enhancement: secondary drip eaves (Piyan) [87]are installed at the lower segment of the gable wall, adding an independent auxiliary roof layer beneath the main eave. This produces a multi-ridge roof configuration analogous to a hip-and-gable composition with nine ridges, including a central main ridge, front and rear vertical ridges, and secondary drip ridges and diagonal gable ridge lines along the added eave tier, arranged symmetrically along the gable axis. The resulting broken-line roof edge strengthens water diversion, wind resistance, and layered overhang articulation, while enriching the roofline rhythm and vertical visual hierarchy.

Figure 85 presents a comparative diagram listing all the roof truss forms mentioned above. It can be seen that only the gelin style relies entirely on rammed earth walls for load-bearing, while the other truss forms are supported by wooden frames.

[86] Cao, 2008. p. 27.
[87] Cao, 2016. p. 27.

Figure 84. “Gelinshi”truss type. Example: Anonymous Wufenglou in Bangdu Village

Self taken in 2024

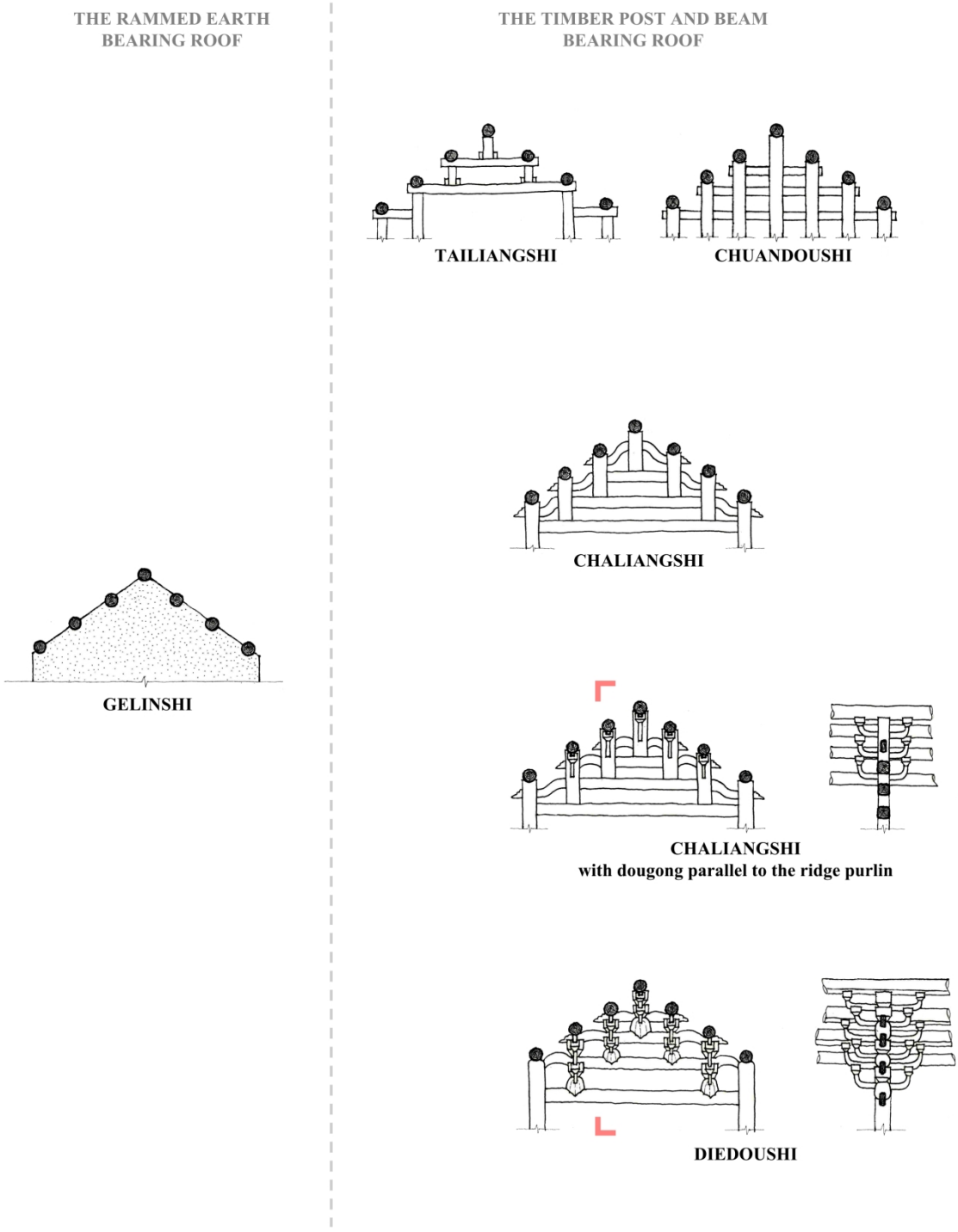

Figure 85. Diagram of Different Truss Types

Self drawn

- Yizhuzao and Jianzhuzao: Methods of Space Extension

(1) Yizhuzao: Extending the Space by Moving the Pillar

"Yizhuzao"[88] is a structural adjustment strategy that preserves the original count of columns while freeing them from their strict loci to enlarge the central mingjian (lit. "clear span")[89] of a hall. Its core principle is to remove an in-situ column (i.e., a column that would normally stand directly beneath a guazhu) within common beam-frame systems such as the 3Tong 5Gua or 2Tong 3Gua[90] configurations, shift the column one bay outward toward the eave line, and introduce a layer of diedou at the original beam end so that the beam can cantilever past the former column line. See Figure 86-88.

This permits roof and purlin loads to be transferred smoothly to the relocated column without interrupting beam continuity or reducing overall stiffness, thereby increasing the unobstructed span and usable width of the central mingjian without enlarging beam sections or raising clear heights. Mechanically, the solution depends on the vertical bearing of the diedou and the stepwise cantilevering of the dougong layers; frictional engagement and interlocking between the dougong members effect stress transmission and node stability. For this reason the technique is often described as a composite "diedou-cantilevered-beam" or "dougong-based column-relocation" solution.

Historically, Yizhuzao originated in high-status palace and temple architecture. Large halls and forecourts in Ming and Qing official architecture frequently employed column relocation to deepen porticoes and open the central bay. As the practice diffused into vernacular housing it became simplified and localized: in Fujian, carpenters adapted the method to the scale and materials of domestic halls and entranceways, producing a technical expression that mediates ritual and pragmatic spatial needs.[91]

Within Hakka and Minnan Wufenglou, the application of Yizhuzao is particularly emblematic. Because the entrance hall and ancestor hall are the building's most ritualized and symbolically loaded spaces, they require expanded net spans and clear heights for rites and reception. To avoid bisecting the main axis with excessive column lines, craftsmen adopted a diedou-style column relocation in these two

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[88] Li, 2003. p. 95.

[89] Mingjian is the central bay of a hall, framed by the main columns and emphasized as the brightest, most ceremonial span in a traditional axial plan.

[90] In the truss system of Chinese architecture, particularly in the south, a "tong" or "tongliang" refers to a roof beam that spans horizontally, while a "gua", or "guazhu", is a short columns placed atop that beam to support purlins. The terms "3tong 5 gua" and "2tong 3gua" describe modular combinations of beams and posts. These modules are used to scale up or down the size of a roof structure: more beams and posts are added in larger roofs, while fewer are used for smaller roofs.

[91] Cao 2015.; Liang 2006.

areas: the column that would stand at the juncture of the mingjian is omitted, and the beam end is cantilevered outward by one or two layers of diedou until it bears on the outward-shifted column. This typically increases the clear width by roughly one unit of the horizontal distance between two purlins (commonly referred to as a bujia[92]). The diedou not only provides vertical support and leveling but, through the staggered, interlocking tenons between layers, supplies horizontal shear and anti-slip resistance so that the cantilevered beam retains adequate bending performance. As a result, the ancestor hall attains a larger, column-free open volume while roof loads continue to flow to the foundations via the new beam → diedou → relocated-column path, maintaining structural continuity.

The integration of Yizhuzao with rammed-earth wall systems in Wufenglou is especially ingenious. Exterior eave columns often form a semi-embedded, semi-independent relation with the earthen outer wall: one side of the beam end projects outward while the other side is set into the wall, preserving wall restraint while allowing the relocated column to accept the vertical load of the projecting eave. This "earth–timber junction" functions as a calibrated node in mixed-material construction and enables halls to achieve palace-like openness while retaining the economical and stable qualities of vernacular construction.

Overall, Yizhuzao in Wufenglou does more than enlarge usable floor area: it enacts the visual ordering and artisanal intelligence of ritual core spaces. The sequential cantilevering of diedou overcomes geometric limits of traditional frames; the beam–column engagement preserves load paths; and the outward displacement of columns enhances the hall's ceremonially charged symmetry. In inheriting a high-status structural lexicon and transliterating it into local timber–earth systems, Wufenglou thus demonstrates a localized technical creativity and spatial aesthetics at the domestic scale.

[92] Bujia is the standard horizontal module between two adjacent purlins in Chinese timber roofs, often used to measure bay depth and to quantify span enlargement in column-relocation techniques.

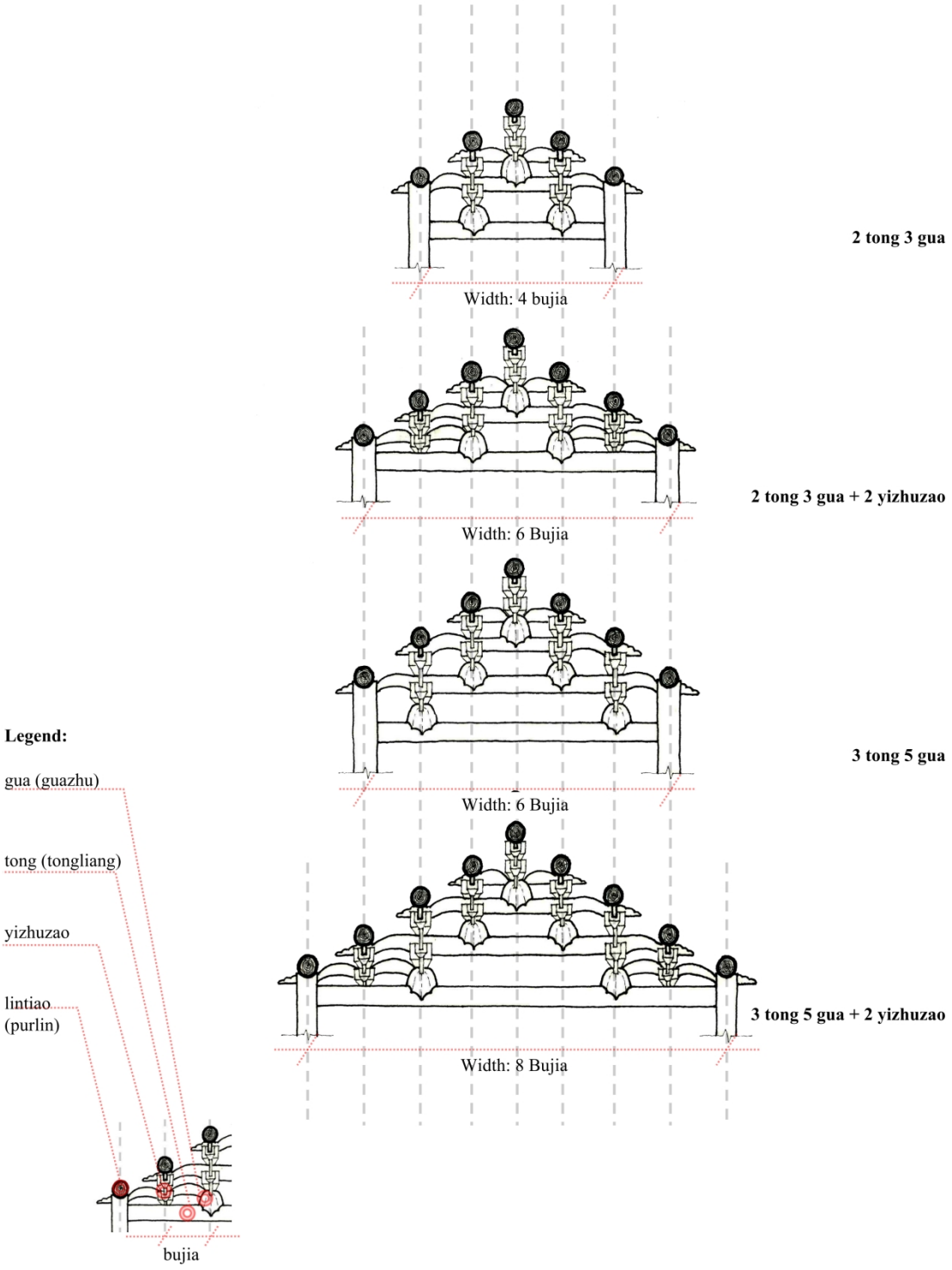

Figure 86. A Diagram of "Yizhuzao" Structure

Self drawn

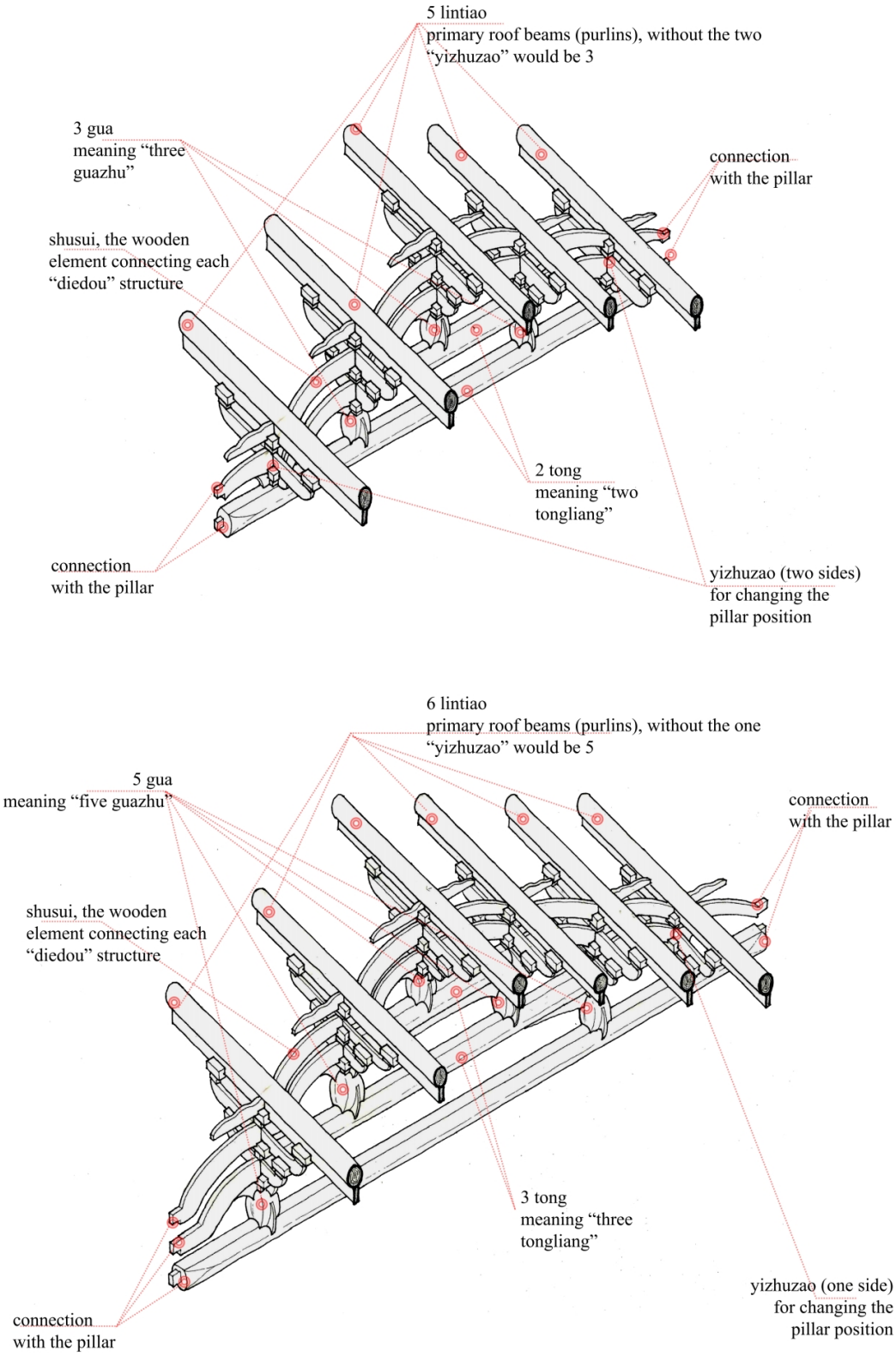

Figure 87. Yizhuzao Examples: 2Tong 3Gua Plus Yizhuzao (up); 3Tong 5Gua Plus Yizhuzao (down)

Self drawn

Yonghaolou (Hakka Wufenglou) Entrance Hall Truss: 2 Tong 3 Gua with 2 Yizhuzao (near); 3 Tong 5 Gua (far)

Nanguilou (Minnan Wufenglou) Entrance Hall Truss: 2 Tong 3 Gua

Figure 88. “Tong-Gua” Structured Roof Truss in Wufenglou. Examples: Yonghaolou, Nanguilou

Self taken in 2024

(2) Jianzhuzao: Extending the Space by Reducing the Pillar

Jianzhuzao[93] is a structural adjustment method in traditional Chinese timber architecture that reduces the number of interior load-bearing pillars to enlarge the net interior space while maintaining load path continuity and structural stability. The principle is to transfer roof loads to peripheral pillars and walls through a strengthened beam system—by enlarging beam sections and adding diedou or chuanfang[94]—so that pillars can be reduced without compromising structural coherence. First seen in Ming–Qing residential and ancestral buildings, the method reflects a logic of "material efficiency and beam substitution for pillars."[95]

To discuss Jianzhuzao in Fujian hall structures, one must first understand the term 4 point gold pillars (the 4 central pillars in a hall, see Figure 89)[96], which refers to the four primary load-bearing pillars symmetrically positioned along the central axis—two in the front half and two in the rear—supporting the ridge beam and main purlins. The 4 point gold pillars configuration is conventionally read as an index of hall status and lineage prosperity. In contrast, false 4 point gold pillars (visually four but structurally reduced to two primary load-bearing pillars, see Figure 90) describes a localized adaptation in which the two front gold pillars are removed or shifted outward, leaving only the two rear gold pillars and the existing eave pillars to carry the structural load. In this strategy, the front "pillars" are no longer true gold pillars in a structural sense; the eave pillars absorb the combined role of both eave and gold pillars to visually preserve the four-pillar symmetry while functionally reducing the pillar count. This principle aligns with Jianzhuzao in that spatial openness is gained through a reconfigured beam system rather than a full pillar array. See Figure 91.

In Wufenglou, especially the ancestor hall of Hakka Wufenglou, the false 4 point gold pillars strategy is highly representative. When constrained by site conditions or construction resources, builders replaced the full 4 point gold pillars layout with a reduced-pillar scheme, correspondingly thickening the ridge beam and secondary beams and incorporating diedou or chuanfang at mid-span or beam ends to enhance spanning capacity and joint stability. Through this reinforced beam network, roof loads are redirected to the eave pillars and rammed-earth bearing walls, forming a structurally stable system that uses fewer pillars without destabilizing the frame.

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[93] Li, 2003. p. 95.
[94] Chuanfang are through-tie beams passing between posts, locking frames into bays and providing lateral restraint typical of chuandou-derived systems.
[95] Yao 1959. p. 28.; Liang 2006.
[96] gold pillar (Jinzhu): Gold pillars are the principal inner columns of a hall, aligned symmetrically on the axis to carry ridge and main purlin loads, conventionally marking the hall's ritual status.

Crafting a false 4 point gold pillars system demands high-quality timber and precise joinery. Double- or triple-layered dou blocks or interlocking fang members are commonly deployed to mediate load transfer and ensure smooth force flow. The visual composition maintains the formal symmetry of four pillars, while the interior gains a markedly expanded column-free space suitable for rites and banquets. In local building culture, true 4 point gold pillars is associated with affluence, while false 4 point gold pillars embodies measured resourcefulness, reflecting vernacular negotiation between ritual propriety and material economy.

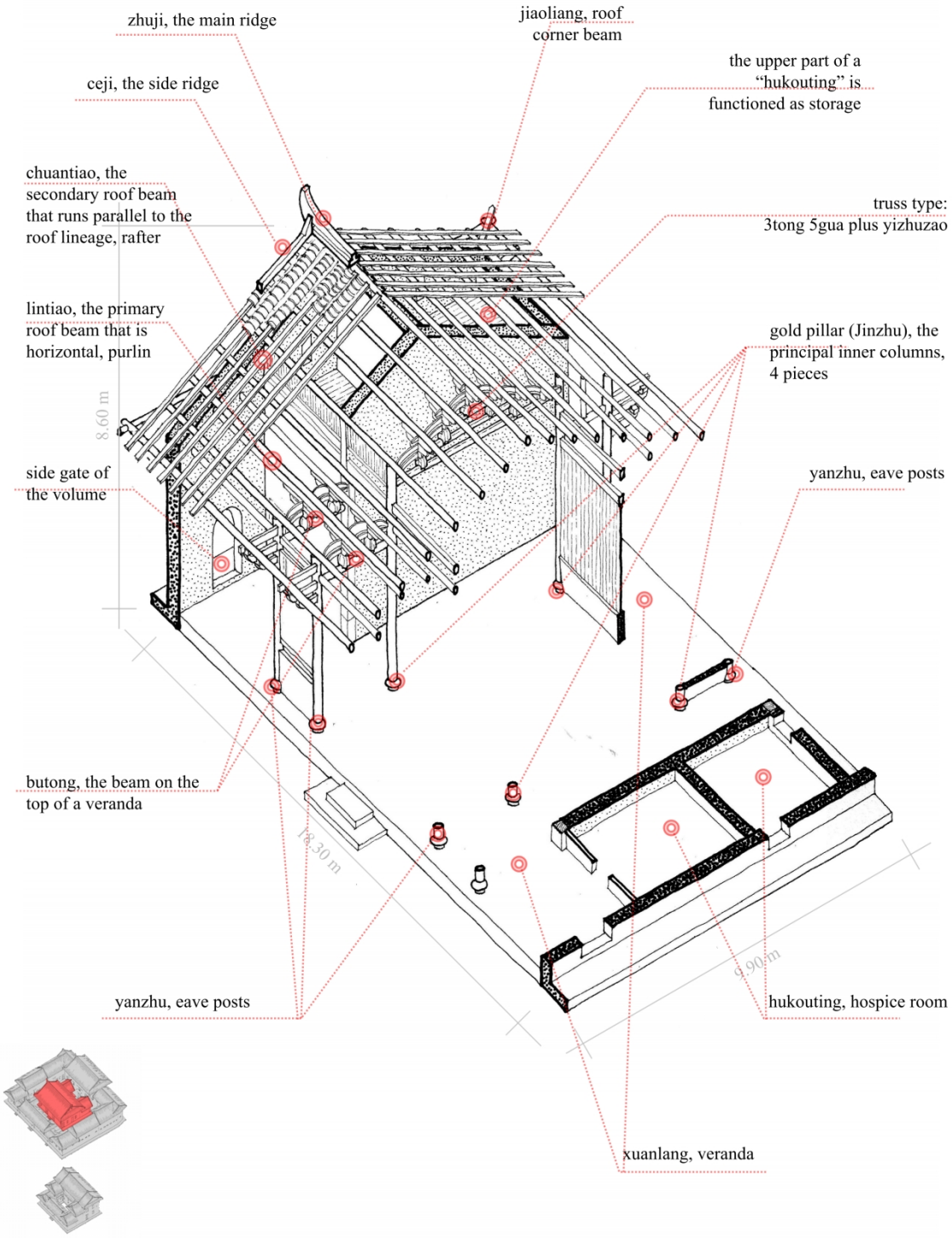


Figure 89. The 4 point gold pillars system. Example: The ancestor hall of Yulonglou

Self drawn

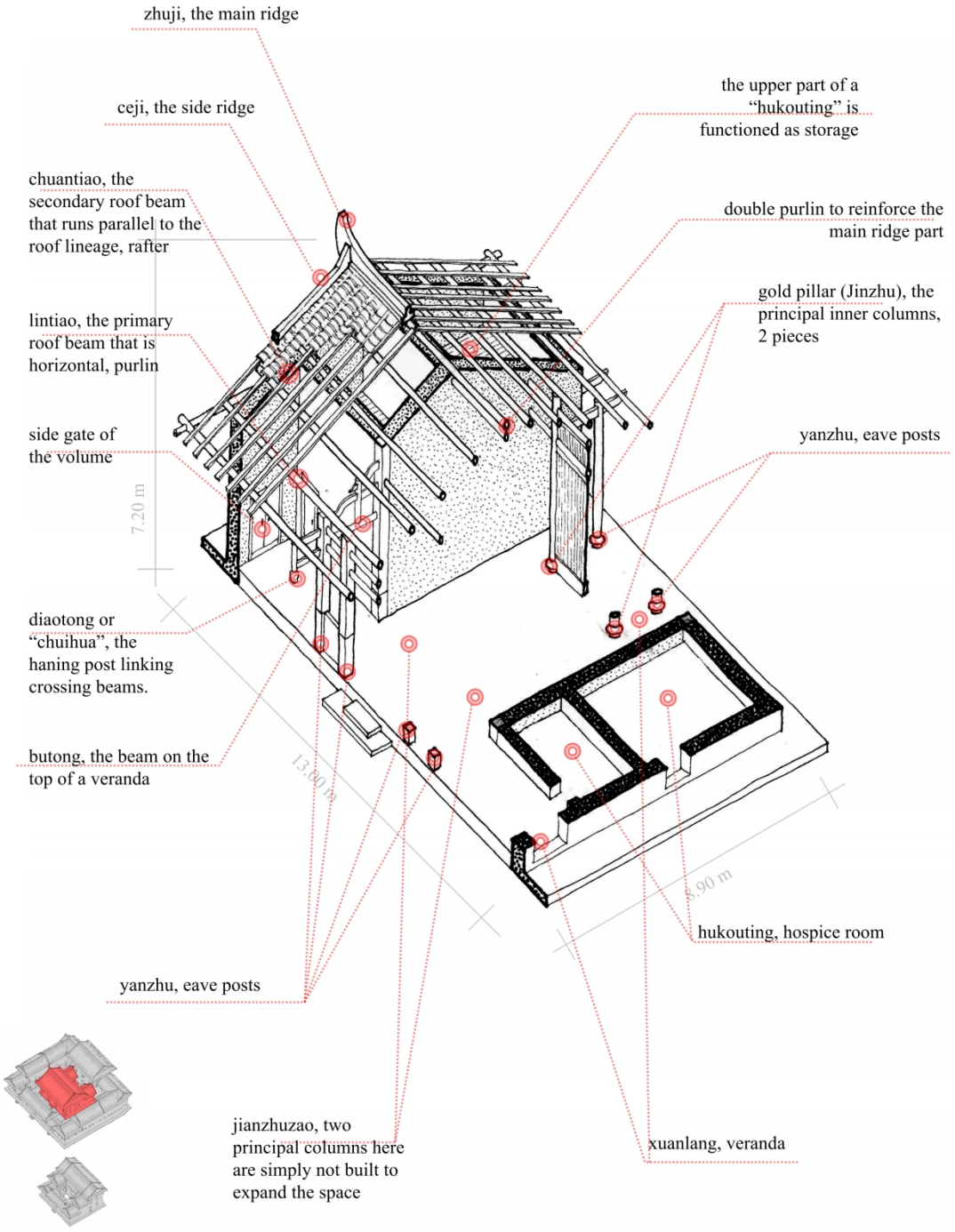


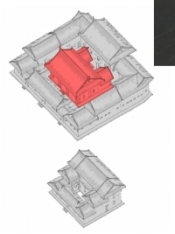
Figure 90. The false 4 point gold pillars system (Jianzhuzao). Example: The ancestor hall of Yaoyuanlou

Self drawn

4 POINT GOLD PILLARS

Yulonglou

FALSE 4 POINT GOLD PILLARS



Huaichuntang

Figure 91. The 4 point gold pillars system and the false 4 point gold pillars system. View from inside

Self taken in 2024

- Five-elements Gable and Roof Treatment

The Chinese traditional architectural system includes five-element gable designs which use different gable crest profiles to represent the five elements (Metal, Wood, Water, Fire, Earth) through specific curved shapes and angular measurements and dimensional arrangements. The Metal-shaped gable features a broad curved design which represents success and abundance while the Wood-shaped gable has a thin design that points upward to represent development. The Water-shaped gable design consists of three to five curved lines which represent fluid movement. The Fire-shaped gable reaches its peak at a pointed tip to show energy while the Earth-shaped gable maintains a broad flat design for stability. These forms convey auspicious values—wealth, vitality, harmony, ascendance, and solidity respectively—and were historically determined by local fengshui masters according to household birth data and orientation for elemental harmonization. See Figure 92, 93.[97]

Structurally, the roof system of Wufenglou is more complex than ordinary dwellings. Although its silhouette resembles a xieshan roof[98], it differs from its canonical construction. In orthodox xieshan, the ridge's gable wall is recessed inward (shoushan)[99], allowing the ridge to float above and behind the gable edge, producing visual hierarchy and roof-layer recession associated with high-status buildings. In Wufenglou, the main ridge is supported by rafter and purlin systems and visually meets the gable edge directly without inward recession; the gable is the outermost rammed-earth enclosure. Therefore, it is more accurately described as a pseudo-xieshan or multi-ridge, overlapping-eave roof system, where ridges are distributed primarily for drainage, wind mitigation, moisture prevention, and façade articulation rather than the real xieshan.

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[97] Lin 1998.; Zheng 2018. pp. 12-15, 138.

[98] Chinese roof forms are conventionally ranked by status and complexity: double-eaved wudian (highest), single-eaved wudian, xieshan, xuanshan, and yingshan/hard-gable types. The hierarchy reflects both structural elaboration and ritual prestige.

[99] Shoushan is the xieshan construction step that pulls the ridge ends inward so the ridge terminus recedes from the gable edge, producing the layered roof recession typical of orthodox hip-and-gable roofs.

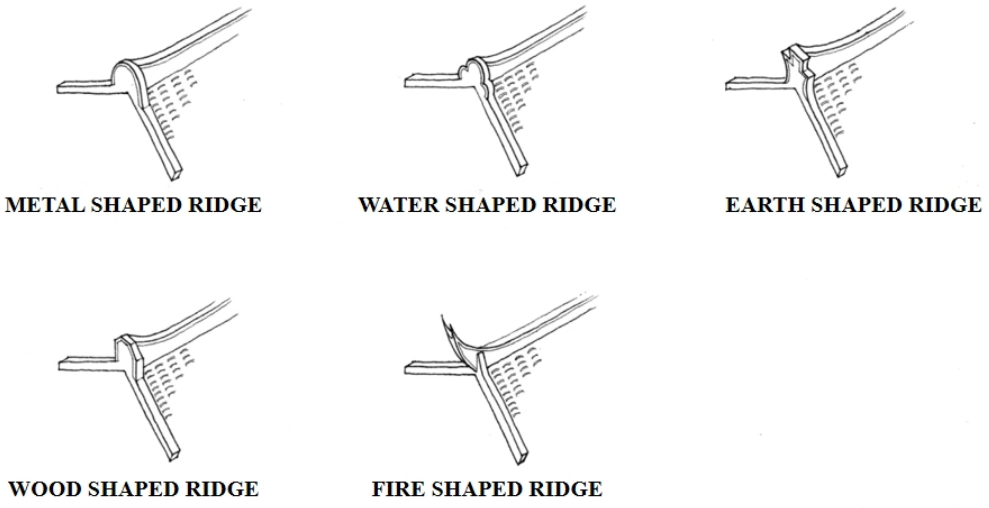


Figure 92. Five-Element Roof Ridge Forms

Self drawn

Because Wufenglou employs triangular solid gables, five-elements symbolism is not expressed through gable outlines but through the decorative and formal treatment of ridge terminals combined with triangular gable profiles. In Minnan Wufenglou, the most recognizable ridge type is yanweiji (swallow-tail ridge)[100], characterized by bifurcated, upward-sweeping ridge ends. It carries the Fire-element symbolism of ascendancy and flourishing, often accompanied by cut porcelain ornamentation and painted ridge décor. In contrast, Hakka Wufenglou may exhibit slightly upturned ridge ends but in restrained angles and simplified finishes, functioning primarily as structural terminations rather than a full yanweiji system.[101]

A comprehensive roof-edge reinforcement and anti-uplift system further distinguishes Wufenglou. To resist typhoon uplift and stabilize water shedding, eave edges employ double or triple tiles, gable edges apply layered overhanging drip courses tightly bedded with mortar, and tile rows along gable slopes are sealed to reduce wind suction and water infiltration. Ridge intersections are locked with pressing ridge tiles, sometimes with supplemental bricks to compact (yazhuan, see Figure 94)[102]. This sequence of edge-layering, pressing, and sealing forms a continuous interlocking roof envelope optimized for humid,

[100] Yanweiji (swallow-tail ridge) is a Minnan ridge profile with bifurcated upturned ends resembling a swallow's tail. It is a prominent regional marker, often associated with auspicious "flourishing/ascending" symbolism and elaborate porcelain or stucco ornament.
[101] Wu 1997a.; Wu 1997b.; Wu 1997c.; Cao 2006.; Zheng 2018. pp. 7-9, 80-81, 137.
[102] Yazhuan are pressed bricks or ridge-pressing units added at ridge intersections or tile terminations to clamp tile courses, seal joints, and improve wind-uplift resistance.

monsoonal climates.

Figure 93. Five-Element Roof Ridge Examples

Self taken in 2024, 2025

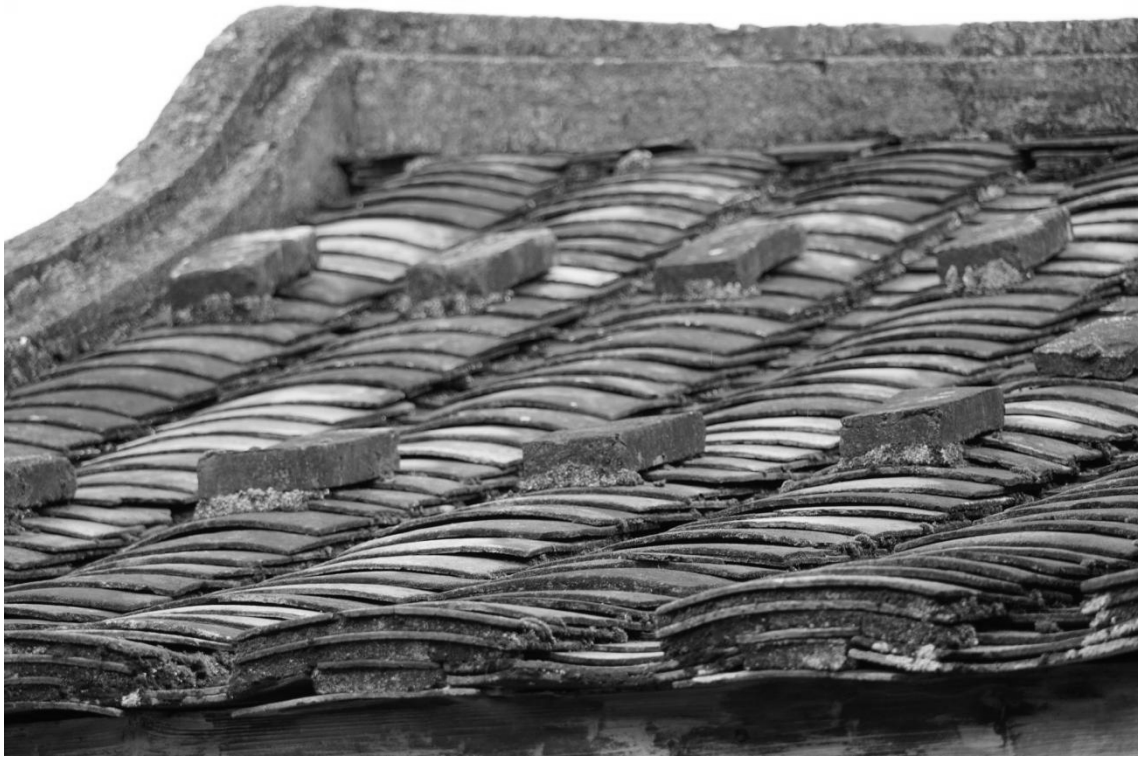


Figure 94. “Yazhuan” on the roof of Minnan Wufenglou, Yifulou

Self taken in 2024

Overall, Wufenglou roofing integrates multi-ridge construction logic and five-elements symbolism while achieving climatic adaptability through systematic edge reinforcement. It is neither a formal xieshan roof nor a purely symbolic derivative, but a localized pseudo-xieshan vernacular roof typology balancing structural performance, environmental responsiveness, and cultural codification.

5. Decorative Elements in Fujian Wufenglou

- Louhua (decorative perforated lattice)

In Fujian Wufenglou and other vernacular houses, louhua (decorative perforated lattice)[103] constitutes one of the most characteristic ornamental devices, widely applied to window frames, eaves soffits, bracket arms, beam edges, and door lintels. In Wufenglou, where ventilation and daylight are critical in multi-story courtyard massing, louhua mediates between structure and environment: although non-load-bearing, it provides air exchange, controlled permeability, and patterned light filtering.[104]

The term refers to floral or geometric motifs carved into voids—"flowers revealed through openings." Crafted in wood or brick, louhua favors lightness and translucency, balancing the solid wall mass with voids. In both Hakka and Minnan Wufenglou, louhua appears extensively in the ancestor hall, threshold halls, and corridor screens, becoming an indicator of cultural refinement and aesthetic cultivation. Its function lies in the expression of "void": not attached structurally, but animating the envelope through light and air, allowing the massive earthen walls to "breathe" and registering time through shifting shadows. See Figure 95, 96.

[103] Dai 2001
[104] Lan 2013.; Zheng 2018. pp. 25, 50.

Yulonglou

Rulindi

Tianxinglou

Yonghaolou

Figure 95. Louhua structure in Hakka Wufenglou

Self taken in 2024

Xiashanlou

Fuanlou

Liuzhaowu

Xiashanlou

Figure 96. Louhua structure in Minnan Wufenglou

Self taken in 2024

- Mendang (stone gate base) and Hudui (door-header pair)

Mendang (stone gate base) refers to the stone blocks placed at the lower sides of the main entrance. Often carved from monolithic granite or drum-shaped stone, they act as the lower pivot support for the door leaves and anchor the door frame, preventing moisture, impact, or sliding. More elaborate examples adopt drum-form, box-form, or lion-head forms.[105]

Hudui (door-header pair) denotes paired protruding elements located at both ends or the upper edge of the door header. Typically carved in wood or brick, they serve as fixing points for the header beam or for hanging couplets and inscriptions. Their section is commonly round, square, or hexagonal and always arranged in pairs. In Minnan examples, hudui works closely with brick-carved lintels and stucco inscriptions; in Hakka entrances, it often appears with timber lintels and stone plaques.

In Wufenglou, mendang, hudui, door leaves, high thresholds, and the horizontal plaque form a single entrance composition where structure, ornament, and ritual identity converge. See Figure 97.

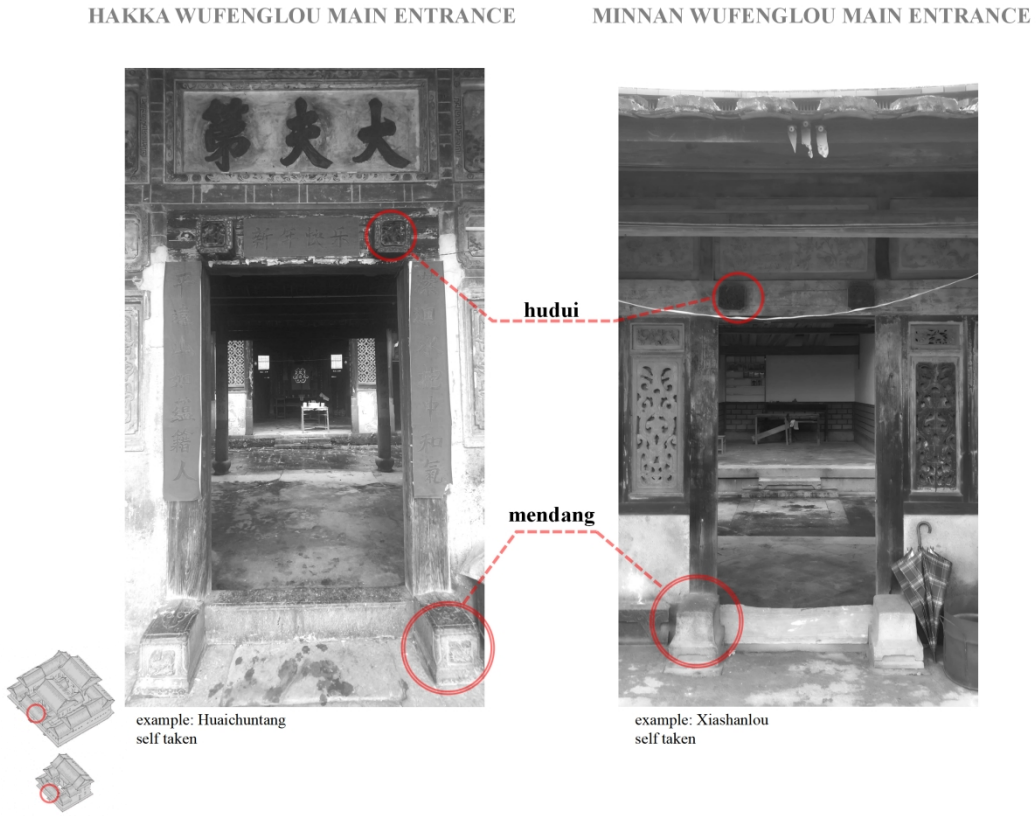


Figure 97. Mendang and Hudui in Hakka and Minnan Wufenglou

Self taken in 2024

[105] Zheng 2018. pp. 31-32.; Lin 1998. p. 32.

- Chuihua / Diaotong (pendant column, non-grounded short column beneath the eave)

Chuihua / diaotong refers to a pendant column suspended beneath the eave, sleeved over the projection of a cantilevered bracket arm or beam tip. It is a non-grounded short column, stabilizing the eave projection while also serving as ornament. The bottom of the pendant column frequently takes the form of a flower basket, lotus petal, or gourd head. It is often used together with widened porch bays or deeper eave projections.[106]

In Wufenglou, pendant columns occur most frequently at the entrance hall eaves, the front of the ancestor hall, and corridor junctions—precisely where structural forces converge and articulation is desired. See Figure 98, 99.

[106] Lan 2013.; Zheng 2018. pp. 39-41, 102.

Yulonglou

the wooden dowel of a chuihua structure. example: Yonghaolou

HAKKA WUFENGLOU PENDANT COLUMN (CHUIHUA)

MINNAN WUFENGLOU PENDANT COLUMN (CHUIHUA)

Fuanlou

Longshantang

Figure 98. Chuihua structure in Hakka and Minnan Wufenglou

Self taken in 2024

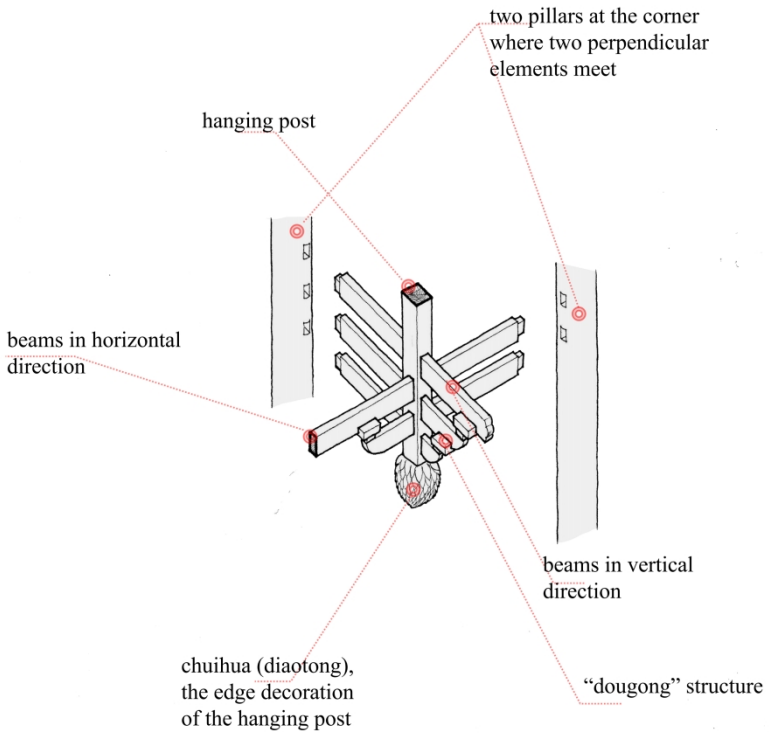


Figure 99. Chuihua structure

Self drawn

- Zhuchu (stone column base)

Zhuchu (stone column base) forms the foundation interface of timber columns. Usually made of granite or bluestone, it spreads vertical load, isolates moisture, prevents decay, and establishes column alignment. Common shapes include circular, square, octagonal, inverted-basin, inverted-dou, and drum types. The top is cut with a mortise recess to receive the column spindle, and its edges are chamfered or water-shaped to reduce wear and prevent water accumulation. A rubble leveling layer beneath integrates the base with the plinth.

In Wufenglou, zhuchu appears at entrance halls, ancestor halls, and veranda column lines. Principal axial columns (such as the gold pillars within four-point structural compositions) often use larger and more refined forms, while secondary bays adopt plainer types. Minnan cases typically combine zhuchu with alternating stone-brick podiums and shallow exposure for effective drainage, while Hakka examples use larger exposed bases to elevate wood from humidity, matching deeper eaves and strong rain belts. See Figure 100.

Yulonglou

Huaichuntang

HAKKA WUFENGLOU STONE BASE (ZHUCHU)

MINNAN WUFENGLOU STONE BASE (ZHUCHU)

Liuzhaowu

Nanguilou

Figure 100. Zhuchu in different Wufenglou

Self taken in 2024

- Couplet inscriptions and wall paintings

At primary entrance halls and the ancestor hall—the most ceremonially charged spaces—vertical inscribed couplets and wall paintings appear as a coordinated visual system. Both are located on the central axis, arranged symmetrically, reinforcing the grammar of "axis with two wings" that defines Wufenglou.[107]

The couplets are fixed to door frames or entrance columns, executed in stone or timber relief with a deep carving profile; Minnan examples often apply gilded or vermilion outlining, while Hakka cases prefer plain carving. Above them, the hengbian (horizontal name plaque) anchors the hall name or house name, forming the canonical façade composition: central plaque + paired vertical couplets. Mendang, hudui, and couplets are often installed together, constructing a complete ceremonial entrance boundary. See Figure 101.

Wall paintings occupy the entrance interior, the facing walls of recessed niches, or the rear wall of the ancestor hall. Their medium varies by height: near hand-reach they tend to be painting or low-relief carving; under the eave and gable apex, they appear in stucco relief or mosaic assembly. The imagery follows paired or triptych logic—either bilateral symmetry or "central narrative panel flanked by two subsidiary scenes"—with frames formed by carved moldings or brick outlines.

Together, the couplets articulate meaning through text (vertical axis), while wall paintings articulate narrative through image (horizontal spread). The pattern—"image on the front, couplets on both sides"—is repeated throughout Wufenglou and creates the ritual scenography of entering along the central axis.

[107] Zheng 2018. pp. 48, 55, 121, 164.; Lan 2013.

Figure 101. Carved couplet inscriptions of Wufenglou. Example: Fushenglou

Self taken in 2024

Chapter Summary

Wufenglou, across both Hakka and Minnan regions, should be understood as a coherent architectural feature whose consistency is grounded not in stylistic resemblance, but in shared systemic principles that govern construction, spatial order, environmental response, and ritual hierarchy. Although regional typological divergence remains evident, its generative logic is nevertheless produced through a unified set of rules. These rules include: (1) a five-volume axial core derived from a nine-grid central space schema; (2) a front-low rear-high stepped hierarchy that integrates fengshui, drainage, and social order within a single architectural arrangement; (3) a spatial syntax that spatializes ritual centrality and domestic subsidiarity through the ordering of space; (4) The similar construction process containing ritual and technical coherence; and (5) a structural regime that hybridizes rammed-earth load-bearing walls with timber roof and beam systems.

Its construction system demonstrates a regionally adaptive but internally consistent tectonic intelligence—stone footings for moisture isolation, layered ramming with bamboo tensile reinforcement, timber–earth composite load paths, and climatic strategies such as wadang–dishui water cutting, fangjianqiang splash barriers, Sishuiguitang courtyard drainage, and multi-ridge roofs optimized for monsoon rainfall and typhoon uplift. Roof structures combine shared Chinese truss grammars (Tailiangshi, Chuandoushi) and localized hybrids (Chaliangshi, Diedoushi, Gelinshi), while spatial expansion techniques (Yizhuzao, Jianzhuzao) enable large clear ritual halls without compromising structural continuity.

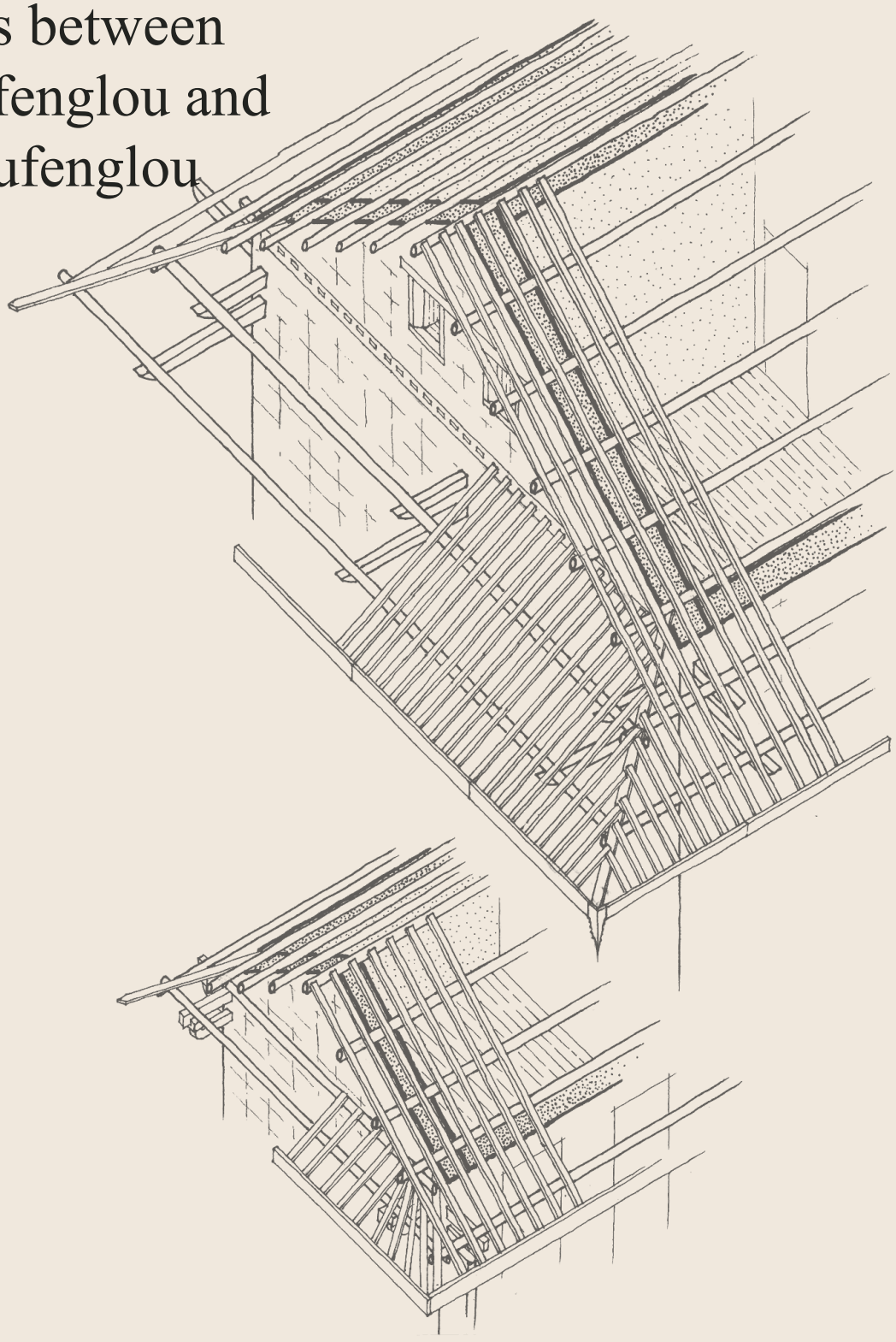
Spatial hierarchy is not decorative but operational: from axis to wings, from front to rear, and from left to right, it encodes gradients of enclosure, mobility, authority, kinship order, and privacy. “Left superior, right subordinate” governs both wing occupation and subtle elevational and proportional differences. Dimensional governance further regulates ancestral hall proportions, courtyard depth, roof pitch asymmetry, and view corridors, so that cosmologically compliant orientation and environmental performance are secured through the same proportional order. Ornamentation—whether expressed through louhua lattice, mendang thresholds, zhuchu column bases, or couplet–mural programs—therefore cannot be reduced to surface embellishment. It functions instead as a calibrated system, one in which structure, airflow, ceremony, and inscription are brought into a controlled architectural relationship.

Thus, Wufenglou constitutes a complete and climatically resilient architectural feature whose coherence is defined not by ethnicity or appearance, but by a shared tectonic system, spatial syntax,

construction protocol, and ritual–environmental intelligence that work together within its built form and residential order.

CHAPTER IV

Differences between Hakka Wufenglou and Minnan Wufenglou



CHAPTER IV. Differences between Hakka Wufenglou and Minnan Wufenglou

The difference between Hakka and Minnan Wufenglou cannot be reduced to region or appearance alone, because the more decisive contrast lies in the way each architectural system generates space. This chapter therefore compares their distribution, formation logic, five-volume composition, housing units, auxiliary spaces, expansion, defense, inheritance, facade, circulation, gables, entrances, and naming conventions in order to clarify where their shared principles end and where their typological divergence begins. Both traditions are organized through a nine-square axial schema and both maintain a stepped volumetric hierarchy, yet these common features do not produce the same spatial logic. In Hakka Wufenglou, ritual and residence are separated through an independent ancestor-hall system and through modular jian-ting-qijiao housing units. Its courtyards, side wings, defensive arrangements, and lineage inheritance are formed through an axial-to-lateral order, so that the central ritual axis and the lateral residential parts remain structurally and spatially distinct. Minnan Wufenglou, by contrast, keeps ritual and residence within one core. Its dwelling organization depends on bay sequence, while circulation is concentrated around the titingjian or ancestor hall, and defense is reinforced through hucuo and chonglou. Its inheritance logic remains strictly axial and left-right ranked, and its side wings function as extensions rather than constitutive parts of the type. These differences are also visible in facade language, gable treatment, entrance form, and naming practice. Taken together, they show that Hakka and Minnan Wufenglou should be understood as independent architectural types rather than as regional variants of one basic type.

1. Different Regional Builders and Case Study Selection

- Hakka and Minnan Wufenglou Regional Distribution Difference

The Hakka and Minnan regions of southern Fujian display a clear dual-cultural-core pattern, in which language distribution, topography, and settlement history reinforce one another. Hakka-speaking communities are concentrated mainly in the western part of the province, while Minnan-speaking communities are concentrated in the east[1], with their approximate border running through the Bopingling[2],

[1] Dai 2000.; Dai 2001.; Dai 2011.; Xie 2013, p. 14, 181, 189.; Porretta 2022.

[2] Bopingling Mountains are one of the three major mountain groups of the Central Fujian Mountain Range, together with the Jiufeng and Daiyun mountains. They form a south-central Fujian highland belt around the Longyan–Zhangzhou area and act as an important natural topographic divide in the province.

Daiyun Mountains[3], and the Tingjiang River basin[4]. Historical migration, geographical separation, ethnic movement, and long-term economic exchange have together produced several transitional areas stretching across Xinluo District in Longyan, the western mountains of Zhangzhou, and the southern part of Sanming. The northwestern zone is predominantly mountainous and has long been associated with Hakka settlement, whereas the southeastern zone opens toward the coastal plains associated with Minnan-speaking populations from Zhangzhou to Quanzhou and Xiamen. Although the two regions are naturally protected by the Daiyun Mountains, long-term interaction across these regions has created language and cultural transition zones in southwestern Fujian[5], especially in western Zhangzhou and eastern Longyan, and even at the village level in places such as Nanjing, Pinghe, and Zhao'an, where both Hakka and Minnan are spoken.[6] Near this boundary, Wufenglou examples preserve regional affiliation while also recording cross-regional contact. The main distribution area of Hakka Wufenglou extends across the north-central part of Yongding District and the southwestern part of Xinluo District in Longyan, including areas such as Gaobei, Kanshi, Fushi, Hulei, Peifeng, Hugang, Longtan, and Tangbao, which in the Qing dynasty were collectively known as the Fengtianli administrative region[7]. This zone has long been a Hakka settlement area associated with Tingzhou Hakka dialects[8]. Its population largely descends from Hakka migrants who moved into the area from Tingzhou and southern Jiangxi during the Ming and Qing periods.[9] The local landscape is characterized by gentle slopes and river valleys, and settlements commonly follow stream lines. The Wufenglou found here are generally characterized by rammed-earth walls, whitewashed surfaces, and a three-halls-and-two-wings layout linked to wider Hakka building traditions in Jiangxi.[10] Minnan Wufenglou is found mainly in Hua'an County[11] of Zhangzhou[12] and Anxi

[3] The Daiyun Mountains are a principal mountain system in central Fujian; their main peak, Mount Daiyun, lies in Dehua County, Quanzhou, reaching about 1,856 m. The range is often described as the "ridge of central Fujian" and forms a key ecological and geomorphological backbone.

[4] The Tingjiang River basin refers to the drainage area of the Ting River, or Tingjiang in Chinese, the largest river in western Fujian. The river rises in Ninghua County, flows generally south into eastern Guangdong, and has a basin area of roughly 11,802 km²; it is a main tributary of the Han River and is historically associated with Hakka migration and settlement corridors.

[5] Knapp 1992.

[6] Xie 2013, pp. 172-189.

[7] Fengtianli, in the Yongding area was created as a Ming-dynasty lijia administrative unit during the Hongwu land-survey reforms (late 14th century), when earlier administration xiang (lit. village) were reorganized into li (lit. zone). The Kangxi Yongding Gazetteer records that "Feng tian li was formerly Anfeng xiang." The name ceased to function as an official administrative unit in the early Republican period (after 1912), when the area was redivided into modern districts (e.g., the Eighth District / Xiafeng District) and later lianbao units, replacing the old "li" system.[Gazetteer of Yongding County Kangxi Edition], 2012.; [Gazetteer of Yongding County, Qianlong Edition], 2012.; [Gazetteer of Yongding County, Daoguang Edition], 2012.; [Gazetteer of Yongding County, Republican Edition], 2015.

[8] Zeng and Cheng 1967.; Pan et al. 2013. pp. 104, 135-138.

[9] Luo 1989, pp. 35-36.

[10] Wan 1995.; Wan 1996.; Wan 1998.; Wan 2018, p. 130.; Leong 2013, p. 26, 80, 95.

County of Quanzhou[13], both of which lie along the border between core Minnan-speaking areas and more mountainous inland zones. Hua'an,[14] in northern Zhangzhou, preserves some of the most complete examples of the Minnan Wufenglou basic type[15] and shows a mixed cultural background shaped by both the Zhangzhou plain and rising inland terrain. Anxi, in northwestern Quanzhou, has rugged topography and dense mountain landscapes. Its dialect belongs to the Minnan language family but also incorporates some Hakka features.[16] It therefore provides an important sample area for the spread of Minnan Wufenglou into mountainous regions, and its ornamentation and formal variations are more diverse than those of Hua'an. The Minnan speech of Hua'an and Anxi is also relatively close in accent and vocabulary[17] (see Figure 102).

[11] Huang 2019.; Huang 2021.; Qin 2021.; Hong et al. 2023.

[12] In the year 507 CE (during the Liang dynasty's Tianjian era), the area originally known as Longxi County was established. It was later renamed Zhangzhou in 1960 after merging with Haicheng County on August 15 of that year. [Gazetteer of Longxi County Jiajing Edition], 1965.; [Local Gazetteer of Longxi], 1980.; [Gazetteer of Zhangzhou Prefecture, Zhengde Edition], 2012.; [Gazetteer of Zhangzhou Prefecture, Wanli Edition, Upper Volume]. 2012.

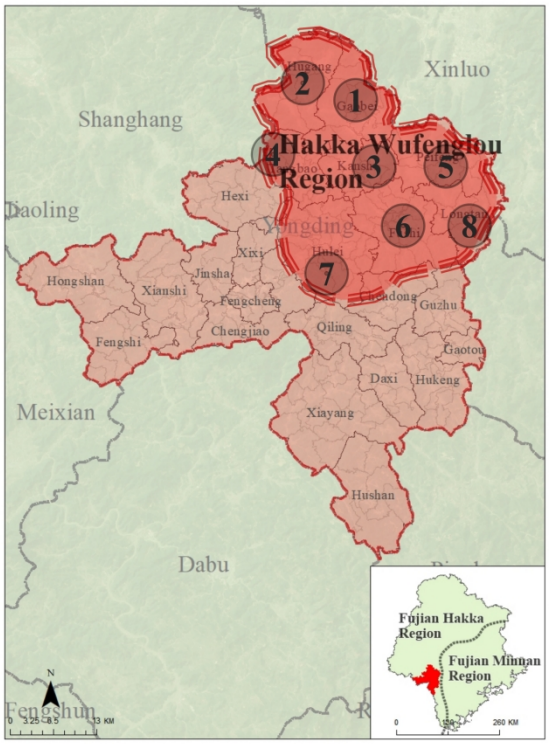
[13] Liu, Lin, and Li 1965.; Ministry of Housing and Urban-Rural Development 2017. pp. 41-43, 154-158.

[14] [Gazetteer of Hua'an County], 1996.

[15] Huang et al. 2025, pp. 16-17, 164-165.

[16] [Gazetteer of Anxi County, Ming Jiajing Edition], 2002.; [Gazetteer of Anxi County, Kangxi Guichou Edition], 2003.

[17] The comment is based on interview records of the field research among January to April 2024 in Hua'an and Anxi.



HAKKA REGION:
YONGDING COUNTY OF LONGYAN CITY

1. TOWNSHIP: Gaobei
   VILLAGES: Fuling, Mulin, Shangyang, Xibei
2. TOWNSHIP: Hugang
   VILLAGES: Hudong, Huxi
3. TOWNSHIP: Kanshi
   VILLAGES: Kanshijieshequ, Fushancun
4. TOWNSHIP: Tangbao
   VILLAGES: Hekeng
5. TOWNSHIP: Peifeng
   VILLAGES: Kongfu, Changliu, Dapai
6. TOWNSHIP: Fushi
   VILLAGES: Sheqian, Xinmin, Queping, Dongan
7. TOWNSHIP: Hulei
   VILLAGES: Hulei (same name with the township)
8. TOWNSHIP: Longtan
   VILLAGES: Longtan (same name with the township)

MINNAN REGION:
ANXI COUNTY OF QUANZHOU CITY

1. TOWNSHIP: Taozhou
   VILLAGES: Wupei, Lianshan
2. TOWNSHIP: Gande
   VILLAGES: Hongyou, Yangshan
3. TOWNSHIP: Lantian
   VILLAGES: Wutu, Neichun
4. TOWNSHIP: Xiping
   VILLAGES: Neishan, Nanyan, Luoyan

HUA'AN COUNTY OF ZHANGZHOU CITY

5. TOWNSHIP: Hulin
   VILLAGES: Zhushan, Xincuo
6. TOWNSHIP: Xiandu
   VILLAGES: Dadi, Zhaoshan, Shangyuan
7. TOWNSHIP: Huafeng
   VILLAGES: Hudi, Yanping, Gaoshi, Qinling
8. TOWNSHIP: Gaoan
   VILLAGES: Bangdu, Xiyang

Figure 102. Hakka and Minnan Wufenglou distribution areas and the field research townships and villages

Self drawn

- Case Study Sample

The case selection in this dissertation follows two main principles: typological representativeness and comparative diversity. The aim is to reveal the multidimensional characteristics of Wufenglou through both horizontal typological coverage and vertical regional comparison, while taking formal configuration, spatial logic, and cultural context into account.

In this survey, 28 Hakka dwellings and 28 Minnan dwellings were examined, making a total of 56 cases. These include both the basic types of Wufenglou and their variations, as well as certain Wufenglou that were still under construction at the time of investigation. See Figures 103 and 104.

Figure 103. Drone-modeled Hakka Wufenglou and their variants, including structures under construction, documented in this survey.

Self rendered in 2024, 2025

Figure 104. Drone-modeled Minnan Wufenglou and their variants, including structures under construction, documented in this survey.

Self rendered in 2024, 2025

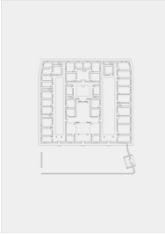
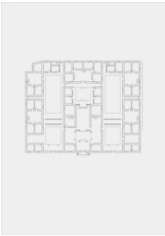
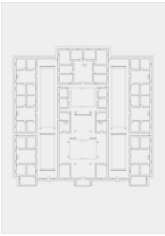
From the perspective of typological evolution, six cases are selected for each group (Hakka and Minnan), covering a continuous sequence from the 1, smallest unit, 2, standard form, 3, variation, 4, extended form, 5, large-scale structure, and 6, special functional type—thus illustrating the progressive transformation of Wufenglou from basic composition to complex system.

In terms of spatial and structural features, the selected cases integrate variations in ground plan, auxiliary buildings, and defensive or geomantic adaptation, reflecting the diversity of Wufenglou's constructive logic and environmental responses.

From a regional-cultural standpoint, the Hakka Wufenglou cluster—mainly located in Yongding, western Fujian—embodies the enclosure and functional verticality in mountainous settlements, while the Minnan Wufenglou group—found in Hua'an (Zhangzhou) and Anxi (Quanzhou)—demonstrates the openness and horizontal extension of coastal plains. Morphologically corresponding yet contextually contrasting, the two sets form a coherent regional comparison framework.

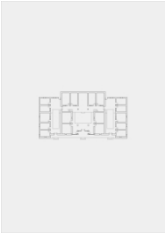
Finally, from the aspect of research value, each case performs a distinct analytical role—serving as a benchmark reference, structural innovation, or scale extreme—collectively supporting the typological framework of this study across structural, functional, and cultural dimensions.

Table 9. Hakka Wufenglou Study Cases

Categories	Name, Built Year	Drone relief (Self rendered January - March 2024)	Ground Floor Plan (Self drawn)[18]	Reason for Selection
Hakka Wufenglou	YAOYUANLOU, 1760			The smallest housing unit arrangement
	HUAICHUNTANG, 1856			Hakka Wufenglou that offset the defect in Fengshui
	RULINDI, 1760-1800s			The Hakka Wufenglou with variation of side buildings
	YULONGLOU, 1834			The most standard and most studied Hakka example
	XUEXIANLOU, 1692			The Hakka Wufenglou adding auxiliary rooms
	YONGHAOLOU, 1821-1850			The existing largest Hakka Wufenglou

[18] Detailed Plans and Facades are listed in Appendix

Table 10. Minnan Wufenglou Study Cases

Categories	Name, Built Year	Drone relief (Self rendered January - March 2024)	Ground Floor Plan, same scale with Hakka cases[19]	Reason for Selection
Minnan Wufenglou	WUFENGLOU (anonymous) 1983			Minnan Wufenglou smallest housing unit, 3 Kaijian
	YIFULOU, 1936			Unique layout, “Sifangkanting”, one public stair
	NANGUILOU, 1926			Minnan Wufenglou standard housing unit of 5 Kaijian
	XIASHANLOU, 1906			Minnan Wufenglou with watch tower
	LIUZHAOWU, 1936			Wufenglou with the front windows on “Titingjian”
	FUANLOU, 1942			Minnan Wufenglou with split layer protection wings

[19] Detailed Plans and Facades are listed in Appendix

2. Hakka and Minnan Wufenglou Basic Type

Within the typological system of Fujian Wufenglou, the configuration of the five main volumes is the key criterion for distinguishing between Hakka and Minnan types. Although both follow a centrally aligned and symmetrical arrangement of five principal masses, their internal composition and spatial logic are different. In this study, the numbering of the five volumes follows the hierarchy of the largest, tallest, and rearmost volumes, beginning with those that fulfill the most fundamental residential functions rather than simply starting from the entrance bay. This method makes it easier to compare Hakka and Minnan examples on a shared basis, especially because some Minnan cases do not include a standard Hakka-style grand entrance hall, and because the main entrance is treated differently in the two traditions: Hakka uses menlou, while Minnan uses tashou, as discussed later in this chapter. This adjustment concerns only the numbering logic and does not alter the nomenclature or physical boundaries of each volume. It is intended to reduce misunderstanding caused by superficial positional resemblance.

- Hakka Wufenglou's Basic Type

While Hakka Wufenglou is commonly labeled a three-hall-two-wing house (San tang liang heng)[20], this vernacular expression is not typologically precise, because many Fujian rammed-earth dwellings share a similar outline without belonging to the Wufenglou lineage, and so-called side buildings often contain hall-like organizational units. For this reason, the Hakka Wufenglou basic type is more rigorously defined here as an axial-lateral five-volume composition, in which three bodies align on the central axis and two lateral bodies flank it in near parallel. In plan, this arrangement generates a central courtyard system with outward, centrifugal deployment that completes enclosure and defense, emphasizing axial governance and perimeter solidity in accord with Hakka clan residence patterns, defensive needs, and mountainous settlement logic. Within this framework, the terms hall and wing are retained only as convenient references for counting volumes or describing variations rather than as exact typological labels (see Table 11).

Volume 1 | Zhulou/Zhenglou[21] meaning the main house (tallest and rearmost volume; terminating

[20] In this text, the term "three-hall–two-wing" does not specifically refer to the Hakka Wufenglou itself. Instead, it represents a general architectural layout rule for certain types of dwellings based on a "hall-and-wing" layout rule. This rule, which will be discussed in detail in Chapter V, is a broader framework from which a range of similar buildings—including Wufenglou as well as other Hakka dwellings in Jiangxi and Guangdong—are derived.

[21] A dialect term specific to Hakka architecture, referring to the "Main House." It is the most important building in the complex, located at the highest point of the axis, normally contains the household of all family members.

the axis)

Placed at the axial end, Volume 1 commands the ensemble and closes the longitudinal sequence. Internally, its rooms are organized around a central hall. A stair core is typically set behind this hall, resolving vertical circulation while reinforcing the ritual termination of the axis. As the tallest volume, it establishes the overall height hierarchy and anchors the rearward, most authoritative part of the compound. See Figure 105, 106.

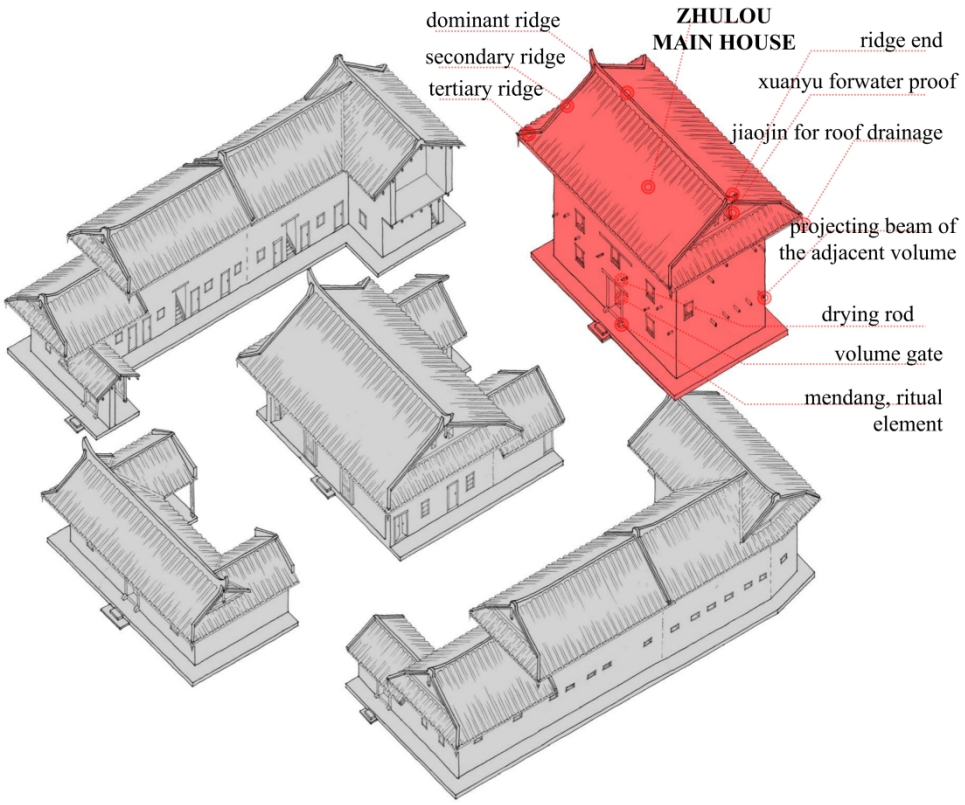


Figure 105. Hakka Wufenglou Volume 1. Example: Yaoyuanlou

Self drawn

Figure 106. Main House (Zhulou) of the Hakka Wufenglou: Xuexianlou

Self taken in 2024

Volume 2 | Zhongting meaning the middel hall or ancestor hall[22] (the volume with symmetrical bays alongside)

Located between the rear main house and the entrance volume, Volume 2 serves as the middle hall and principal ancestor hall. Its lateral bays open symmetrically from the axis, and "Tiger-Mouth Rooms"[23] at both ends accommodate end-of-life care for elders. Kitchens frequently occupy the rear flanks of this volume, facing Volume 1, so that Volume 2 mediates between the main house and the ancestral hall both spatially and formally. See Figure 107, 108.

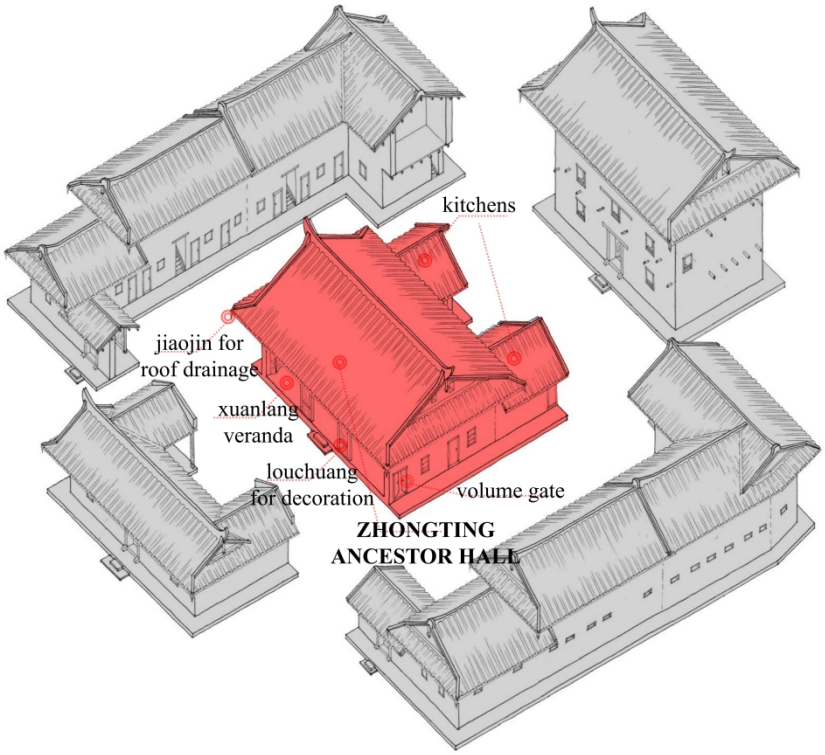


Figure 107. Hakka Wufenglou Volume 2. Example: Yaoyuanlou

Self drawn

[22] The Ancestor Hall is the ritual center of a Chinese clan or extended family home, housing the spirit tablets of ancestors. It is the most sacred space in the hierarchy of the house, used for worship, festivals, and major family decisions.

[23] The "Tiger-Mouth Rooms" (Hukouting) are a unique feature found specifically in Hakka Wufenglou. Their bay arrangement is similar to the main house of the Minnan Wufenglou, where the ancestor hall is in the center and two rooms symmetrically extend along its axis. However, although these rooms conform to the nine-square grid layout principle and are indeed used for habitation, they serve as temporary quarters for elderly residents nearing the end of life. Therefore, even though they fit into the overall nine-grid layout and can be considered residential in a broad sense, they are not treated as part of the main housing units. Consequently, when discussing the housing parts of the Hakka Wufenglou, the volume containing the ancestor hall (Volume 2) and the Tiger-Mouth Rooms is excluded from that discussion.

Figure 108. Ancestor Hall (Zhongting) of the Hakka Wufenglou: Rulindi

Self taken in 2024

Volume 3 | Menting meaning the entrance hall (lowest volume; principal ingress)

As the foremost and lowest body on the axis, Volume 3 contains the main entrance. It connects to Volume 2 through side corridors that may locally convert into rooms, yet do not take on primary dwelling functions. The entrance hall includes a generous vestibule; its corner niches can be annexed to enlarge the hall or enclosed as storage alcoves. Because Volumes 1–3 all lie on the axis and each contains a "hall," local parlance groups them as the "three halls," though their specific volumetric relations are what define the type. See Figure 109, 110.

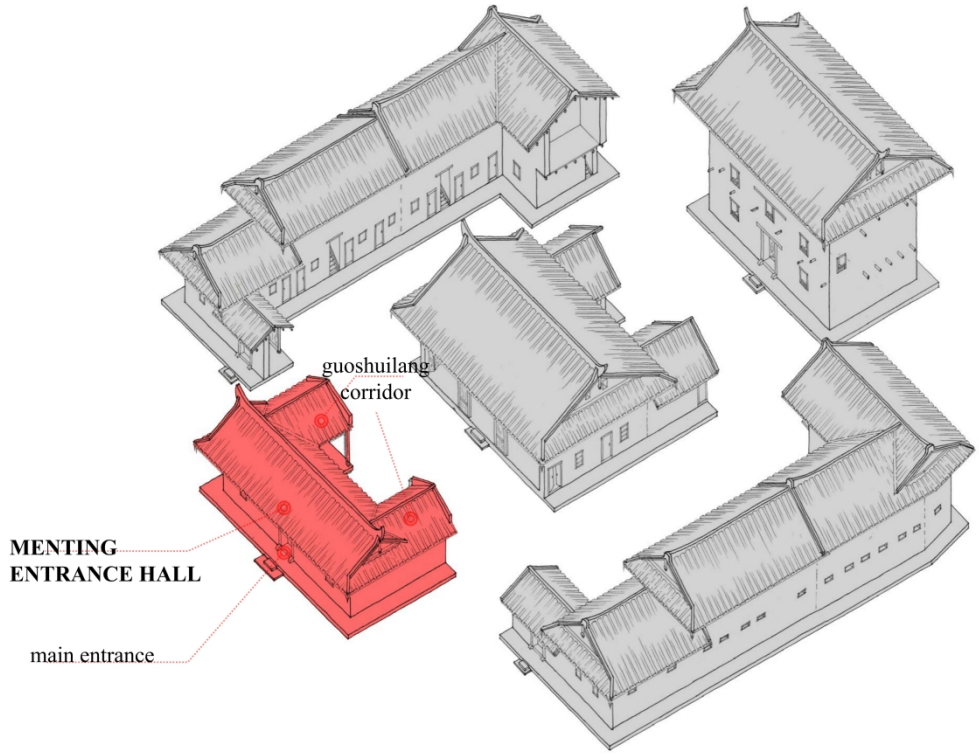


Figure 109. Hakka Wufenglou Volume 3. Example: Yaoyuanlou

Self drawn

Figure 110. Entrance Hall (Menting) of the Hakka Wufenglou: Yaoyuanlou

Self taken in 2024

Volumes 4 & 5 | Hengwu[24] meaning the lateral wings (dwelling bodies; intermediate height; jian–ting–qijiao [25]logic)

Flanking the axial trio[26], Volumes 4 and 5 extend the main house's housing-unit grammar laterally and in fore-/aft repetition. Each wing follows the Hakka jian–ting–qijiao (room–hall–step up) aggregation centered on a minor hall, with dwelling as the primary function. Their scale and storey count are intermediate between Volume 1 and Volume 3. Toward the front eaves they adopt stepped/offset roofing to lower storeys, generating ancillary buffer zones and sheltered side circulation that may accommodate auxiliary rooms or private schools. In accordance with the ritual Fengshui hierarchy of "left honored, right modest[27]," the left wing is in some cases slightly higher or larger than the right. Crucially, these dwelling units are structurally independent from the entrance–ancestor hall system: the axial complex is composed through bay-expanding, axis-governed rules reminiscent of Minnan conventions, whereas the wings remain hall-centric in Hakka logic. This dual-system juxtaposition is definitive for identifying and interpreting the Hakka Wufenglou. See Figure 111, 112.

[24] In Hakka, the term "wu" is used to refer to a house or building. This footnote clarifies that throughout the text, "wu" will appear frequently in the context of Hakka dwellings. In contrast, the Minnan term for a house is often "cuo." This note helps readers quickly distinguish between Hakka and Minnan architectural terminology. See "Ruwu" and "Jinxincuo" in Chapter IV

[25] It typically involves a central hall (ting) flanked by rooms (jian), with a vertical variation or "step-up" (qijiao) in the roofline or floor level to signify hierarchy or to adapt to topography. In Hakka Wufenglou, "Jian-ting-qijiao" works as a housing module which applies in all the housing units surrounding the central ancestor hall

[26] This refers to the three architectural volumes each contain main halls aligned along the central axis, typically consisting of the Lower Hall (entrance), Middle Hall (main gathering space), and Upper/Rear Hall (ancestral shrine/elders' residence). In the context of Wufenglou, these are the core ritual spaces.

[27] See chapter III

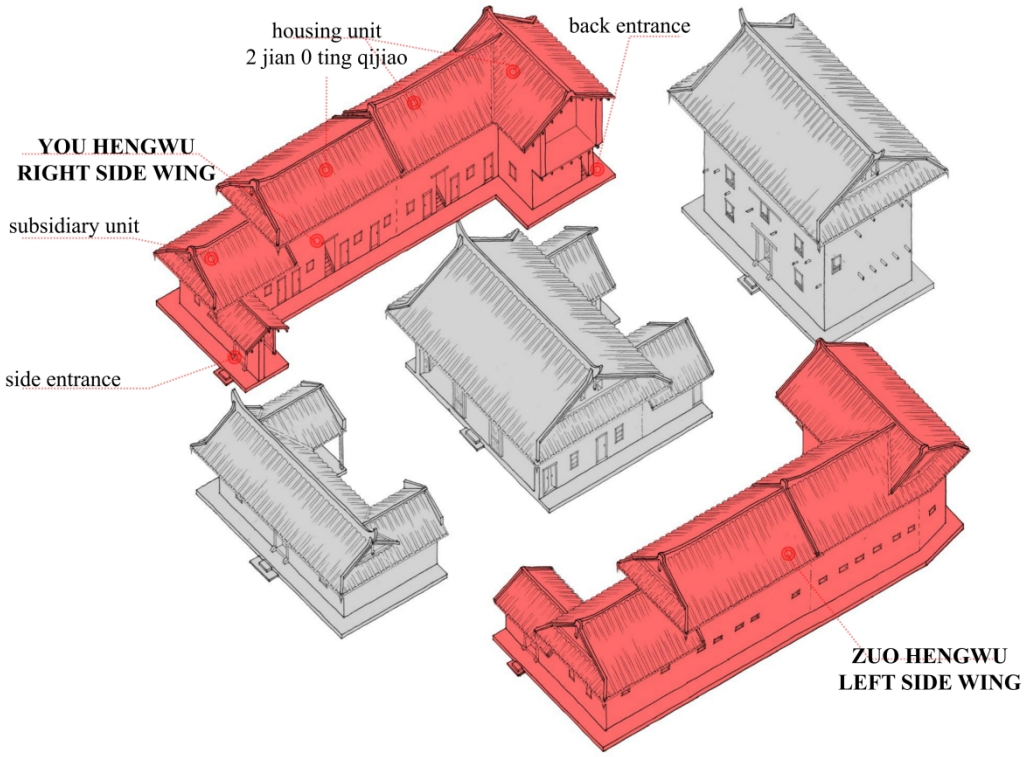


Figure 111. Hakka Wufenglou Volume 4 & 5. Example: Yaoyuanlou

Self drawn

Figure 112. Right Side Wing (You Hengwu) of the Hakka Wufenglou: Yulonglou

Self taken in 2024

Courtyard System and Spatial Gradient

The five volumes collectively generate four courtyards, together in a public-to-private gradation: The main one whose layout originates from the nine-square grid pattern, framed by Volumes 2 and 3 with their flanking corridors, is the most open ceremonial and social space, hosting ancestral rituals, receptions, and climatic regulation through ventilation and daylight. Behind it, a secondary public/service courtyard is enclosed by the posterior parts of Volumes 1 and 2, housing the communal kitchen and functioning as a practical yet ritual-domestic yard for smoke exhaust and air circulation. On both sides, two lateral private courtyards are bounded by each wing together with the corresponding side portions of Volumes 1–3; they extend front-to-back as a sequence from the ancillary side entrance outside toward increasingly private rooms inside. Passageways and doorways along both sides of the veranda in Volume 2 and at the link between Volume 1 and the kitchen ensure easy movement between the axial complex and the lateral wings. Through this configuration, the Hakka Wufenglou courtyard system expresses a clear hierarchy of privacy—public to semipublic to private—while integrating ritual, domestic, and environmental functions into a single, stable five-volume order.

Table 11. Hakka Wufenglou five volumes' information

Volume No.	Name (Meaning)	Position in Layout	Height / Storey Condition	Primary Functions	Internal / Spatial Logic	Special Features	Relation within the Five-Volume System
Volume 1	Zhulou / Zhenglou (main house)	At the rear end of the central axis; terminates the sequence	Tallest volume	Ritual termination of axis; dwelling; central hall activities	Central hall with stair core behind; establishes rear authority	Anchors overall height hierarchy	Part of axial trio (Volumes 1–3)
Volume 2	Zhongting (middle / ancestor hall)	Between Volume 1 and Volume 3 on the central axis	Medium–high	Ancestor hall; symmetrical bays; kitchens at posterior ends	Includes "Tiger-Mouth Rooms"; mediates between main house and entrance hall	Tiger-Mouth Rooms used for end-of-life care	Central volume of axial complex
Volume 3	Menting (entrance hall)	Foremost and lowest body on the axis	Lowest volume	Main entrance; vestibule; circulation	Vestibule with corner niches; side corridors linking to Volume 2 (non-dwelling)	Corner niches extend or store space	Forms the front of the axial trio
Volume 4	Hengwu (lateral wing)	Lateral body on left side of axis	Intermediate height	Principal dwelling units	Jian–ting–qijiao dwelling grammar; minor hall at center	Stepped roofing toward the front	Structurally independent from entrance–ancestor system
Volume 5	Hengwu (lateral wing)	Lateral body on right side of axis	Intermediate height	Principal dwelling units	Jian–ting–qijiao grammar repeated front-to-back	May contain auxiliaries or private schools	Creates lateral private courtyard system

- Minnan Wufenglou's Basic Type

While Minnan Wufenglou also organizes space along a central axis, its five-volume schema differs fundamentally from the Hakka basic type. It is composed according to the nine-square-grid principle as a Main House (Dingluo), paired Stair-Pavilion Rooms (titingjian), and paired Corner Rooms (jiaojian). Each volume is capped by an independent gabled roof, making the five bodies legible both in facade and in roof profile. The plan centers on a single courtyard: the ancestor hall anchors the rear end of the axis (back of the court), the main entrance anchors the front, the transitional bands on both sides correspond to the titingjian, and the corner positions are occupied by rooms — posterior corners biased to dwelling, anterior corners to service. In this way, Minnan Wufenglou develops from core to periphery and from principal to auxiliary spaces, while also using staggered height differences to express a clear vertical hierarchy and Minnan's open, dynamic, and ornamental aesthetics (see Table 12).

Volume 1 | Dingluo[28] meaning the main house (rear main body; two storeys; tallest)

Located at the axial terminus, it integrates the ancestor hall and the dwelling suites within a single body (unlike the Hakka type). The central bay houses the ancestral hall, flanked by bedrooms; the frontage widens by paired bay additions from the central bay, yielding 3/5/7… odd-bay sequences[29]. Roofed independently as a gable, Dingluo serves as the ritual–residential core. See Figure 113, 114.

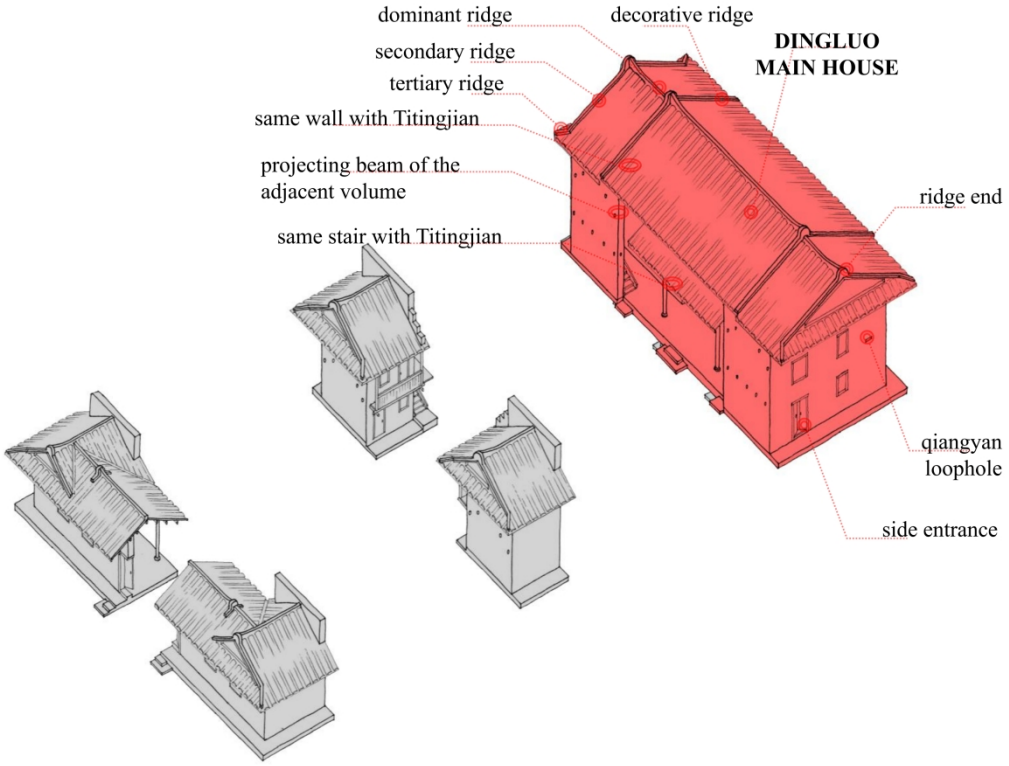


Figure 113. Minnan Wufenglou Volume 1. Example: Nanguilou

Self drawn

[28] A dialect term specific to Minnan architecture, referring to the "Top Hall" or "Rear Main House." It is the most important building in the complex, located at the highest point of the axis, housing the ancestor hall and senior family members.

[29] The “odd-bay sequence” (e.g., a 3/5/7 bay arrangement) mentioned in the description of the Minnan Wufenglou’s main house is actually a type of “Axial-Bay layout rule” that will be discussed in detail in Chapter V. This rule is not unique to the Wufenglou; it has been adopted by the Minnan Wufenglou but is also used in many other Minnan vernacular dwellings that are not classified as Wufenglou.

Figure 114. Main House (Dingluo) of the Minnan Wufenglou: Taianlou

Self taken in 2025

Volumes 2 & 3 | Titingjian[30], meaning stair-pavilion Rooms (bilateral, two storeys; in front of Dingluo)

Symmetrically placed on both sides of the axis, these volumes typically house the main stair at their junction with Dingluo (a minority places the stair at Dingluo's center). Their roofs are gable-fronted, purlin-supported with shed eaves, interpretable as "half of a nine-ridge roof."[31] Ground floors often serve as kitchens or storage; upper floors as storage or temporary bedrooms when Dingluo (main house) is fully occupied. Functionally they act as circulation nodes, service pods, and spatial buffers. See Figure 115, 116.

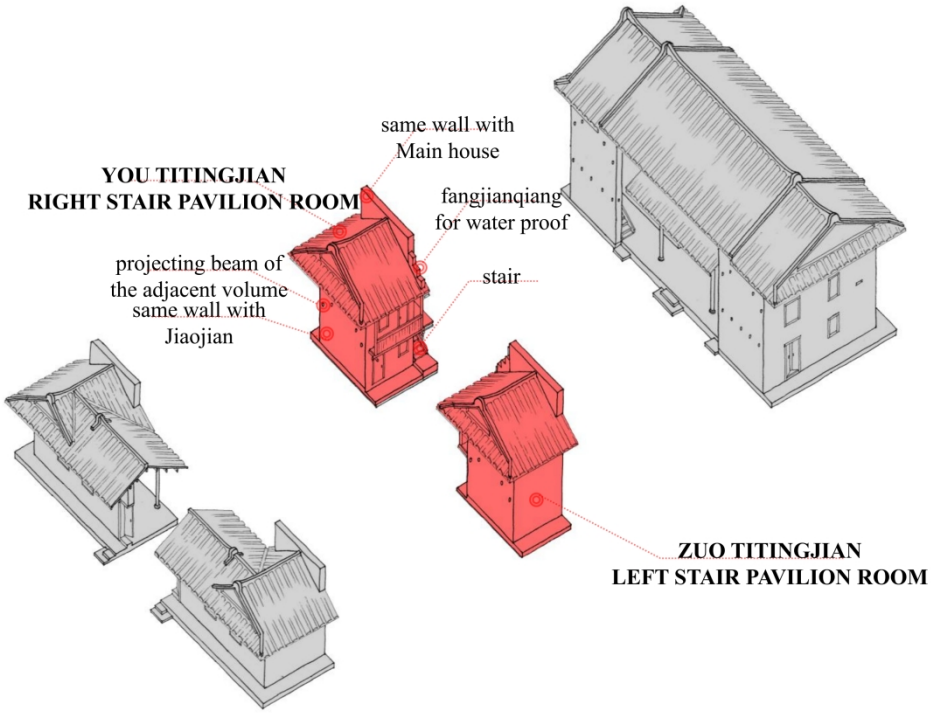


Figure 115. Minnan Wufenglou Volume 2 & 3. Example: Nanguilou

Self drawn

[30] An unique dialect term specific to Minnan Wufenglou

[31] In Chapter III, the "Nine-ridge roof" mentioned for the Wufenglou is not exactly the same as the traditional Chinese Xieshan roof; it just resembles it. The term "half of a nine-ridge roof" is used because the Titingjian's roof is essentially a partial form: one side is directly attached to the Main House wall. So it has about five ridges instead of a full set of nine, but it still follows the volumetric idea of a nine-ridge roof.

Figure 116. Right Stair-Pavilion Room (You Titingjian) of the Minnan Wufenglou: Nanguilou

Self taken in 2024

Volumes 4 & 5 | Jiaojian[32], meaning corner rooms (flanking the main entrance; lower than stair-pavilions)

Placed on both sides of the central entrance, each carries a front-facing gable at a height deliberately lower than the stair-pavilions to reinforce frontal hierarchy and façade stepping. By ritual convention they do not serve as principal bedrooms, but operate as kitchens, storage, or anteroom extensions to the entrance hall; in some cases, partial interior non-enclosure with corner posts is adopted to enlarge the entrance hall. See Figure 117, 118.

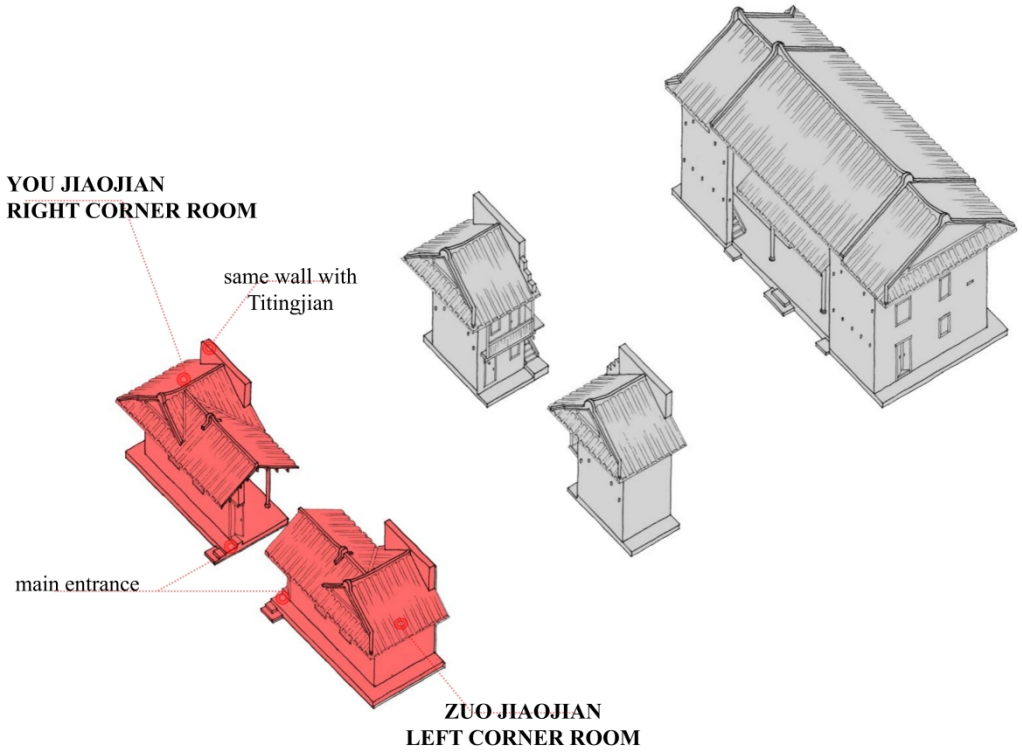


Figure 117. Minnan Wufenglou Volume 4 & 5. Example: Nanguilou

Self drawn

[32] "Jiaojian" refers to the rooms located at the corners of the front façade, Functionally, they are secondary spaces often used for storage or utility, distinct from the primary living quarters, reflecting the hierarchy of space usage.

Figure 118. Corner Room (Jiaojian) of the Minnan Wufenglou: Longshantang

Self taken in 2025

Ingress and Extensions

The basic type has a single main entrance at the front center; secondary doorways are set at both junctions between Dingluo and the stair-pavilion rooms, ensuring lateral connectivity between the axial core and side bodies. Some variants expand laterally with protection buildings (hucuo)[33] to increase dwelling capacity; however, these are not part of the basic type.

In sum, the Minnan Wufenglou is Dingluo (main house) -centric, with paired stair-pavilion rooms orchestrating vertical circulation and services, and corner rooms forming the ritual forecourt with the entrance hall. The five independent gabled volumes, positioned by the nine-grid logic, jointly enclose the single central courtyard, integrating ritual, dwelling, and service functions in a continuous sequence, while graded storey heights and stepped roofs produce the characteristic Minnan open and dynamic façade composition.

[33] A dialect term of Minnan, meaning “side building”

Table 12. Minnan Wufenglou five volumes' information

Volume No.	Name (Meaning)	Position in Layout	Height / Storey Condition	Primary Functions	Internal / Spatial Logic	Special Features	Relation within the Five-Volume System
Volume 1	Dingluo (main house)	Rear axial terminus	Tallest; two storeys	Ancestor hall and dwelling combined in one body	Central ancestral hall; flanking bedrooms; odd-bay progression	Independent gabled roof	Ritual–residential core
Volume 2	Titingjian (stair-pavilion room)	Lateral volumes in front of the main house	Two storeys	Circulation node; stair; service space	Stair at junction with Volume 1; ground floor as kitchen/storage; upper floor temporary rooms	Gable-fronted roof with shed eaves	Bilateral transitional units
Volume 3	Titingjian (stair-pavilion room)	Symmetric counterpart to Volume 2	Two storeys	Same as Volume 2	Same as Volume 2	Same as Volume 2	Maintains symmetry
Volume 4	Jiaojian (corner room)	Flanking the main entrance	Lower than stair-pavilions	Kitchens, storage, or entrance extensions	May adopt partial non-enclosure with corner posts	Lower front-facing gable	Establishes façade stepping
Volume 5	Jiaojian (corner room)	Symmetric counterpart to Volume 4	Lower than stair-pavilions	Kitchens, storage, or auxiliary functions	Same as Volume 4	Same as Volume 4	Completes five-volume frontal arrangement

Both categories of Wufenglou are composed of five volumetric units arranged symmetrically along a central axis, with heights stepping upward toward the rear. However, the logic of their composition differs fundamentally. In the Hakka Wufenglou basic type, ceremonial and residential spaces are separated: the five volumes place the gate hall and the main ancestral hall at the absolute spatial center of the whole complex, with the primary residential volume located behind this ceremonial core and secondary residential volumes positioned on both sides. This results in a system of multiple enclosures, in which each volume creates its own small courtyard, but the courtyard associated with ceremonial functions becomes the dominant core.

In contrast, the Minnan Wufenglou basic type merges ceremonial and residential functions: all five volumes enclose one shared central courtyard, forming a single-core configuration. This distinction is not merely formal—it reflects deeper differences in social organization, aesthetic preferences, and residential ideology. In other words, even though both forms follow the basic "nine-grid–central courtyard" spatial principle discussed in Chapter II and share the common architectural rules summarized in Chapter III, the essential divergence lies in whether central ceremonial space and the normal residential space remain separated (Hakka) or integrated (Minnan). This difference not only defines their basic typology but also determines the nature of all subsequent variations.

Thus, Hakka and Minnan Wufenglou represent two distinct residential types.[34]

[34] In the following text, to standardize the naming conventions for the five volumes of both Hakka and Minnan Wufenglou, the following rule is adopted: Volume 1 in both Hakka (Zhulou) and Minnan (Dingluo) Wufenglou will be uniformly called "Main House." This is not only because both are the tallest and most dominant volumes in their respective structures, but also because these Main Houses best highlight the fundamental differences in housing unit modules between Hakka and Minnan types. Although they appear similar and hold the dominant role in each type, their internal housing arrangement modules differ significantly, making it easier to compare the two. Therefore, this naming convention helps to clearly distinguish the differences. All other volumes in the Hakka Wufenglou will use English names: Volume 2 as "Ancestor Hall," Volume 3 as "Entrance Hall" or "Main Entrance Hall," and Volumes 4 and 5 as "Lateral Wings." In the Minnan Wufenglou, the volume known as Titingjian retains its pinyin name because it is a crucial recognizable part, while Jiaojian is referred to as "Corner Rooms." This naming rule will be followed throughout the text.

3. Housing Unit and Auxiliary Parts of Hakka and Minnan Wufenglou

3.1. "Jian-Ting-Qijiao" Housing Module of Hakka Wufenglou

The fundamental structure of Hakka Wufenglou consists of the Jian – Ting – Qijiao module which includes Jian for rooms, Ting for the central hall, and Qijiao for the vertical stair-core module that runs from floor to floor to support the structure and provide access. A Qijiao represents a vertical multi-story structure that includes a stairwell to establish both vertical growth potential and define different areas of the building.[35]

A complete housing unit consists of one Ting aligned with the sole entrance, one Qijiao, and symmetrically arranged Jian on both sides. The smallest module exists with Jian and Qijiao only, without Ting, such as the side house of Yaoyuanlou.

Figure 119 shows how the jianting qijiao module is represented in each of the six selected Hakka Wufenglou cases. It can be seen that the jian number in the central rear main house is generally larger than that in the side wings. Additionally, the number of jian at the rear is generally greater than at the front.

As is shown from Figure 120 to Figure 124, the generative sequence of the module follows a scalable pattern. The minimum type is 2 Jian, Qijiao (without Ting). Standard expansions include 2 Jian 1 Ting Qijiao[36]; 4 Jian 1 Ting Qijiao; 6 Jian 1 Ting Qijiao[37]; 8 Jian 1 Ting Qijiao[38]. The maximum recorded case reaches 10 Jian, as found in the main house of Yexinglou in Kanshi, Yongding, where the original single Qijiao evolved into two Qijiao (two staircases), indicating a variant rather than a standard type[39]. Whether it is on the central axis, a basic volume is usually allocated with even numbers of Jian(rooms) and one Ting (hall), the odd number, following the regulation of "one-bright two-dark" mentioned in

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[35] Pan et al. 2013. pp. 116-120, 135-138.

[36] The "2 jian 1 ting qijiao" and the "2 jian qijiao" (without a hall) housing units sometimes feature a single staircase that serves multiple adjoining rooms. This characteristic means that one staircase can manage an entire row of continuous rooms, regardless of whether there is an external corridor or an internal passage that connects these rooms by doorways. This layout is a defining feature of both the "2 jian 1 ting" and the "2 jian" qijiao units, typically presenting a pattern where a single staircase provides access to multiple rooms on either side.

[37] In a "6 jian 1 ting qijiao" layout, there can be a scenario where the central section next to the staircase consists of two rooms. Sometimes, the partition between these rooms is removed to create a single larger space, making it appear as a "5 jian 1 ting" layout. However, the standard form remains "6 jian 1 ting qijiao." This modification does not alter the original standard, and it should also be noted as "6 jian 1 ting qijiao" when labeling.

[38] Each "jian ting qijiao" housing unit may exhibit morphological differences due to terrain, architectural design, and other factors, resulting in variations from the standard rectangular shape or the absence of a particular room. However, these variations do not affect the identification of the housing unit as a "jian ting qijiao."

[39] In Kanshi Street, Yongding, there is a large Wufenglou called Yexinglou. Its main house features a housing module with ten rooms and one central hall. However, unlike the standard Jian-Ting-Qijiao configuration—which typically has only one stair hall—the Yexinglou's main house has two stair halls combined. This breaks the basic housing module pattern. Therefore, in this study, Yexinglou's main house is not classified as a standard housing module, even though its exterior is similar to other Hakka Wufenglou.

Chapter III. Whenever a volume does not include Qijiao, it indicates a single-storey volume.

Room numbers are predominantly even, following the Hakka spatial logic of "one bright, two dim (one central bright core with two symmetric side wings)": Ting and Qijiao form the "bright" core, while paired Jian form "dim" side rooms, requiring bilateral symmetry.

The main house (volume 1) is a scaled-up implementation of Jian–Ting–Qijiao, while side house volumes function as parallel or paired combinations of the same logic. The front segment of side house volumes often incorporates a descending sub-volume, creating a cascading elevation profile—higher at the rear, lower toward the front.

In summary, Jian–Ting–Qijiao is both a housing and structural unit, expandable from 2 Jian, Qijiao to larger assemblies, ultimately forming the main house and side house composition that encloses the central courtyard in a full Wufenglou configuration. Existing literature has not yet systematized the typological sequence of Qijiao-based modular expansion. This framework defines Hakka Wufenglou housing units as expandable modules whose growth logic corresponds directly to the volumetric composition of the building.

Figure 119. ”Jian-Ting-Qijiao” Housing module applied in the chosen 6 study cases of Hakka Wufenglou.

Self drawn

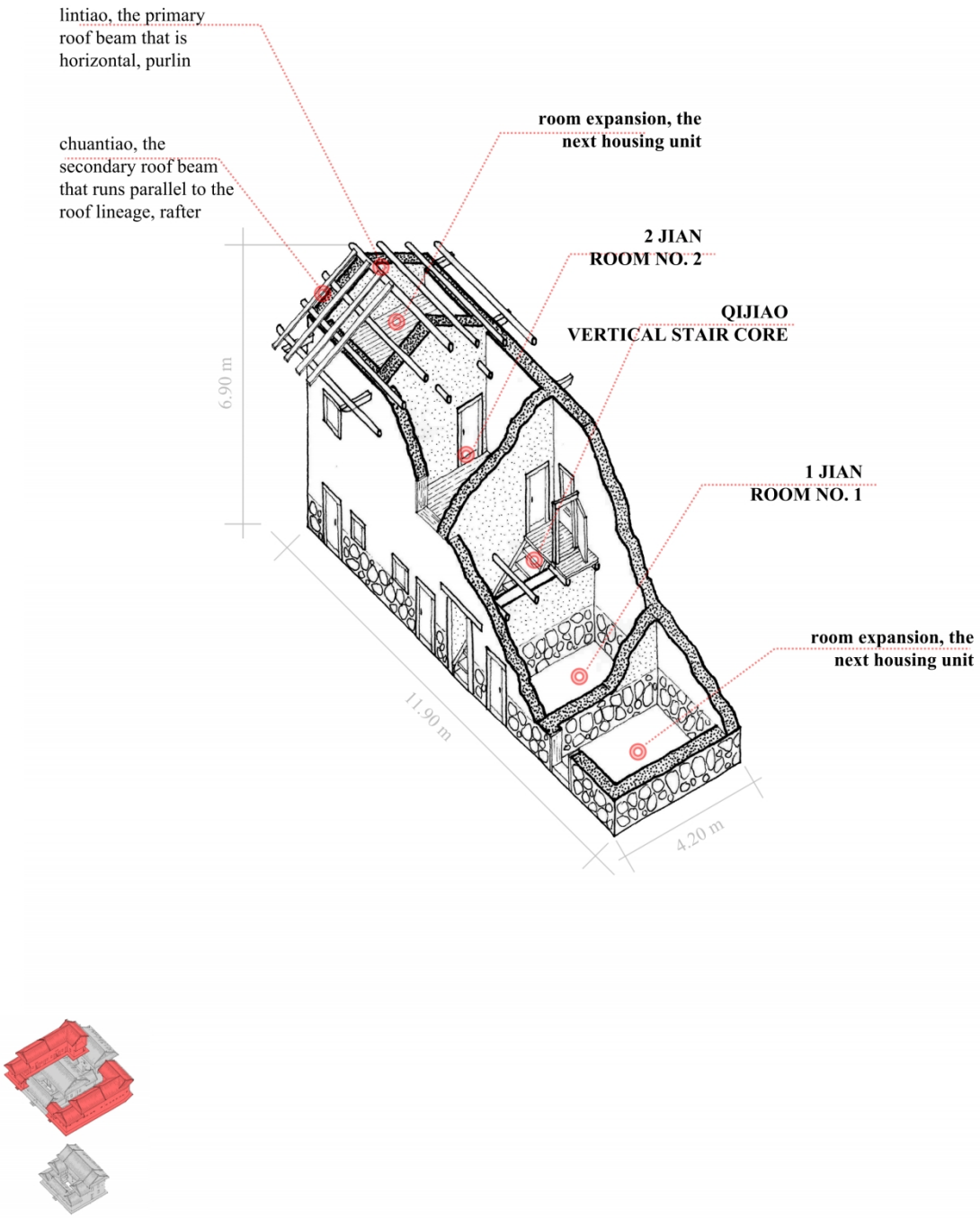

Figure 120. Axonometric Section of 2 Jian Qijiao (No Ting), with rooms each connected to another housing unit.

Example: The side wing of Yaoyuanlou

Self drawn

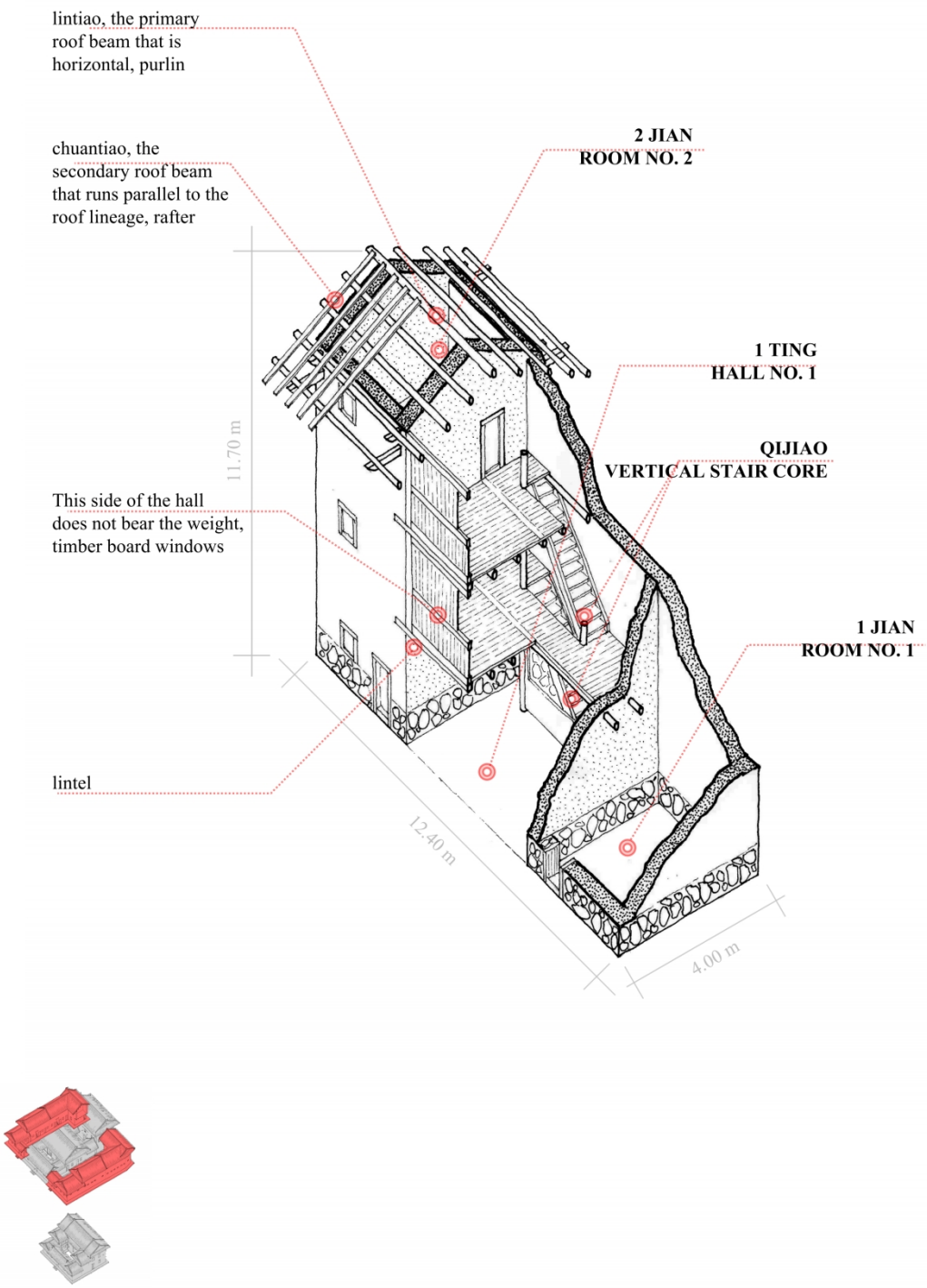

Figure 121. Axonometric Section of 2 Jian 1 Ting Qijiao

Example: The back building behind the main house of Yonghaolou

Self drawn

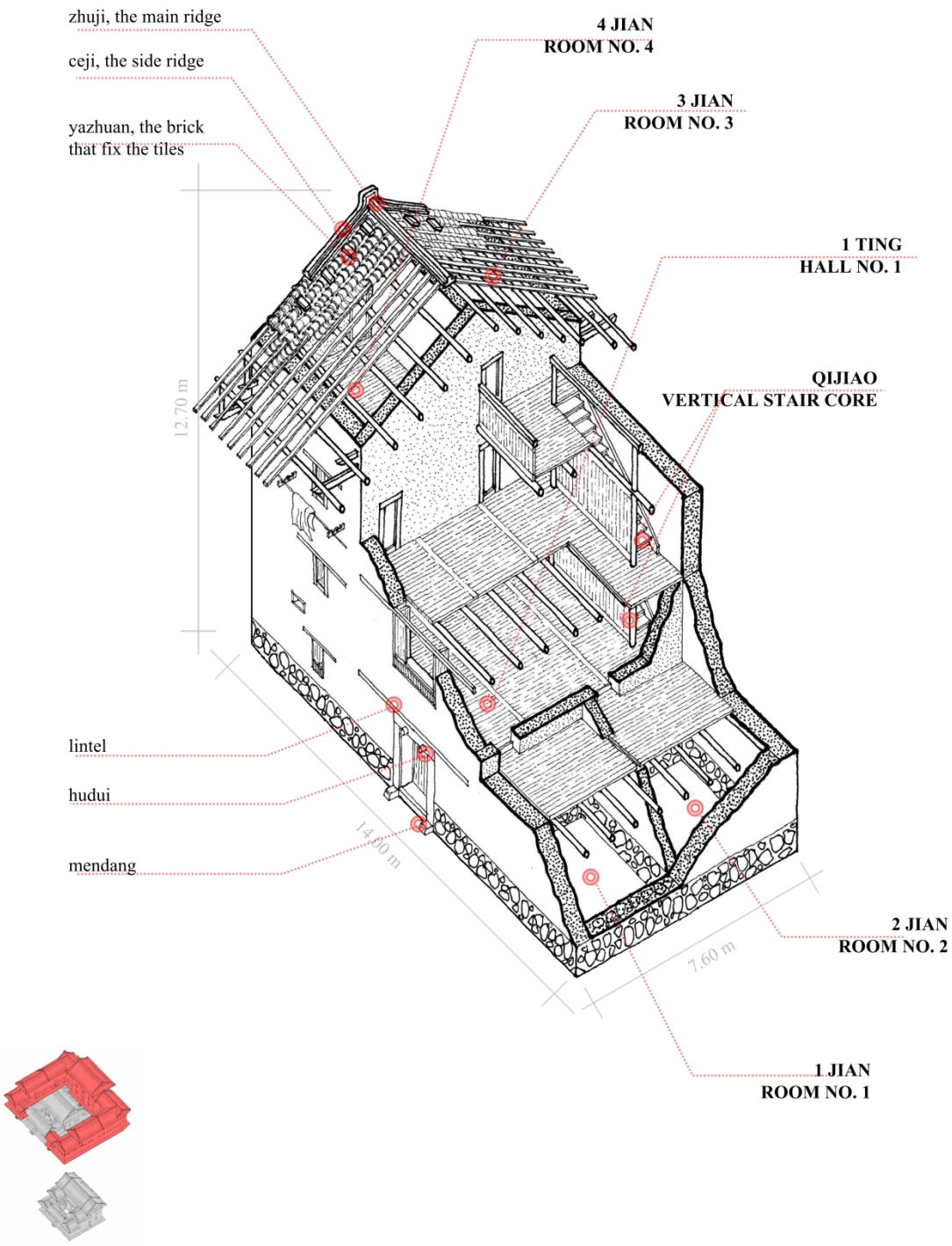

Figure 122. Axonometric Section of 4 Jian 1 Ting Qijiao

Example: The side wing of Yulonglou

Self drawn

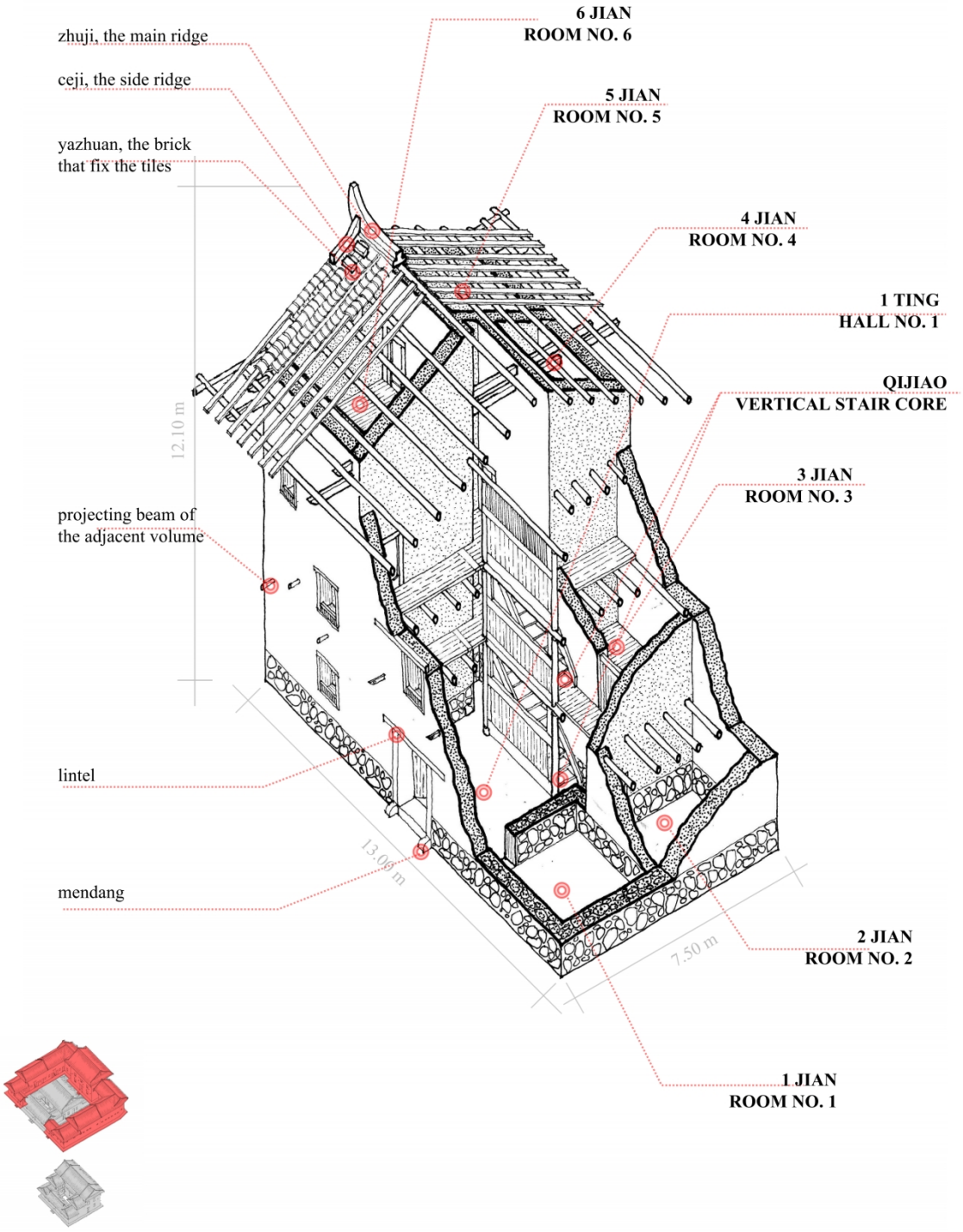

Figure 123. Axonometric Section of 6 Jian 1 Ting Qijiao

Example: The main house of Yaoyuanlou

Self drawn

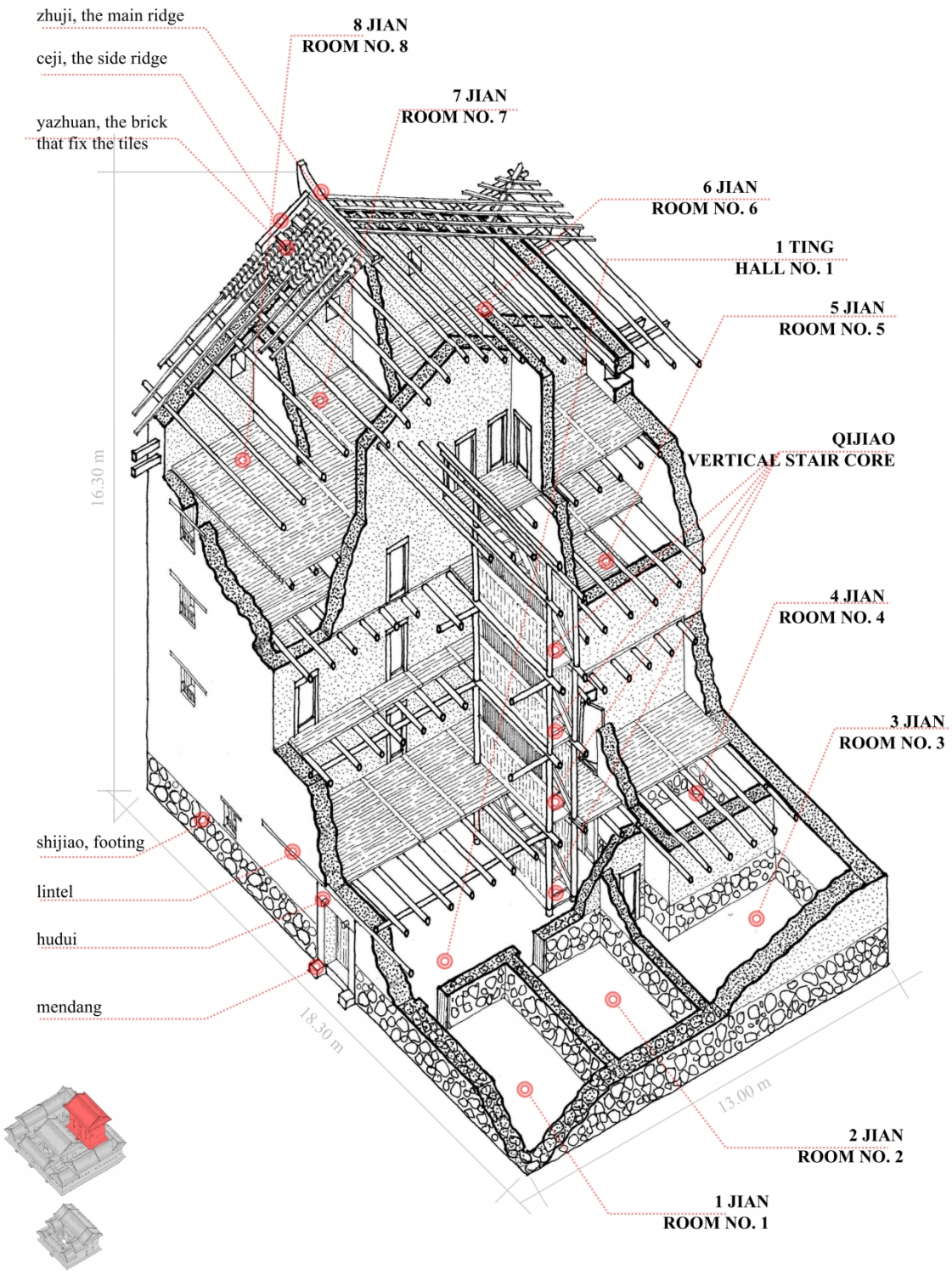

Figure 124. Axonometric Section of 8 Jian 1 Ting Qijiao

Example: The main house of Yulonglou

Self drawn

Figure 125 analyzes the circulation logic within Hakka Wufenglou housing modules. The key distinction lies in how the presence of a "Ting" (Hall) dictates movement. In the Independent Volume and Combinable Volume with a Hall, the circulation is organized around a central distribution hub. Vertical traffic leads directly into this shared hall, which then acts as a node to distribute flow independently to surrounding rooms, avoiding unnecessary intrusion into private zones. Conversely, in the Combinable Volume without a Hall, the absence of this central gathering space fundamentally alters the flow. Circulation is forced to become linear and penetrating; connecting to another unit or room requires passing directly through the adjacent private space ("room-to-room"), creating a continuous, serial path without the buffer of a neutral distribution area.

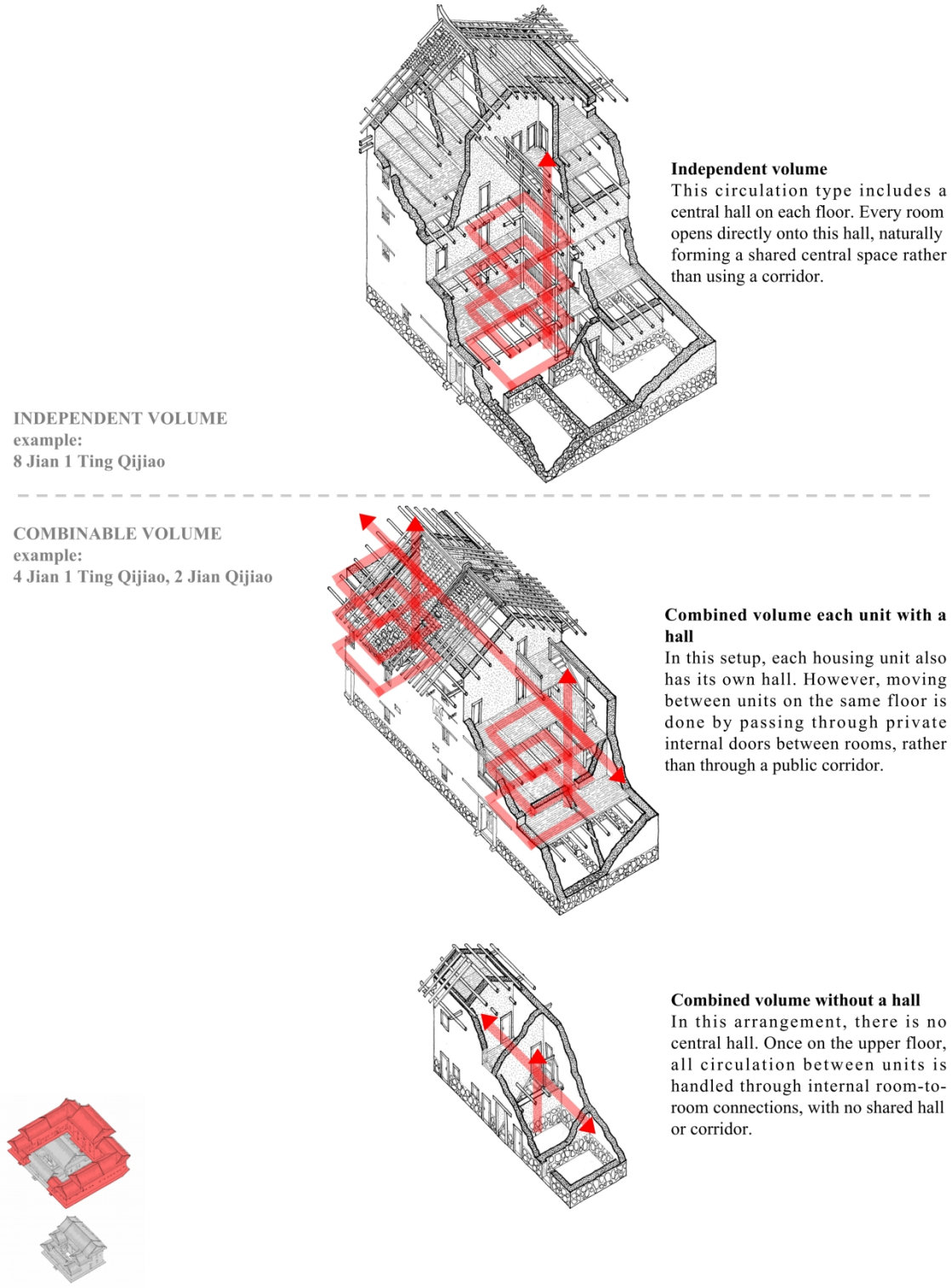

Figure 125. Representation of Circulation Flows in Different Jian–Ting–Qijiao Structures

Self drawn

Building upon the previous analysis of circulation flows, Figure 126 classifies the Hakka Wufenglou modules into functional roles—Main House or Side Wing—determined by their ability to interconnect without compromising habitability. The large 8-Jian module is structurally restricted to serving only as a Main House. Due to its deep spatial depth, attempting to connect it laterally as a side wing would obstruct natural light, creating uninhabitable "dark interior rooms"; thus, it requires the "independent volume" circulation logic. In contrast, the 4-Jian module serves as the pivotal, flexible link. It is the only typology capable of functioning as either a Main House or a Side Wing, as its layout is compact enough to avoid dark rooms while retaining the central hall for distribution. Finally, the smaller 2-Jian units (often hall-less) are relegated strictly to Side Wings or extensions. Their limited scale and linear, pass-through circulation make them unsuitable for primary living, forcing them to exist only as attached, combinable volumes.

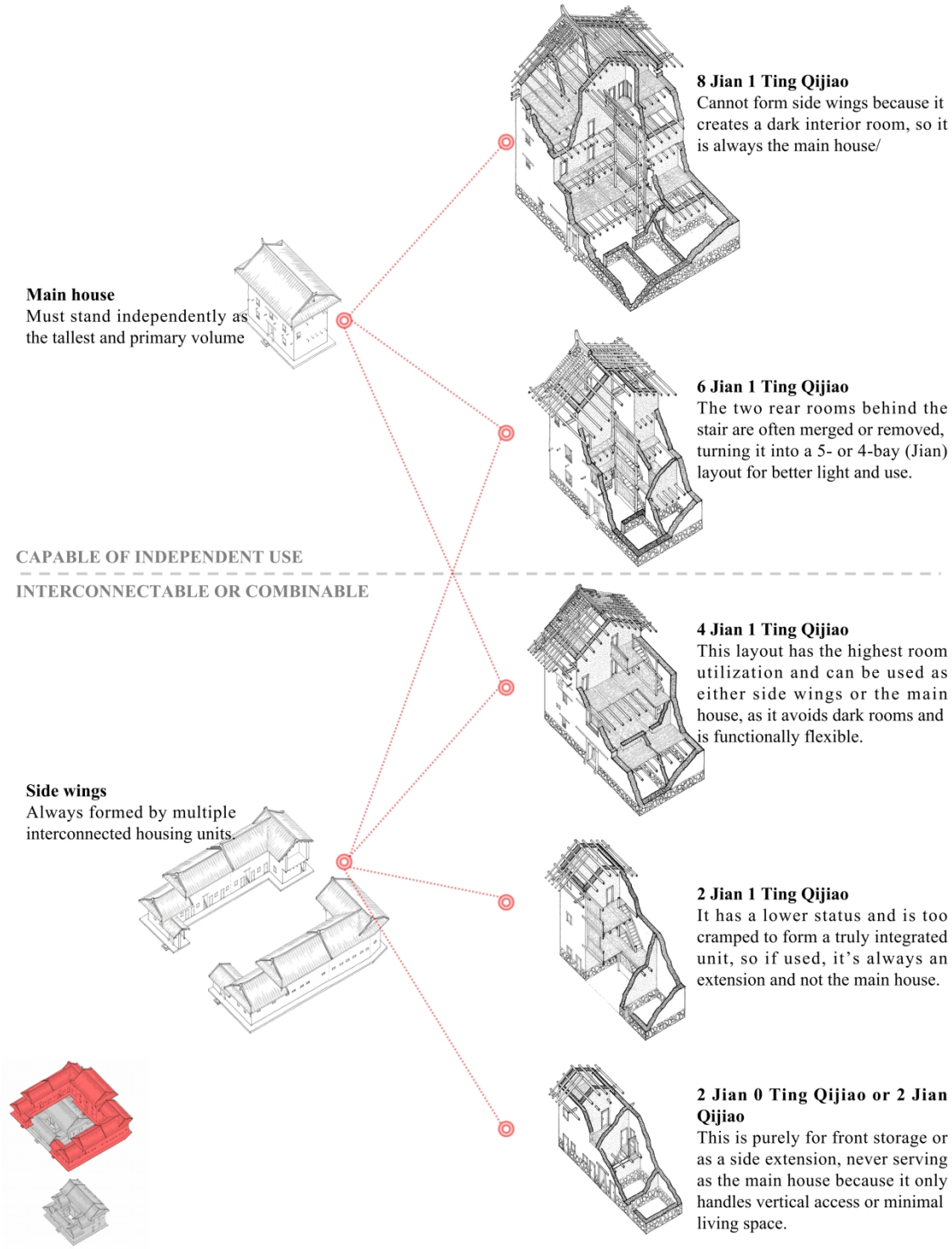

Figure 126. Indications of Which Jian–Ting–Qijiao Structures Are Suitable for the Main House or Side Wings

Self drawn

- Spatial Configuration of the Jian – Ting – Qijiao System Around the Central Courtyard in Hakka Wufenglou

(1) The Central Courtyard's Autonomy in Hakka Wufenglou

In the overall layout of Hakka Wufenglou, volume 2 (ancestor hall as core) functions as the primary spatial and ritual ordering anchor. Together, the ancestor hall and the main entrance hall define and enclose the central courtyard, which is positioned on the principal axis as an independent spatial unit rather than a component of any single Jian – Ting – Qijiao housing unit. In other words, the central courtyard and its Ting are autonomous from the flanking housing units, operating as the shared ceremonial and communal core, structurally and programmatically distinct from the side house modules.

As previously outlined in the Nine-Square grid axial scheme (see Chapter II), the spatial hierarchy consists of: the center grid as the central courtyard, the front grid as the main entrance hall, the rear grid as the ancestor hall, the rear-left and rear-right grids as chambers (in Hakka Wufenglou designated as Hukouting (Tiger-Mouth Room), for senior elders, although Hukouting may serve temporary residential functions), the middle-left and middle-right grids as corridors, and the front-left and front-right grids as auxiliary rooms, forming a model of nine functional divisions.

Functionally, the ancestor hall hosts ancestral rituals, lineage gatherings, and family assemblies, serving as a collective domain. Side chambers adjacent to it often constitute Hukouting (Tiger-Mouth Room); although these may be temporarily used for living purposes, they are generally utilized for storage or daily placement when not required for elder care. Because volume 2 remains a self-contained unit rather than embedded within any 8 Jian 1 Ting Qijiao or similar housing module, Hakka Wufenglou establishes a clear spatial sequence in depth: the main entrance hall (volume 3) addresses the exterior and reception, followed by the ancestor hall (volume 2) addressing internal lineage functions, and the central courtyard between them completes the core ritual system. Only beyond this core, and laterally to both sides, do private living and sleeping quarters unfold. This configuration ensures that communal ceremonial space and domestic residential space remain segregated rather than merged within a single housing unit, and that spatial progression is organized along depth layers rather than lateral clustering.

Around this axial courtyard system, the Jian–Ting–Qijiao housing units are distributed, paired, and multiplied. In essence, housing units negotiate how people dwell, while the central courtyard–Ting system

negotiates how the lineage congregates. The two operate with structural autonomy but strict axial alignment.

(2) Combinatorial Variations of the Jian–Ting–Qijiao Unit

Across the Hakka Wufenglou distribution area, many rammed-earth buildings adopt the Jian–Ting–Qijiao module as the basic housing unit, but not all of them fulfill the criteria of a strict Wufenglou. The following compositional tendencies are commonly observed:

Tendency 1, Elevated frontal elevation

Certain cases raise the entire frontal section to two storeys or above, as seen in Heyipingju. This operation does not alter the internal logic of the Jian–Ting–Qijiao unit within the main house (volume1) and side house (volume4, volume5), but it increases the number of rooms near the entrance, creating overlapping height and massing between the foreground and the main body.

Tendency 2, Rear unit horizontal replication

Instead of enlarging a single housing unit laterally (e.g., from 6 Jian 1 Ting Qijiao to 8 Jian 1 Ting Qijiao), some buildings extend by repeating identical Jian–Ting–Qijiao modules along the frontal span to form a continuous rear mass. Huopotang exemplifies this pattern, where new modules of the same scale are incrementally attached to both sides of the original volume1, elongating the main house.

Tendency 3, Qijiao-extended corridor

In some building forms, a corridor is extended outward from the Ting or the Qijiao stair-core, linking adjacent Jian–Ting–Qijiao units on the same floor. This differs fundamentally from the continuous circumferential corridor of corridor-type Tulou[40], which runs uninterrupted around an entire floor; here, the corridor is only a local connector between neighboring volumes. See Figure 127.

Tendency 4, Independent housing volume

In some cases, only one Jian–Ting–Qijiao unit is built, forming a vertically self-sufficient housing volume with its own entrance. Such buildings operate as independent multi-storey dwellings without relying on paired side volumes. In these cases, the Ting may directly serve as an ancestor hall, and in certain examples, the ancestor hall may appear repeatedly across offset floor levels. See Figure 128.

Tendency 5, Axial core-only configuration without paired side houses

Some buildings preserve only the axial sequence—main entrance hall → central courtyard →

[40] Huang 2020, p. 15.

ancestor hall → central courtyard → main house (volume1–volume3)—while one or both side houses are missing. Although the axial order remains legible, the absence of symmetrical side volumes prevents the formation of paired lateral massing.

These patterns all derive from the Jian–Ting–Qijiao module and may appear independently or in combination, yet they do not necessarily qualify as Wufenglou.

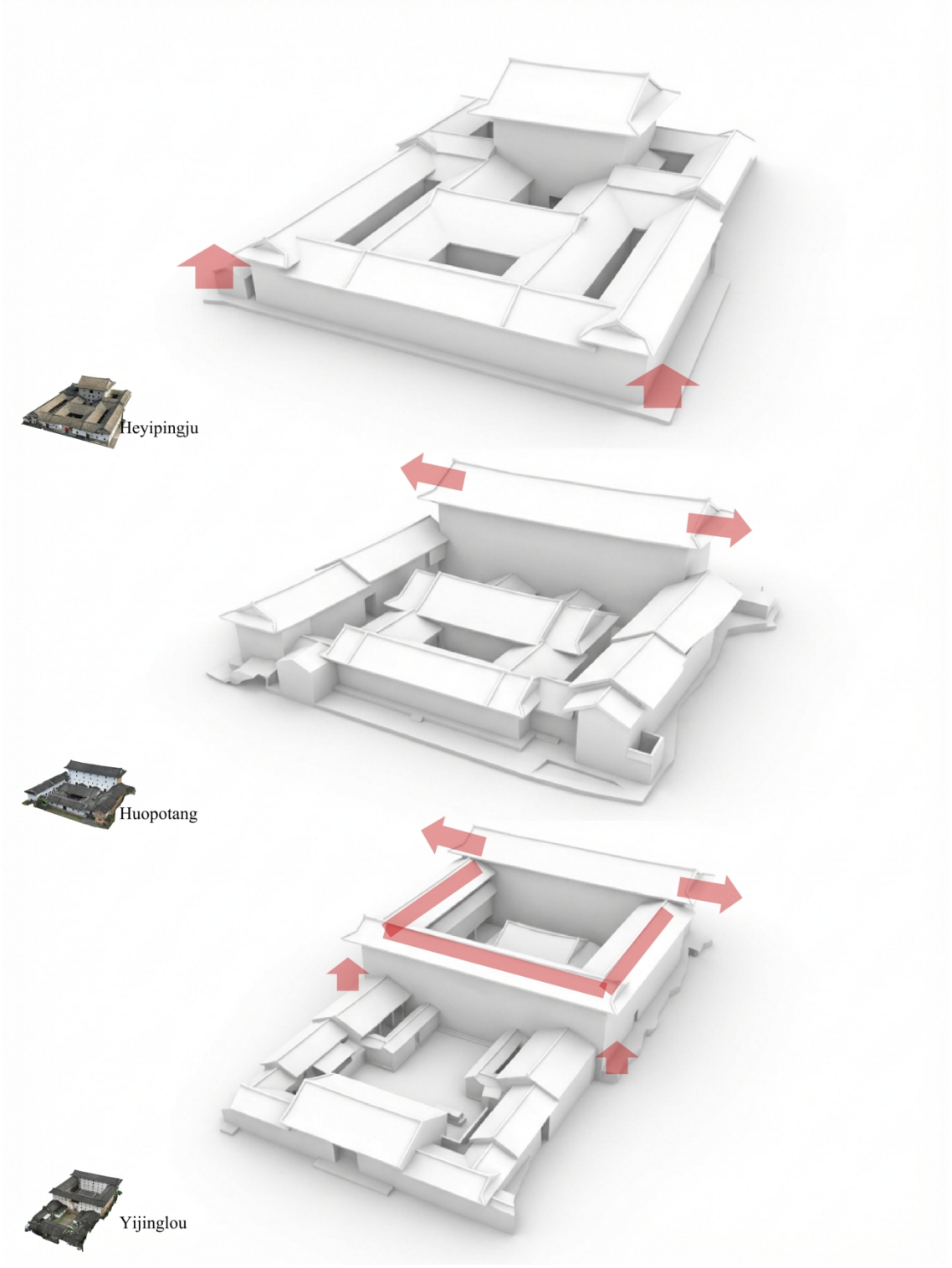

Figure 127. Hakka Wufenglou variations

Self drawn

One volumed type dwelling in Sheqian village

Figure 128. One “Jian-Ting-Qijiao” volume type dwelling

Self taken in 2024

(3) Hakka Wufenglou Identification

To be recognized as a Hakka Wufenglou, a building must simultaneously satisfy the following structural conditions:

- A complete five-volume axial composition must be present, including the main entrance segment, ancestor hall segment, main house, and a pair of symmetrical side houses. Partial assemblies do not qualify.

- The main house must correspond to one standardized Jian–Ting–Qijiao unit, rather than a conglomerate of multiple such units merged into a single oversized mass.

- The façade at the entrance side must appear as a single storey, producing a front-low rear-high elevation rather than a multi-storey front wall from the outset.

- Side houses must derive from the horizontal alignment of identical or near-identical Jian–Ting–Qijiao units, not arbitrary auxiliary rooms.

- Side houses must display a front-low rear-high sectional cascade, descending stepwise toward the front.

Only buildings that meet all conditions above qualify as a Hakka Wufenglou. A Hakka Wufenglou at least requires an axis of main entrance hall volume, the ancestor hall volume, and the main house volume, with two lateral side house volumes. A building that contains only Jian–Ting–Qijiao units or an extended main house or lacks side houses or does not show proper front-low rear-high entrance façade hierarchy cannot be considered a standard Hakka Wufenglou.

(4) Subsidiary Volumes and Housing Expansion in Hakka Wufenglou

This section addresses the built elements in Hakka Wufenglou that fall outside the 5 volumes system, focusing on their planimetric position, their mode of connection to the axial alignment, the reasons they are classified as subsidiary volumes rather than primary volumes, and the distinctive logic of their expansion relative to the core Jian–Ting–Qijiao housing unit.

These spaces frequently appear in Hakka Wufenglou, and in certain cases, are indispensable components despite not forming part of the 5 primary volumes.

Subsidiary Volumes: Private School, Storage, and Kitchen

First, the foremost portion of the side house often incorporates a frontal step-down block, a lower

volume extending toward the street or front courtyard at a reduced height of one or half a storey. This segment, while structurally continuous with the side house, forms a front-low to rear-high vertical sequence that is particularly legible in the staggered alignment of its gable roofs. It accommodates variable functions depending on the scale of the lineage compound, ranging from enclosed storage for tools, crops, and agricultural equipment to, in larger clan establishments, a private tutorial space for lineage-based education, documented in examples such as Yulonglou and Yonghaolou. Despite its functional independence, this component is considered an extension of the side house rather than an independent architectural volume.

Second, between the entrance volume (frequently defined as volume 3) and the ancestor hall (volume 2), a pair of lateral corridors links front reception spaces with ritual and assembly interiors. In Hakka regions, these passages are commonly termed Guoshuilang (rain-proof corridor)[41], designed to ensure continuous circulation under wet conditions. Functionally defined as horizontal connectors rather than occupiable architectural volumes, these corridors are excluded from volumetric enumeration in the architectural classification of Wufenglou.

Third, the kitchen system typically consists of a pair of symmetric kitchen blocks, positioned between the ancestor hall (volume 2) and the main house (volume 1). As Figure 129 illustrates, each block usually contains two to three rooms aligned on a single storey, jointly forming a service transition zone between ceremonial, residential, and daily operational activities. Spatially, these kitchen blocks, together with volumes 1 and 2, partially enclose a secondary courtyard. This configuration produces three primary functional outcomes: High-frequency domestic operations such as cooking and washing are concentrated near the main hall for efficient food distribution; Smoke, heat, and fire activities are spatially buffered, preventing direct intrusion into either the ancestor hall or private living quarters; Kitchen functions are physically integrated with adjacent cooking-storage composite units, establishing a stable "preparation + storage" spatial module.

[41] In general, a Guoshuilang (rain-proof corridor) in traditional Chinese architecture refers to a passageway that allows movement even during rain. The term "Guoshui" means "pass the water." However, in the context of the Hakka Wufenglou, the rain-proof corridor is specifically located between Volume 2 (the Ancestor Hall, the core) and Volume 3 (the Entrance Hall). These corridors connect the two volumes on their respective sides and correspond to the positions 3 and 7 in the nine-square grid layout. Essentially, these corridors function as transitional spaces that facilitate communication between the front and rear sections of the courtyard, aligning with the nine-square grid's structural logic.

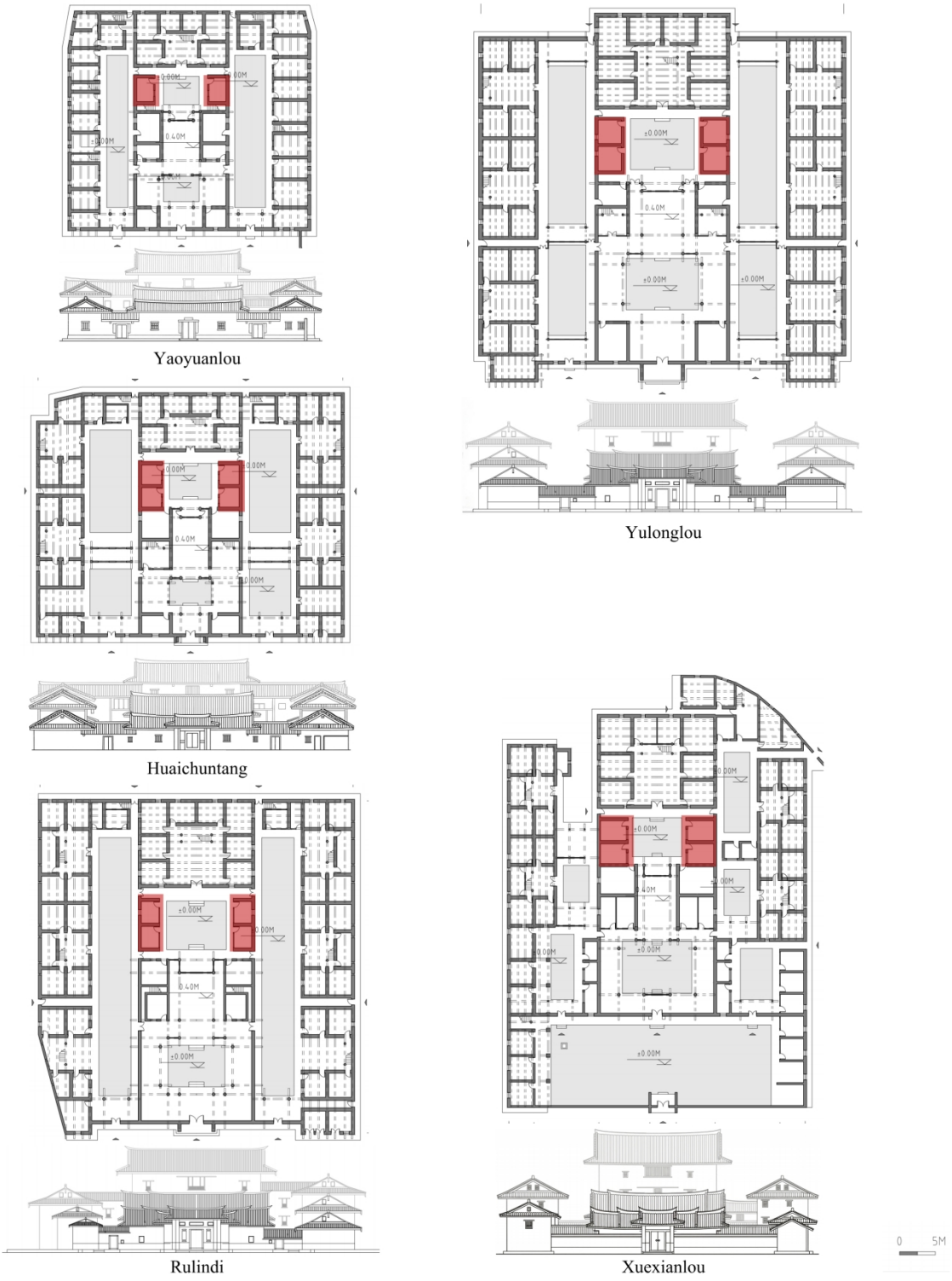

Figure 129. Hakka Wufenglou's Kitchen Positions in the Ground Floor Plan

Self drawn

Although these kitchen blocks are fixed in position, bilaterally paired, and essential to daily operations, they are excluded from the canonical 5-volume system[42] and instead interpreted as service extensions integrated into the central axial sequence. This configuration can therefore be defined as a variation of the jian-ting-qijiao spatial grammar, best understood as "residential unit + service (kitchen) appendage." This composite spatial logic may also manifest in the side houses, when certain requirement of the basic kitchen is too limited to serve the whole scale of the building, as observed in the left side house of Yonghaolou. See Figure 130.

[42] Refers to the five-volume Hakka Wufenglou system, comprising the main house (Zhulou), the ancestor hall volume, the main entrance volume, and two lateral side wings (hengwu).

Figure 130. Hakka Wufenglou's Kitchens Built in Side Volumes (Hengwu) while Remaining the Basic Ones

Self drawn

Housing Expansion

Housing expansion denotes the addition of residential volumes outside the prescribed standard configuration of a Wufenglou. The standard configuration requires at least five principal volumes: a frontal entrance segment (entrance/portal), an ancestor hall segment, the main house, and two lateral side houses that connect to the central axis in a front-low–to–rear-high manner. The main house should remain controlled in scale as a single jian–ting–qijiao unit rather than being formed from multiple adjacent units into an oversized mass; likewise, the principal façade (the entrance-facing elevation) should emphasize a single-storey opening rather than being sealed immediately behind a high wall.

After the above 5 volumes are in place, some Hakka Wufenglou proceed to expand. Expansion commonly occurs in two positions:

- Laterally, by pushing additional subsidiary residential or storage units outward in parallel to the central axis beyond the existing side houses;

- Posteriorly, by adding rear-added blocks behind the main house. The posterior pattern is less frequently observed than lateral extension. Where it does occur, the rear-added blocks are frequently subsidiary in status (they need not exceed the main house in height) and are typically allocated to subsidiary lineage members, storage, or processing functions rather than to the compound's primary ceremonial – reception – sleeping sequence. Cases such as Yonghaolou and older phases of Yonglongchanglou exemplify situations in which new volumes were appended behind a completed five-volume configuration, producing a main house + rear-added block pattern.

Importantly, so long as a building retains the defined five principal volumes — i.e., a frontal entrance/portal, an ancestor hall/central hall segment, a main house controlled at single-unit scale, and paired side houses that connect front-low to rear-high — it may still be classified as a Wufenglou even after the addition of rear blocks or secondary rooms beyond the side houses. In other words, kitchen wings, frontal step-down blocks used for storage or private tuition, Guoshuilang (rain-proof corridor) circulation strips, and rear-added blocks are all regarded as subsidiary extensions: they may be superimposed on the original layout but do not supplant the core volumetric configuration upon which the typological diagnosis of Wufenglou depends.

3.2. “Kaijian” Housing Module of Minnan Wufenglou

Minnan Wufenglou housing units are not defined as self-contained modules that can be linearly added or stacked in depth as in the jian–ting–qijiao unit of Hakka compounds. Instead, the residential units of Minnan are embedded directly within the main house (volume1), generated by arranging bays symmetrically around the central hall. Consequently, the ancestor hall (central hall) and residential rooms coexist within the same architectural volume rather than separating the ritual core into a distinct axial segment as in Hakka basic type.[43]

The basic spatial arrangement of Minnan Wufenglou follows an “axial-bay module (kaijian)”[44] which uses three (Figure 131), five (Figure 132), or seven bays to expand from the central hall. The central bay maintains its central position to function as both the ancestor hall and central hall while the adjacent bays operate as residential areas. The architectural design unites ritual spaces with daily living areas through a single building structure instead of using separate areas. The main house (volume1) extends vertically through two stories; the ground floor features side entrances located at the building ends while the upper floor contains window openings that face stairways to provide light and direct path navigation for corner rooms. This integration of plan and elevation substantiates the classification of the building as a type of "lou (multi-storey)".

In Figures 133 and 134, a detailed comparison is made between the jianting qijiao housing module of Hakka Wufenglou and the kaijian housing module of Minnan Wufenglou on both plan and axonometric levels. It can be seen that both modules are centrally symmetrical along the axis. However, there is a key difference: in the jianting qijiao module, "jian" refers specifically to a chamber or enclosed room, "ting" means a hall, and "qijiao" indicates vertical spaces such as stairwells or multi-story sections. In the kaijian system, "kaijian" does not necessarily mean a room; it refers to a bay formed along the central axis, and only the bays on either side of the axis are actual rooms. That is the primary distinction between "jian" and "kaijian."

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[43] Ministry of Housing and Urban-Rural Development 2017. pp. 41-43.; Lin 1998. pp. 8-9.

[44] In the Minnan Wufenglou, the “kaijian” is a housing expansion module known as Axial-Bay. This system uses the central bay (or span) as an axis and extends symmetrically on both sides. In other words, kaijian-based houses often have an odd number of bays—three, five, or seven. Nine-bay examples are very rare. In the author’s fieldwork, only one seven-bay house was observed. The central bay is called the “bright bay” (mingjian), while the side bays are always called “dim bays” (anjian), regardless of the total number of side bays. This arrangement follows the “one bright, two dim” feng shui principle.

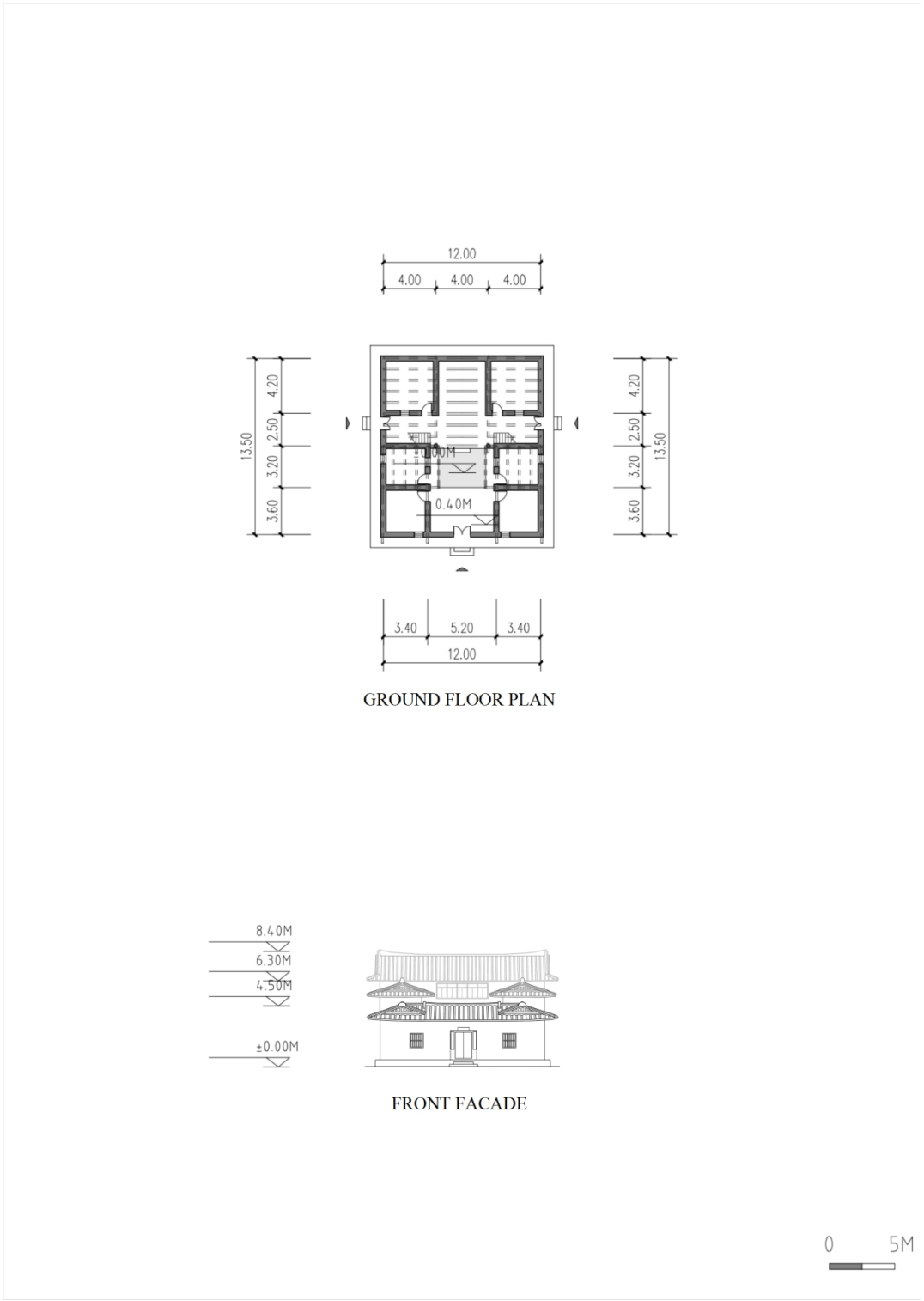

Figure 131. Minnan Wufenglou “3 Kaijian” Housing Module in the Main House.

Example: Anonymous in Dadi village

Self drawn

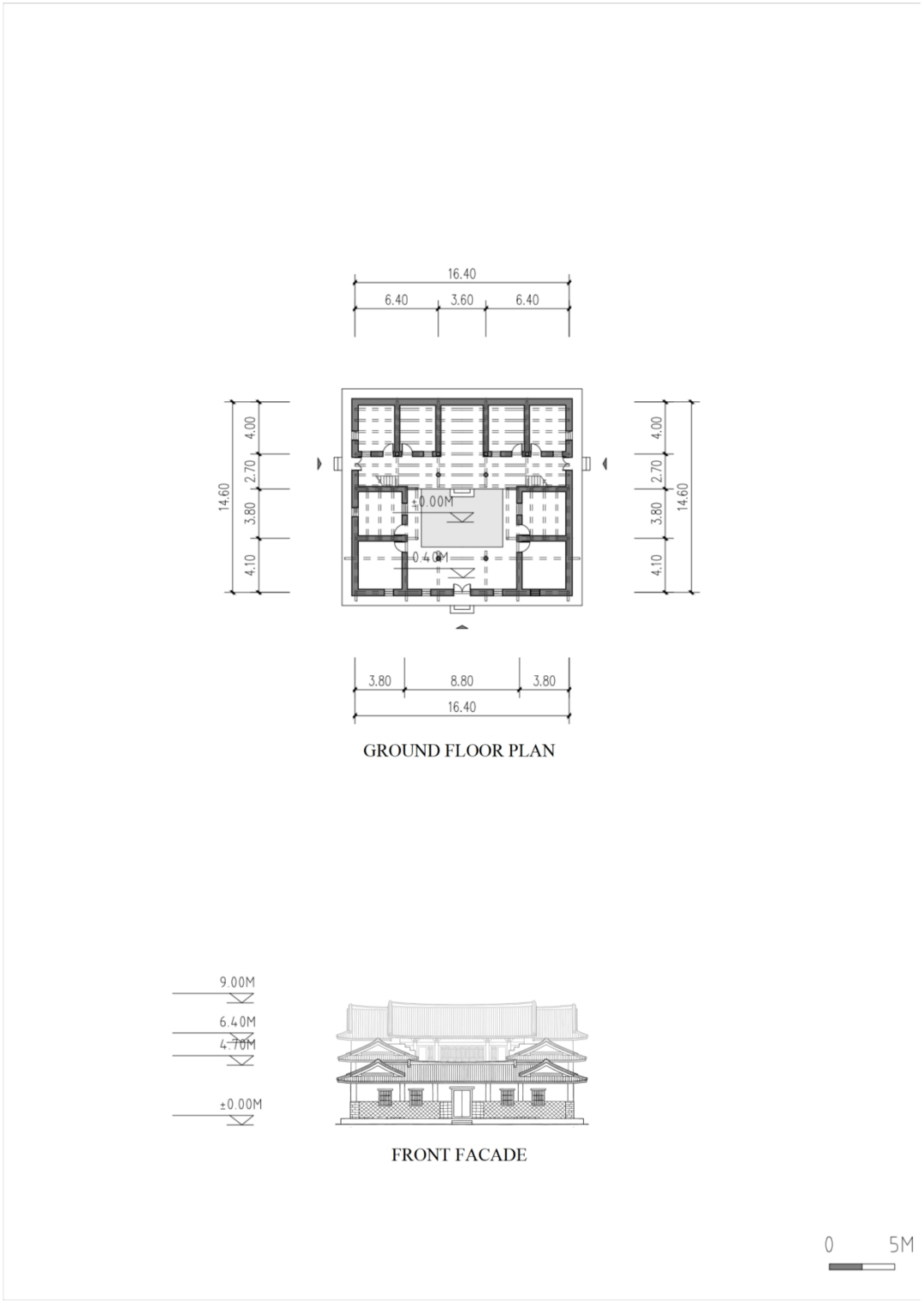

Figure 132. Minnan Wufenglou “5 Kaijian” Housing Module in the Main House. Example: Nanguilou

Self drawn

Figure 133. "Jian-Ting-Qijiao" housing module and "Kaijian" housing module in Plan.

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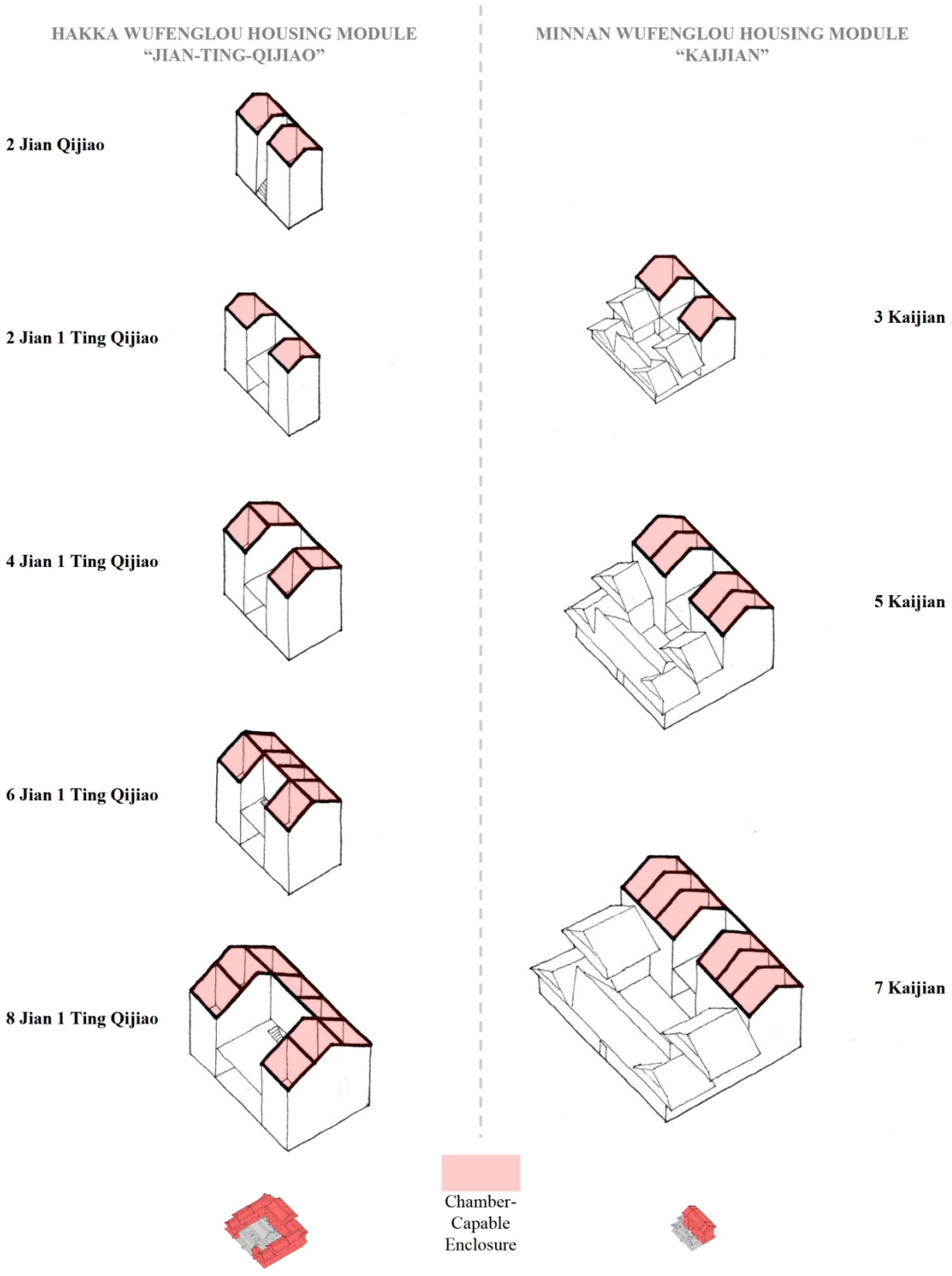

Figure 134. "Jian-Ting-Qijiao" housing module and "Kaijian" housing module in axonometric scheme

Self drawn

In two-storey main house (volume1) compositions, the second-floor spatial organization is not singular but manifests in multiple coexisting typological configurations that should be interpreted as parallel patterns rather than a chronological sequence:

- Split circulation type

In this type, staircases are located at both ends of the main house (volume 1) and within the staircase annexes at each end. Each staircase serves only the volume on its corresponding side. The ancestor hall on the ground floor maintains a vertical height to the roof and strictly functions as an ancestor hall. The two volumes on the upper floors do not connect laterally; if cross-side movement is required, one must first descend to the ground floor, pass through the ancestor hall, and then ascend the stairs from the other side. In this type, the upper floors constitute two parallel but independent lateral domains, rather than a continuous circular path. See Figure 135.

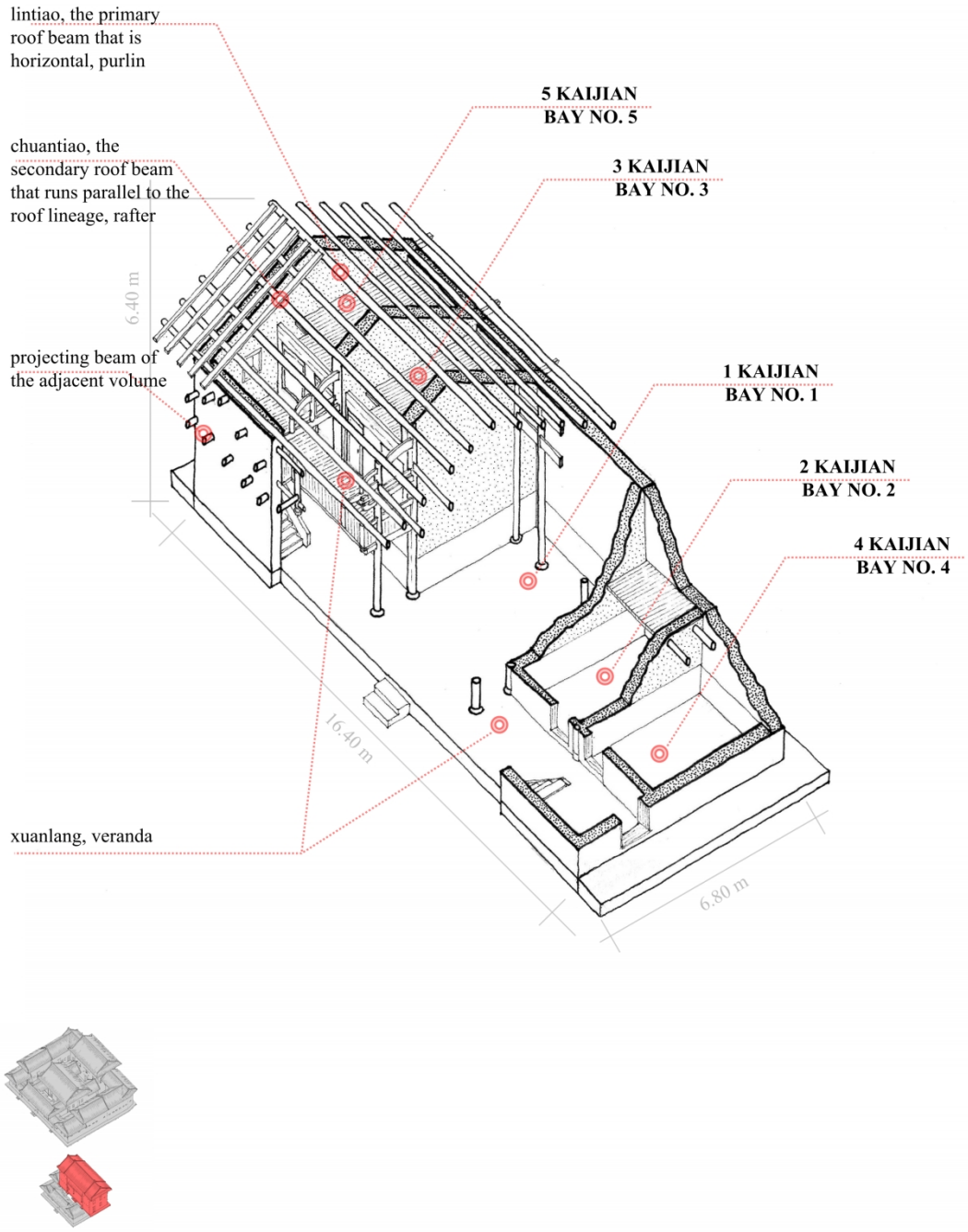

Figure 135. Split circulation type of Minnan Wufenglou's main house. Example: Longshantang

Self drawn

- Connected circulation type

While maintaining the symmetrical placement of staircases at both ends, a transverse corridor is introduced above the central hall on the upper level, directly connecting the left and right wings. The ground floor retains the conventional layout of "ancestor hall in the center, with living quarters on either side," but the upper level forms a group of connecting wings bridged above the central hall. This configuration allows for direct left and right movement on the upper level without returning to the ground floor. In this type, the ancestral hall retains the core ceremonial function of the ground floor, while the space above it participates in the horizontal circulation organization of the upper level. See Figure 136.

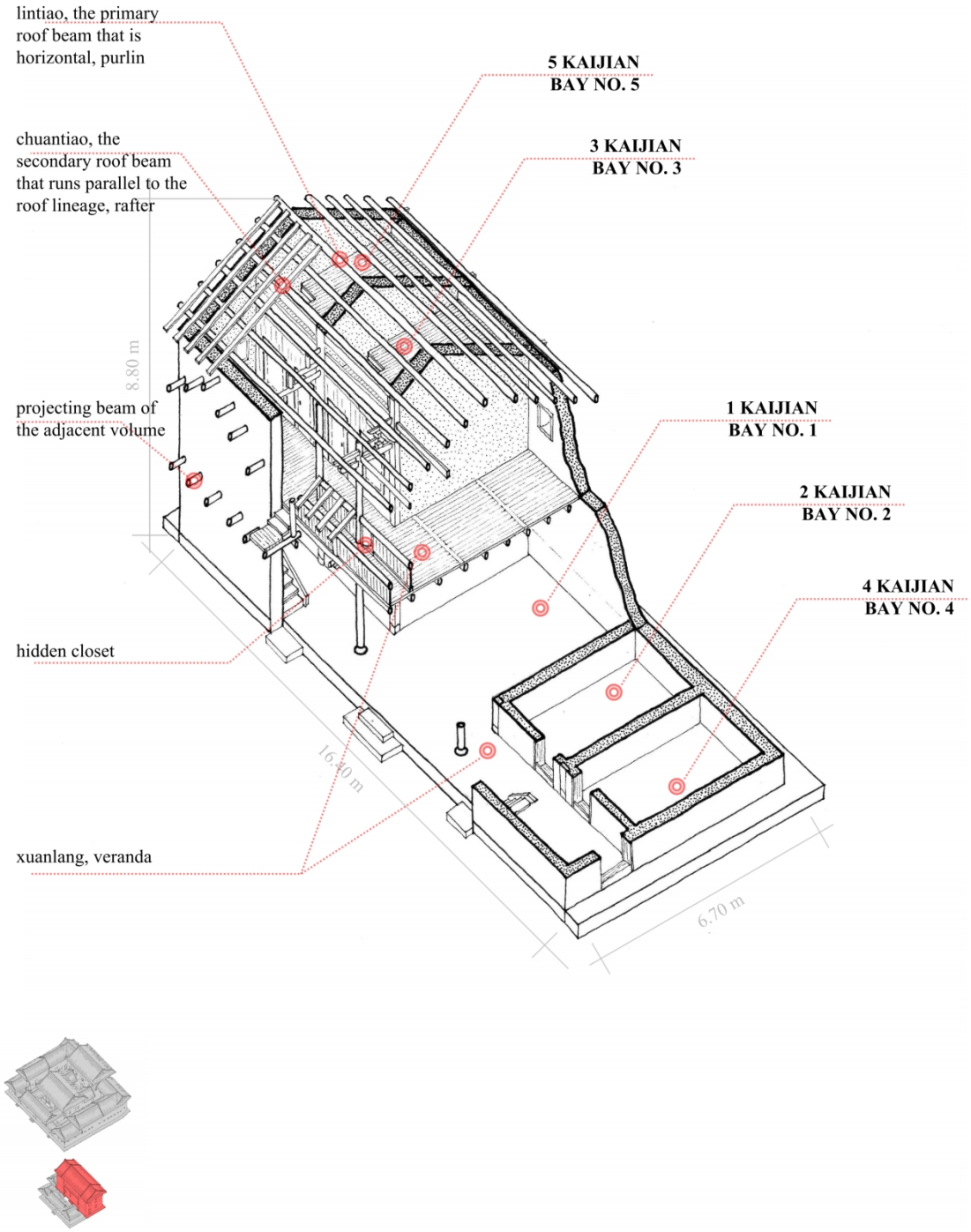

Figure 136. Connected circulation type of Minnan Wufenglou's main house. Example Nanguilou

Self drawn

- Accumulated circulation type

In this type, vertical circulation is fully integrated into the ancestor hall's own spatial volume. The ancestor hall no longer serves merely as a ground-floor ceremonial space but transforms into a circulation core connecting multiple floors. The staircases originally located at both ends are removed and replaced by corridors (but the Titingjian, the stair pavilion room's structure remains), while the staircases are centrally placed within the ancestor hall, becoming the main vertical circulation route of the entire building. Therefore, the upper floors no longer present separate volumes on both sides but are organized around the central hall core. Room doors no longer open horizontally but all face the central hall, forming an n-rooms-oriented toward the hall pattern (n Fang Kanting)[45]: two rooms facing the hall constitute a 2-room layout, and four rooms facing the hall constitute a 4-room layout. In the current field survey, n did not exceed 4, and examples of this type are significantly fewer than standard bay-style residential units. Unlike horizontal expansion of bays, this type compresses space by stacking rooms in depth, incorporating all vertical circulation into the central hall, achieving spatial unity of ceremonial space, daily access methods, and vertical circulation, rather than organizing space by horizontal room arrangement. See Figure 137, 138.

Figure 139 shows the circulation of the three types—Split Circulation Type, Connected Circulation Type, and Accumulated Circulation Type—within the three-dimensional space of one to two floors.

Figure 140 shows photographs of these types, and it can be seen that the Split Circulation Type has a fully double-height hall. The Connected Circulation Type, due to its central corridor, has a less lofty ancestor hall than the first type. The Accumulated Circulation Type turns the ancestor hall area into an outer wall, making it the least open of the three.

[45] The "n Fang Kanting" layout in Minnan Wufenglou differs from the Hakka Wufenglou's "n Jian Ting Qijiao" configuration. In Minnan, the "n-room oriented toward the hall" is based on the axial-bay type and typically features a two-story structure with a maximum of four rooms. The rooms are arranged in depth, and the staircases are integrated into the central hall. In contrast, the Hakka Wufenglou's layout can include more rooms, often up to eight, and can have multiple stories, sometimes up to five. The Hakka design always places the staircase behind the hall, not on the sides. Thus, while both layouts may appear similar in plan, they differ significantly in terms of the number of rooms and the vertical stacking.

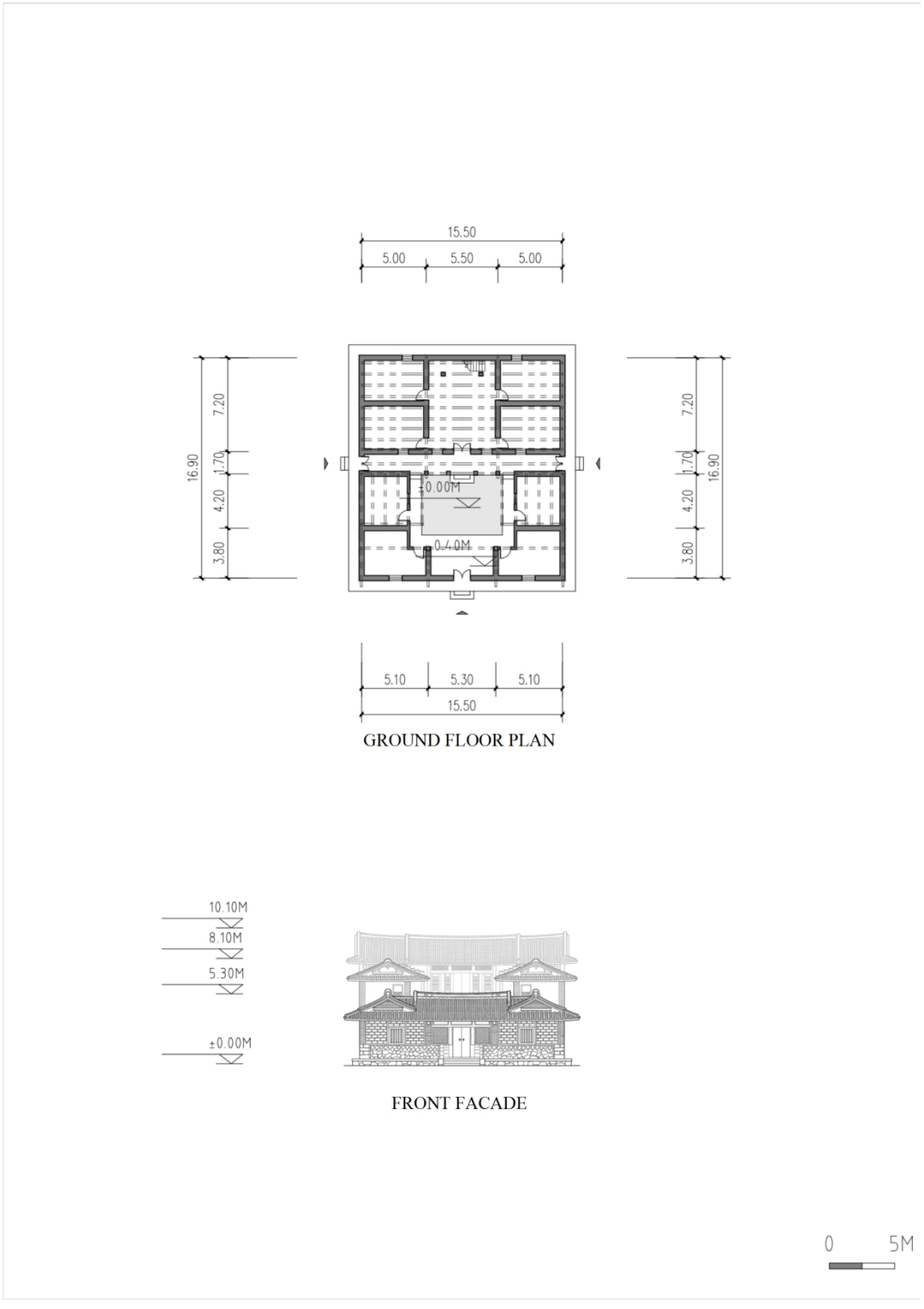

Figure 137. Minnan Wufenglou “4 Fang Kanting” Housing Module in the Main House. Example: Yifulou

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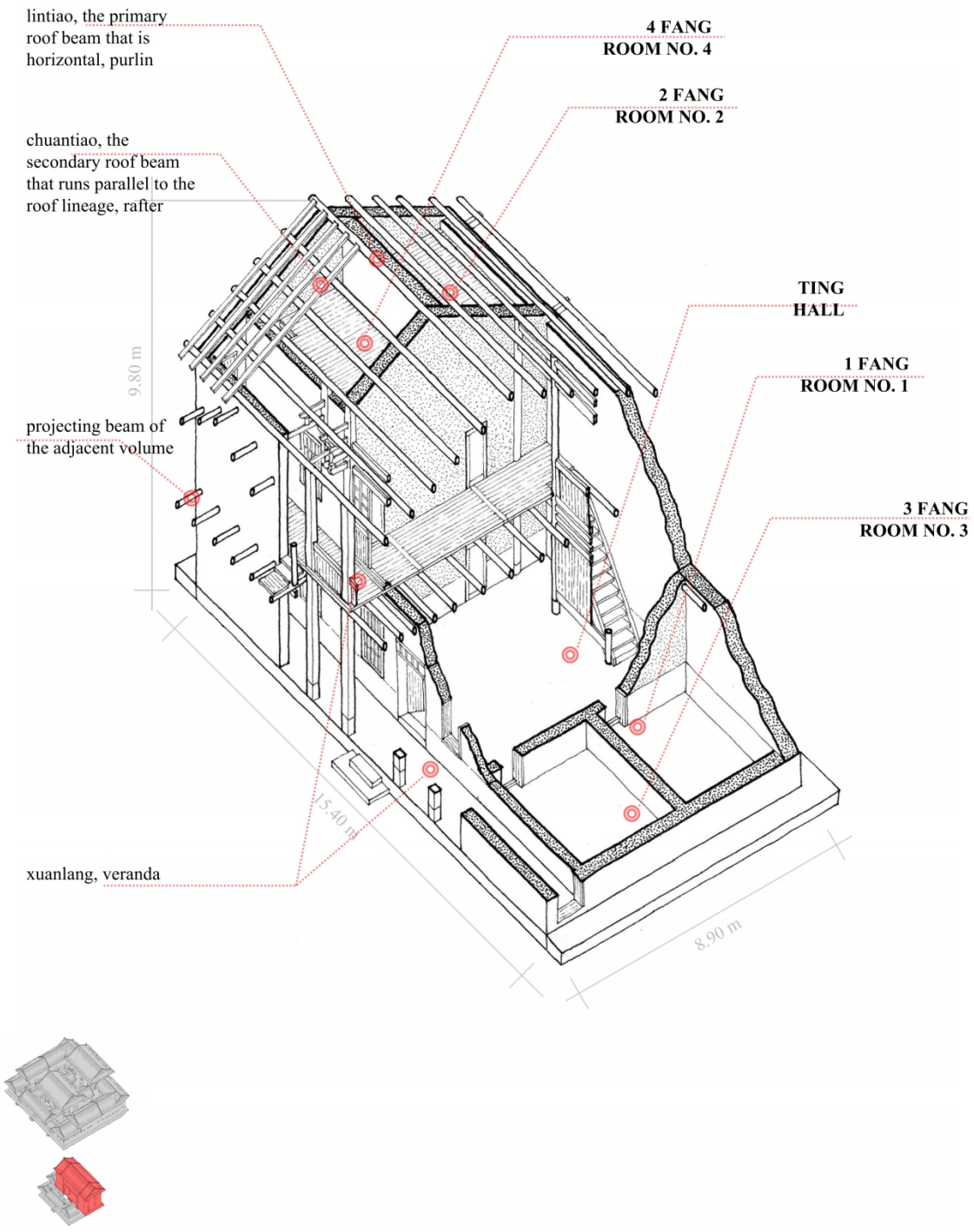

Figure 138. Accumulated circulation type of Minnan Wufenglou's main house. Example Yifulou

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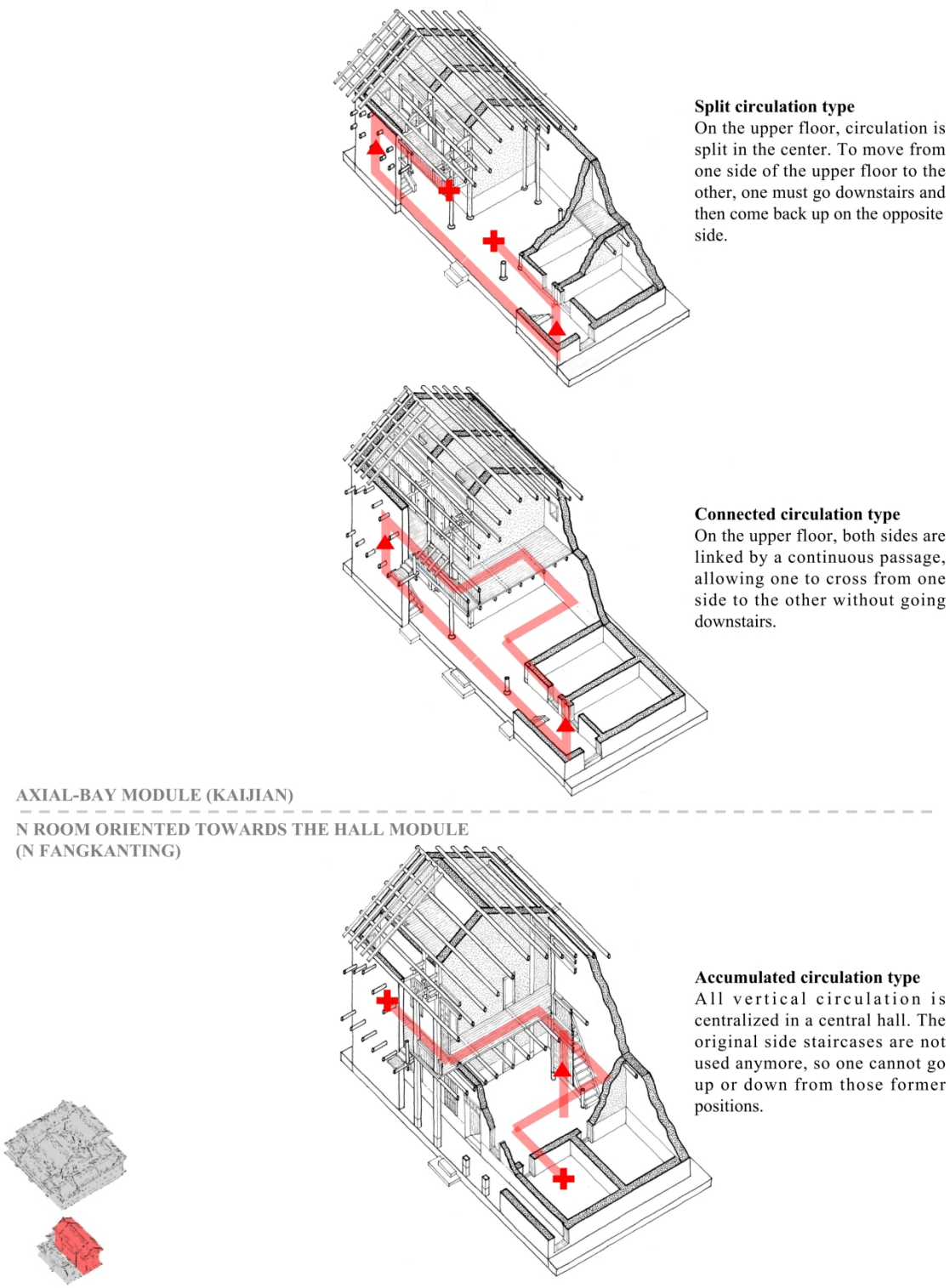

Figure 139. Circulations in Different Minnan Wufenglou Main Houses

Self drawn

Main house in split circulation type. example: Longshantang

Main house in connected circulation type. example: Nanguilou

Main house in accumulated circulation type. example: Yifulou

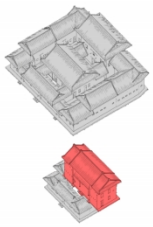

Figure 140. Different Main Houses of Minnan Wufenglou

Self taken in 2024

- Typological interpretation

The accumulated circulation type presupposes an existing upper-level corridor connection—i.e., it typically follows the connected circulation type, since only after a transverse link above the central hall can vertical circulation be consolidated into the hall core. Although documentary evidence is insufficient to sequence these three patterns historically, their merits can be compared: compared with the split circulation and connected circulation types, the accumulated type concentrates movement and sightlines into an efficient, hall-led two-storey nucleus that integrates ritual space, dwelling, and vertical movement, while avoiding continual widening of the façade; conversely, it creates a single-point circulation bottleneck, intensifies acoustic and ritual interference in the ancestor hall, and reduces access redundancies that support wing privacy. Its mode of expansion and number of storeys are limited; superficially analogous to Hakka "Jian–Ting–Qijiao" module, it remains distinct in expansion and floor requirements.

3.3. "Titingjian": The Key Volume for Minnan Wufenglou Identification

Unlike other volumes in the Minnan Wufenglou compositional system — such as the main house, corner rooms, or protective wings — whose spatial definitions align with translatable architectural categories, the Titingjian cannot be supplanted by an English equivalent without compromising its typological integrity. This is because Titingjian is not a function-derived space but a configuration-derived architectural volume, defined simultaneously by vertical circulation, façade hierarchy, roof-scape modulation, lateral threshold mediation, and its role as a primary visual identifier of the building type. Attempts to translate it as stair pavilion, stair tower, or side stair room inevitably reduce it to a single functional dimension, failing to capture its composite identity as a mediating mass placed between the main house and corner rooms, operating as an architectural marker of vertical transition and frontal elevation rhythm. Although regionally it carries various descriptive names referring to stairs, half-levels, or profile forms, none encompass the full spatial, hierarchical, and typological attributes required for precise identification. Therefore, this study adopts Titingjian as a necessary formal nomenclature, treating it as a non-substitutable typological unit essential for the recognition of Minnan Wufenglou.

- Location

In Minnan Wufenglou the main house (volume1) consists of the ancestral hall (central courtyard) and the flanking living rooms, forming a continuous "Main house" band. When observed from the

primary façade, one can identify a pair of small, symmetrically arranged projecting volumes located to either side of—but still close to—the central axis and toward the front of the main house: these paired projections are the Titingjian (volume2, volume3). Titingjian occupy the fore-mid segment of the building' s front–middle–rear sequence; if the central courtyard is taken as the architectural centre, the Titingjian sit at the forward corner points of the courtyard on both sides. The presence of a paired Titingjian is one of the core criteria for classifying an axial-bay mansion as a Minnan Wufenglou.[46]

In elevation and section, the floor level of each Titingjian is slightly lower than the adjacent main house (volume1) rooms—typically by two to three steps, roughly equivalent to two or three risers. In other words, one descends a half-level from the main house to enter the Titingjian. The roof relationship is inverted: the principal ridge is highest at the main house (volume1), lower at the Titingjian (volume2, 3), and lowest at the outer corner rooms (volume 4, 5). This staged cascade of ridgelines and volumes reads visually as a stepped descent outward from the main house, with the Titingjian functioning as the first transitional tier.

The compound term "Titingjian" can be analytically deconstructed. In traditional practice the principal vertical circulation in Minnan houses is not concentrated at the central hall but is placed at the sides of the main house: two staircases, symmetrically disposed, each serve the second-floor accommodation on their respective side. Those stairwells are sited at the turning point before the main house and are locally referred to as Titingqi[47], meaning staircase hall. When a small room is appended beside such a stairwell, it becomes the distinctive two-storey, pavilion-like projection characteristic of the Minnan Wufenglou — hence the local compound Titingjian: "ti" (stair), "ting" (pavilion-like projection), "jian" (discrete room unit). In short, the Titingjian are symmetrical minor house-volumes that grow from the wings at the stair positions, not merely stair enclosures.

Figures 141 and 142 respectively show the location of the "Titingjian" in plan and elevation for the six chosen Minnan Wufenglou study cases. Figure 141 includes the three examples with the basic Minnan Wufenglou form, while Figure 142 shows cases where a protective wing (hucuo) is added. In both scenarios, the Titingjian is present and clearly identifiable.

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[46] Ministry of Housing and Urban-Rural Development 2017. pp. 41-43.; Lin 1998. pp. 8-9.

[47] Distinguishing "Titingjian" and "Titingqi": In Minnan axial bay typed dwellings, the "Titingqi" refers to the small stair-pavilion units, which are scaled to the size of staircases rather than rooms. In contrast, the "Titingjian" is a proper room, larger and encompassing both stairs and living space. This difference means that only when a two-story building includes a proper "Titingjian" can it be considered a Minnan Wufenglou. Otherwise, even if it's a two-story structure, it remains an axial-bay type building and not a true Minnan Wufenglou, because the "Titingqi" is too small and does not create the same visual prominence as the main house or corner rooms. Only with a proper "Titingjian" can the building achieve that distinctive Minnan architectural character.

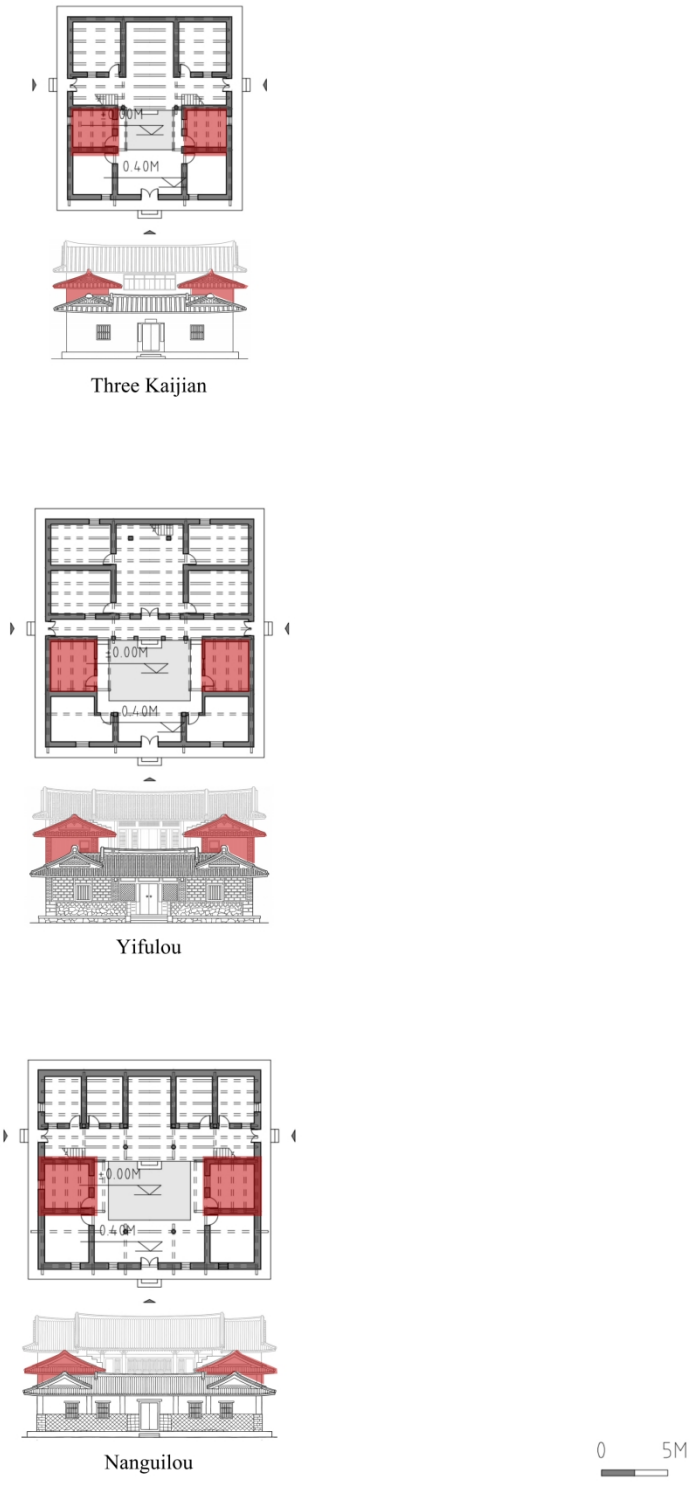

Figure 141. “Titingjian” Volume Position in Plan and Elevation. Minnan Wufenglou with Standard Basic Volumes

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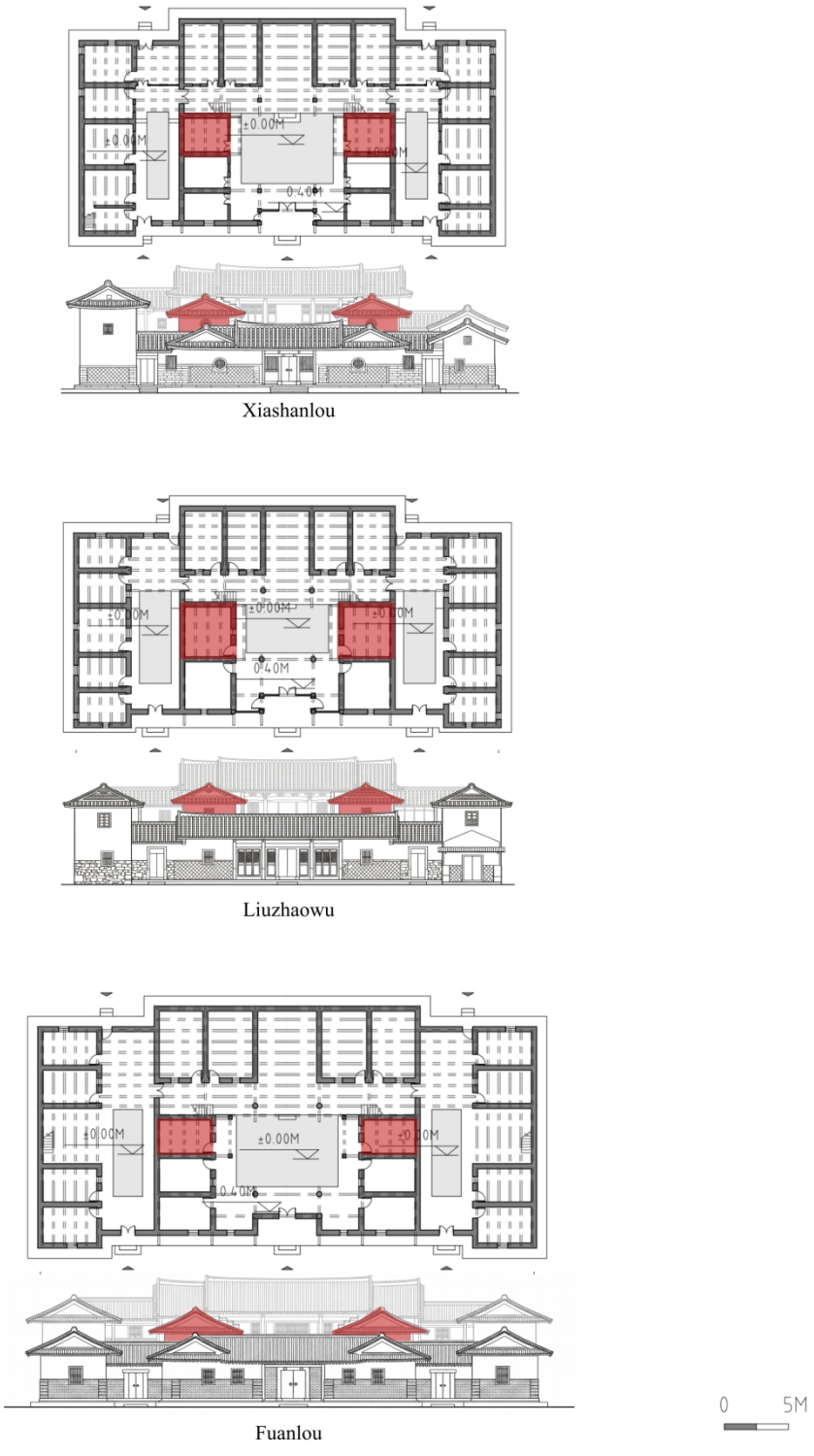

Figure 142. “Titingjian” Volume Position in Plan and Elevation. Minnan Wufenglou with Protection Wings (Hucuo) on both Sides

Self drawn

- Naming

In local discourse, the volume later defined as Titingjian is not referred to by a single fixed term; instead, it carries multiple vernacular names, each foregrounding a different spatial attribute[48][49]:

(1) “Luojie”

Luojie (literally “descending step”) does not denote the literal staircase but the moment where the mass of the main house (volume1) steps outward and downward. It describes the tiered volumetric descent of the main house, rather than an actual circulation stair.

(2) “Guoshui”

Guoshui roughly refers to a covered passage that remains traversable during rain, functioning similarly to the Guoshui lang found in Hakka Wufenglou in its emphasis on sheltered connectivity. The term highlights passage and protection but does not indicate storey, enclosure, or habitation.

(3) “Jutou”

Jutou (literally “the end of a timber, or beam head”) metaphorically describes the volume as an outward extension of the main house’s structural frame, suggesting a protruding “head” of the same backbone, rather than an independent annex.

(4) “Shenjiao”

Shenjiao (“extended foot”) similarly depicts form rather than function, implying a subordinate appendage of the main house reaching forward to a lower level. It denotes morphology, not spatial program of the type.

These labels collectively reveal that this position is primarily understood as a transitional extension of the main house (volume1) — a zone of step-down massing, sheltered passage, circulation, and directional change—rather than a fully defined, enclosed, or independently inhabitable two-storey room. Consequently, terms such as Luojie, Guoshui, Jutou, and Shenjiao can describe analogous transitional parts in other single-storey Minnan houses, and none serves as a precise or exclusive designation for the architectural entity formally identified as Titingjian. See Figure 143.

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[48] In the Minnan region, including places like Xiamen, Zhangzhou, and Quanzhou, these terms have different local names. For instance, "shenjiao" is mainly used in the Xiamen area. "Luo jie" and "guo shui" are primarily used in Anxi and Hua’an. The term "jutou" is used throughout the Minnan region. However, "titingjian" is specifically a term used in the Minnan Wufenglou regions. Cao 2016, pp. 4–16.

[49] “Titingjian” is a specific term used in Minnan Wufenglou regions.

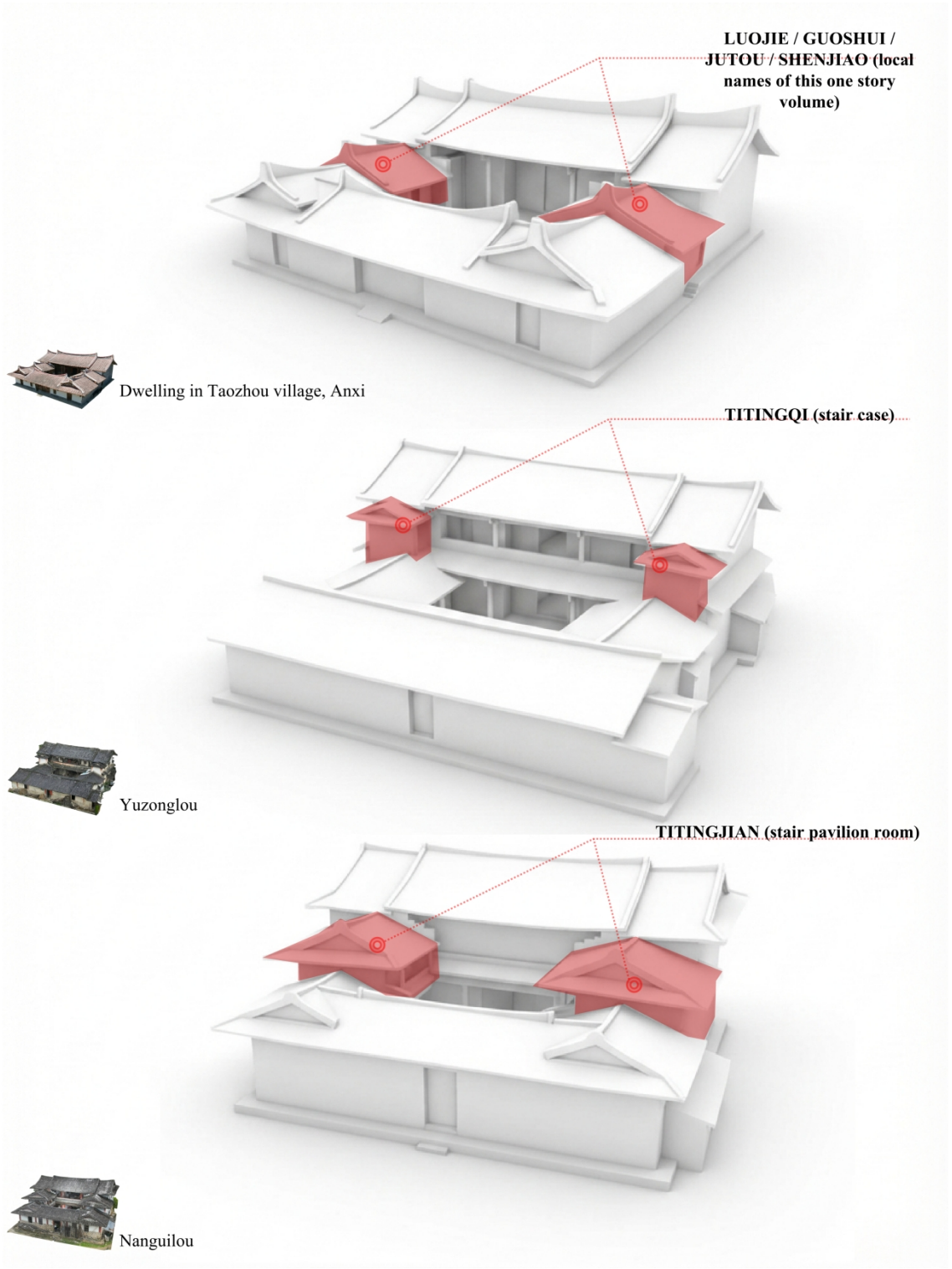

Figure 143. Volume Comparison of the Titingjian in Minnan Wufenglou and Similar Structures in Other Minnan dwellings

Self drawn

- Differentiation of Form and Function

Titingjian can be examined from three dimensions: its functional position in the frontal sequence, its recognisable formal variations across built cases, and its relation to second-floor circulation.

(1) Functions

Titingjian is located at the front flanks of the main house, occupying the middle tier between the highest roof ridge of the main house and the lowest corner rooms (volume4,5). Functionally, it mediates between residential and service zones: the inner main house area serves as the standard bedroom sector, while the outer corner rooms are typically used for firewood, storage, and informal work, and not for formal sleeping space. Titingjian belongs to neither category exclusively. The lower level may contain a kitchen stove or storage room; the upper level, in many cases, can serve as temporary sleeping quarters, bulky storage, or short-term accommodation. It is therefore a transitional threshold between dwelling and service, not a secondary bedroom nor a marginal storage niche.

(2) Recognisable Types

Field cases reveal multiple coexisting states rather than one uniform form, reflecting different degrees of spatial formation:

Formation 1: Titingqi-only type

The volume functions solely as paired stair access to the upper floor, one on each side. It does not form an enclosed room, has no usable upper level, and has no outward window. It remains an exposed stair shell, and such buildings should not be classified as Wufenglou because Titingjian has not yet formed as a room-bearing volume. See Figure 144-146.

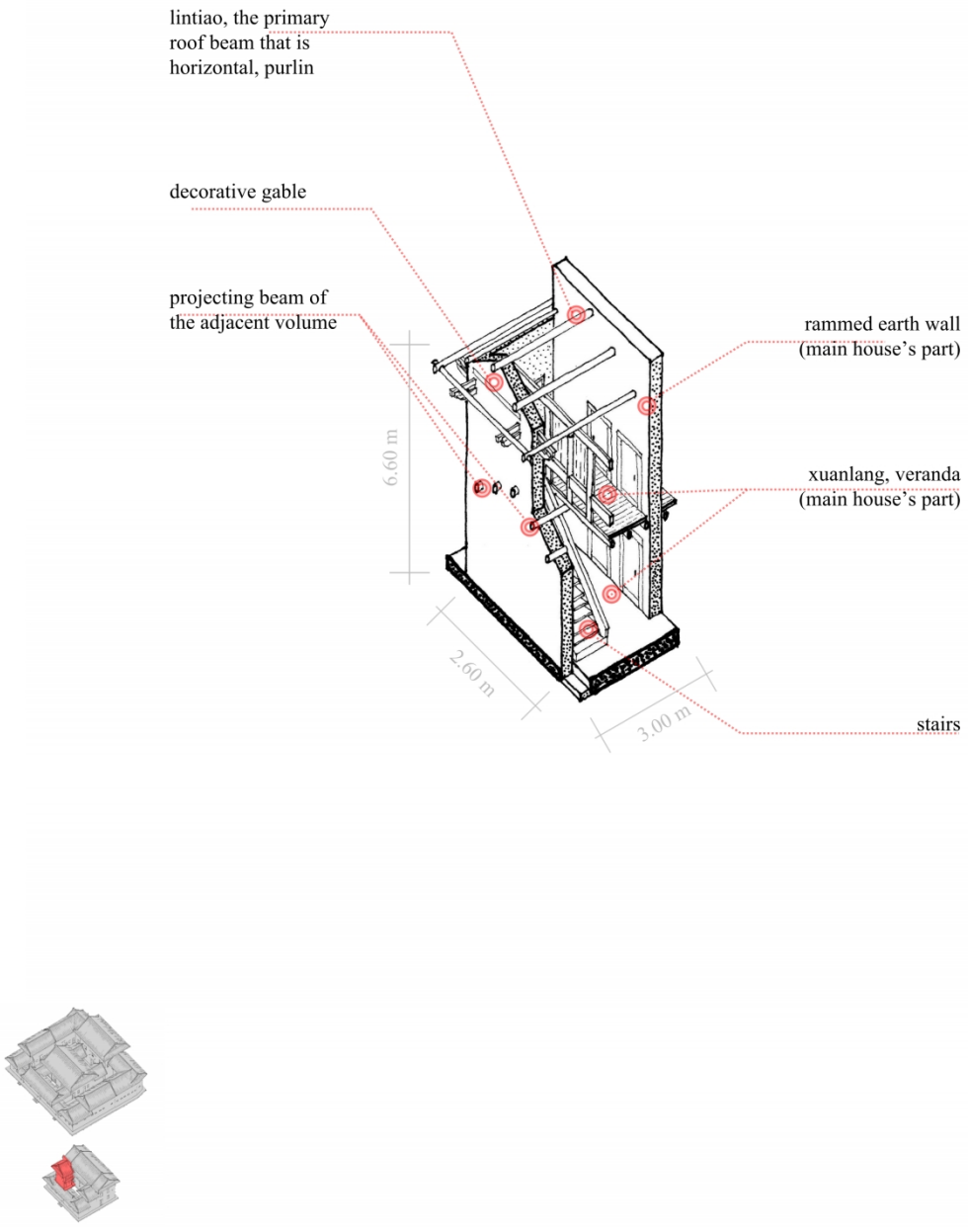

Figure 144. "Titingqi" structure

Self drawn

Figure 145. “Titingqi” structure from outside the building: Yuzonglou (1)

Self taken in 2024

Figure 146. “Titingqi” structure from inside the building: Yuzonglou (2)

Self taken in 2025

Formation 2: Raised half-storey mezzanine type

A low mezzanine is added above the stair. The height prohibits standing, serving only for temporary storage or occasional avoidance space. The volume thickens over the stair but does not form a full room. It usually lacks external windows, yet the stepped massing appears on the frontal elevation, establishing an identifiable Titingjian volume. Buildings at this stage can be recognised as Wufenglou. See Figure 147-149.

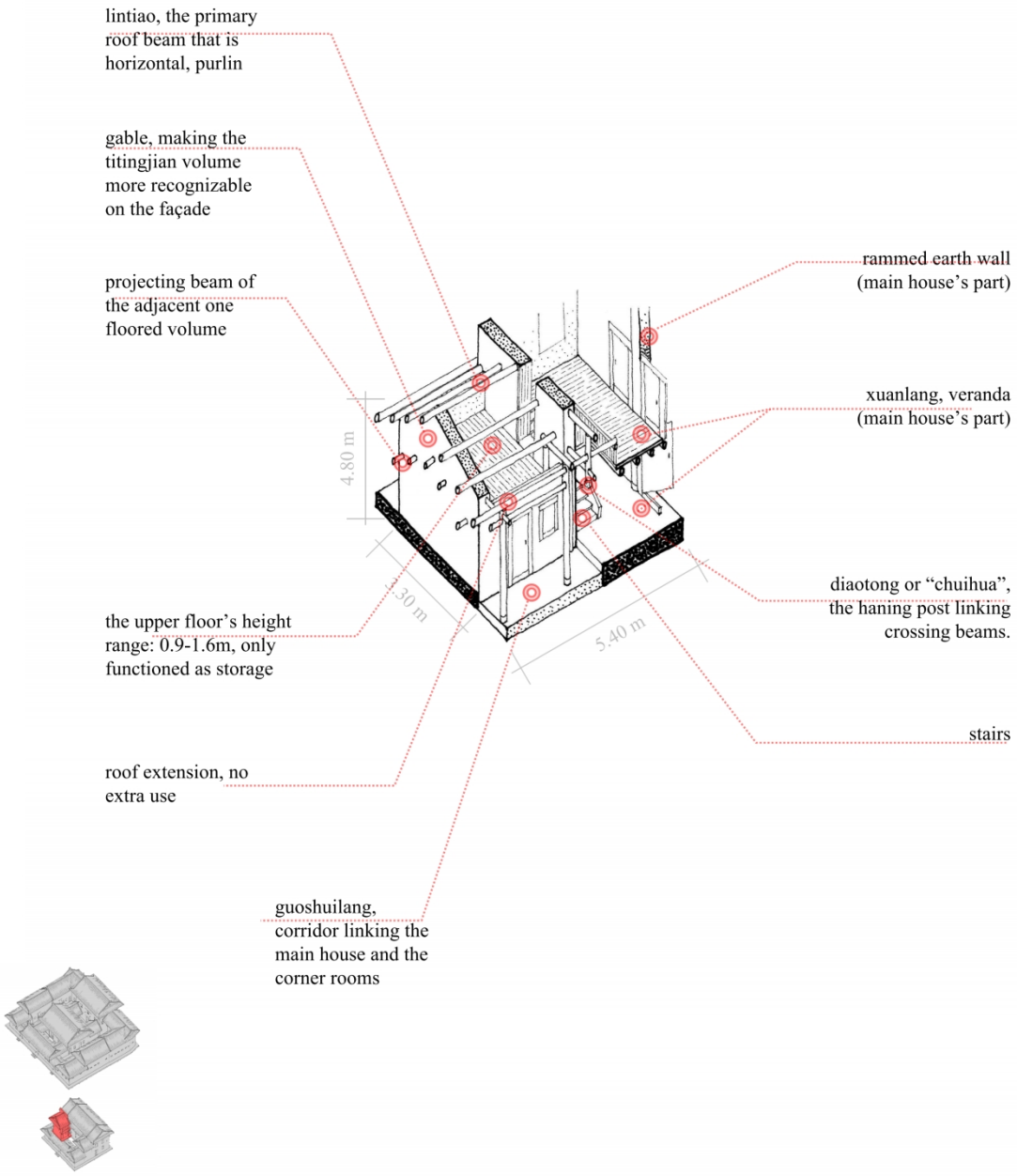

Figure 147. "Titingjian" structure with half a floor.

Self drawn

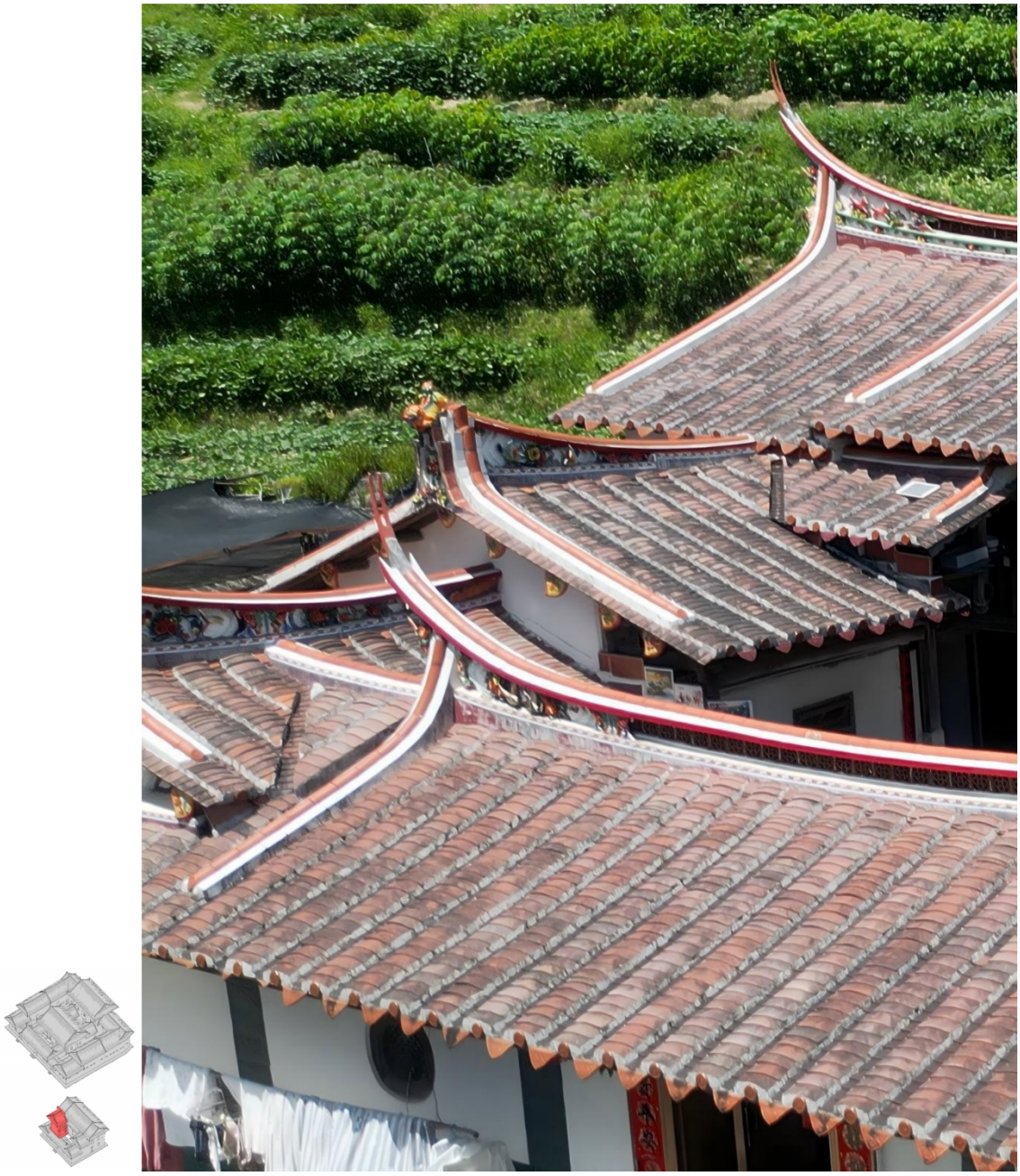

Figure 148. “Titingjian” structure with half a floor from outside the building: Longshantang (1)

Self taken in 2025

Figure 149. “Titingjian” structure with half a floor from inside the building: Longshantang (2)

Self taken in 2025

Formation 3: Two-storey formed type with Humuchuang

The volume becomes a fully usable two-storey unit. The lower level supports kitchen or storage functions; the upper level accommodates sleeping, storage of large items, or short stays. Many cases present a Humuchuang[50], a small frontal window like a tiger's eye, enabling daylight, ventilation, and visual access toward the entrance or forecourt. Here, Titingjian becomes an independently occupiable spatial unit rather than a stair appendage. See Figure 150-152.

[50] The so-called "Humuchuang", tiger-eye windows, appear only on certain Minnan Wufenglou's step-hall sections, and not all step-hall sections have them. These windows are named for their function of ventilation and observing the area in front.

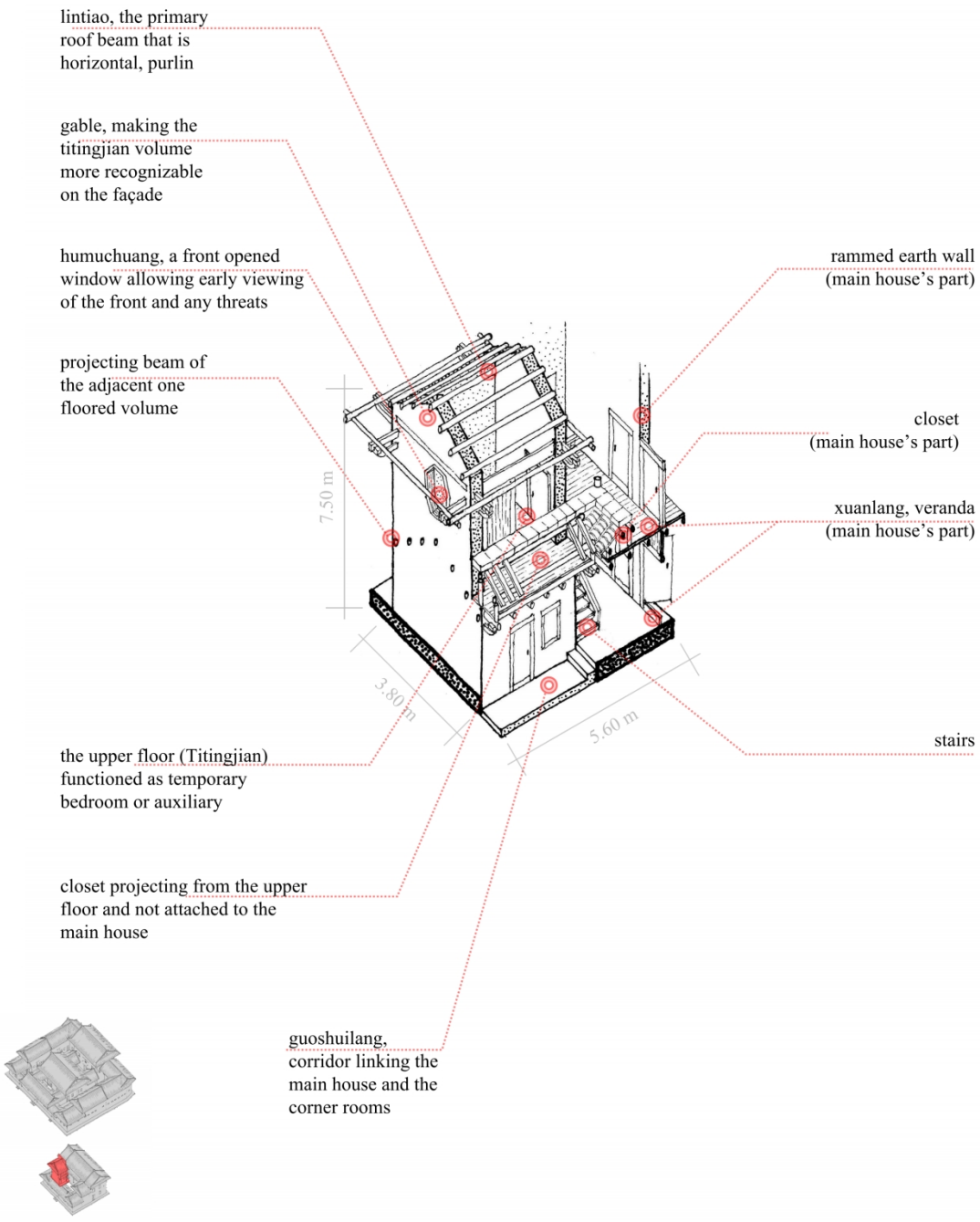

Figure 150. Titingjian with a front window "Humuchuang"

Self drawn

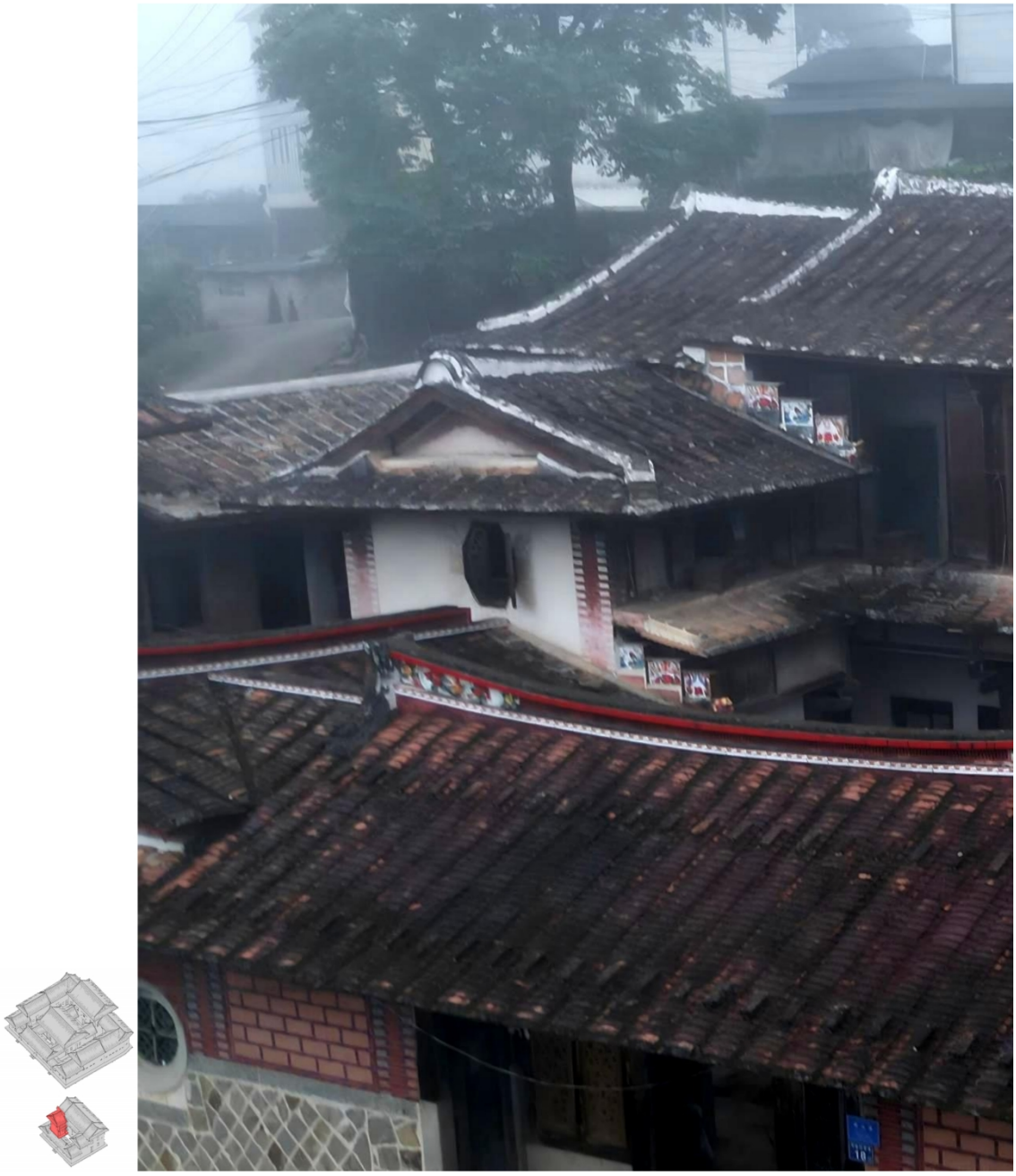

Figure 151. Titingjian with a front window “Humuchuang” from outside the building: Xiashanlou (1)

Self taken in 2024

Figure 152. Titingjian with a front window “Humuchuang” from inside the building: Xiashanlou (2)

Self taken in 2024

Formation 4: Façade-ornamental type

In modern-period cases, frequently, the Titingjian remains in position and retains its volumetric hierarchy, but the “Humuchuang”, the front window, may be removed or simplified into façade motifs. The functional role weakens while the stepped massing is maintained to preserve the main house → Titingjian → corner rooms descending order. In this condition, Titingjian persists primarily as part of the façade sequence rather than an active spatial device. See Figure 153-155.

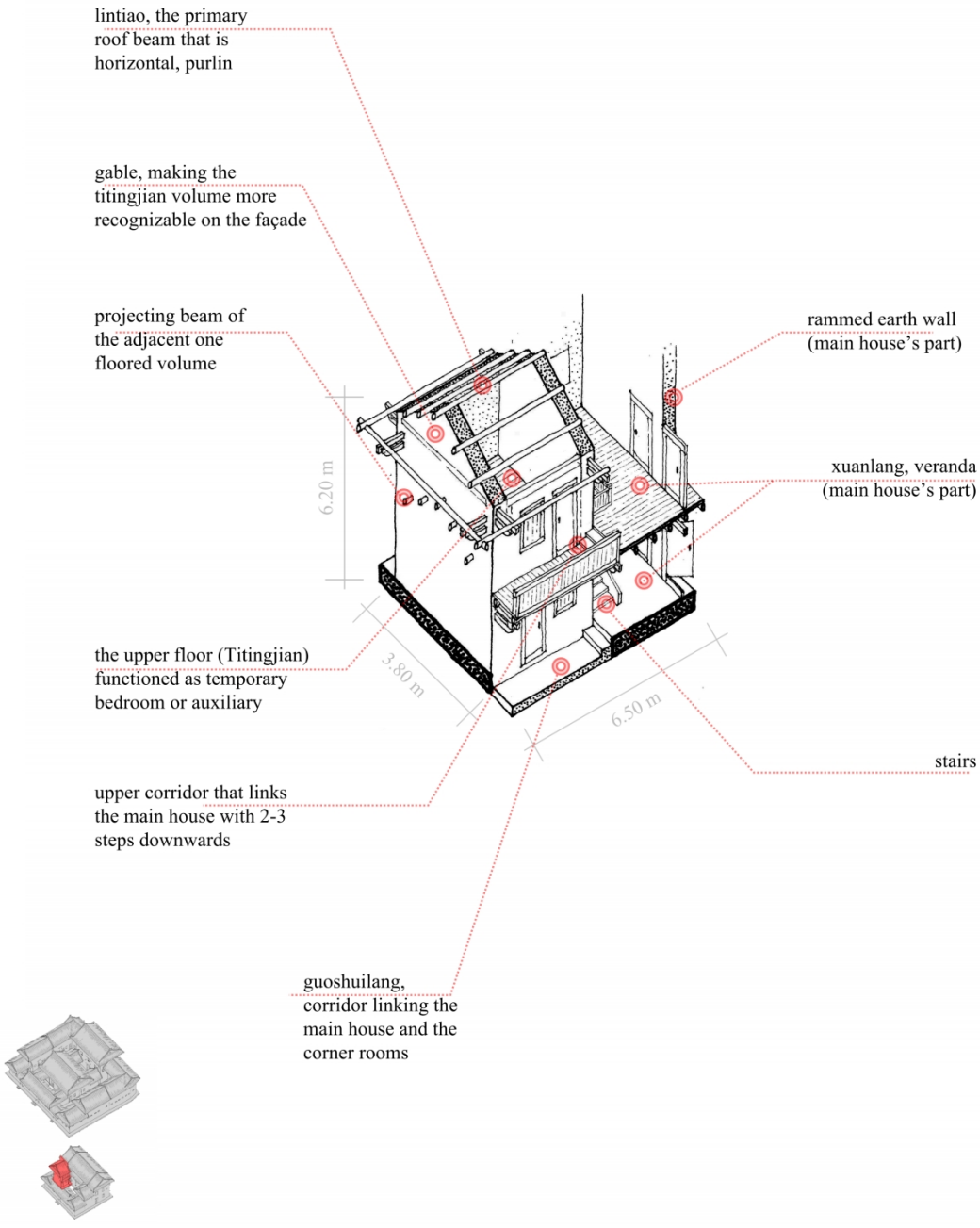

Figure 153. Titingjian without a front window.

Self drawn

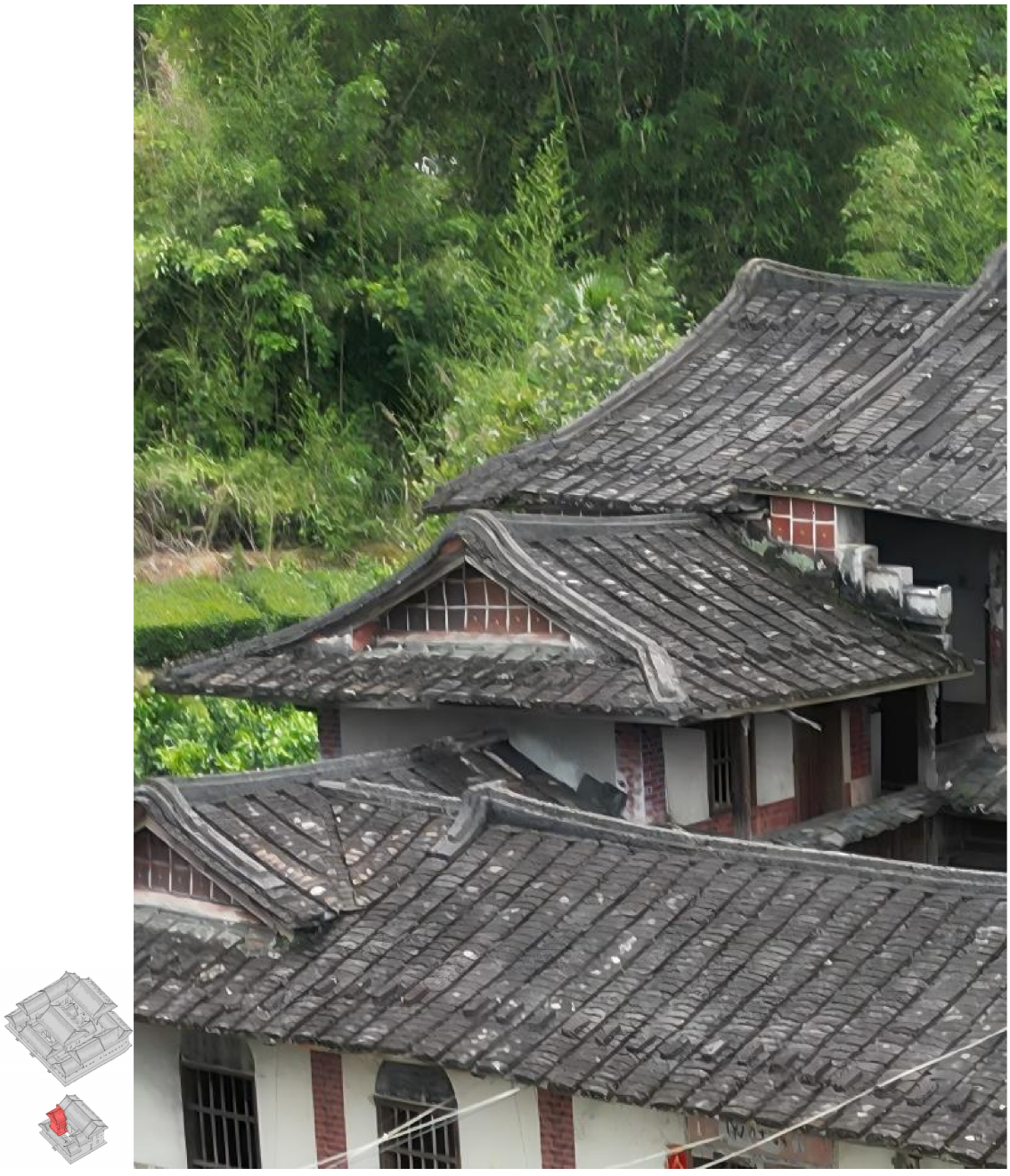

Figure 154. Titingjian without front window from outside the building: Nanguilou (1)

Self taken in 2024

Figure 155. Titingjian without front window from inside the building: Nanguilou (2)

Self taken in 2024

These types coexist regionally and cannot yet be arranged into a verified chronological sequence. They are described here as co-present degrees of formation rather than a linear early–late evolution.

(3) Relation to Second-Floor Circulation

In the combination where Titingjian volume and the main house volume allocate together, two organizational models can be identified:

The first is the dual-side access model, including the “split circulation type” and the “connected circulation type”. Stairs remain located within the paired Titingjian, each serving its respective second-floor wing. In the split circulation type, the left and right upper-level rooms are not connected internally and require descending to the ground floor to cross sides. In the connected circulation type, a lateral passage is formed above the central hall, enabling direct second-floor movement across both wings. In both, Titingjian remains the primary vertical access point.

The second is the “accumulated circulation type”, corresponding to the n-rooms oriented toward the hall pattern (n Fang Kanting). Stairs are relocated to the central hall of the main house, transforming it into a vertical core rather than a ground-floor-only ancestral space. Upper rooms open toward and circulate around this hall, forming two-room or four-room inward-facing clusters. Here, Titingjian remains in place and may retain auxiliary room functions, but stairs are removed, leaving only corridor space. See Figure 156.

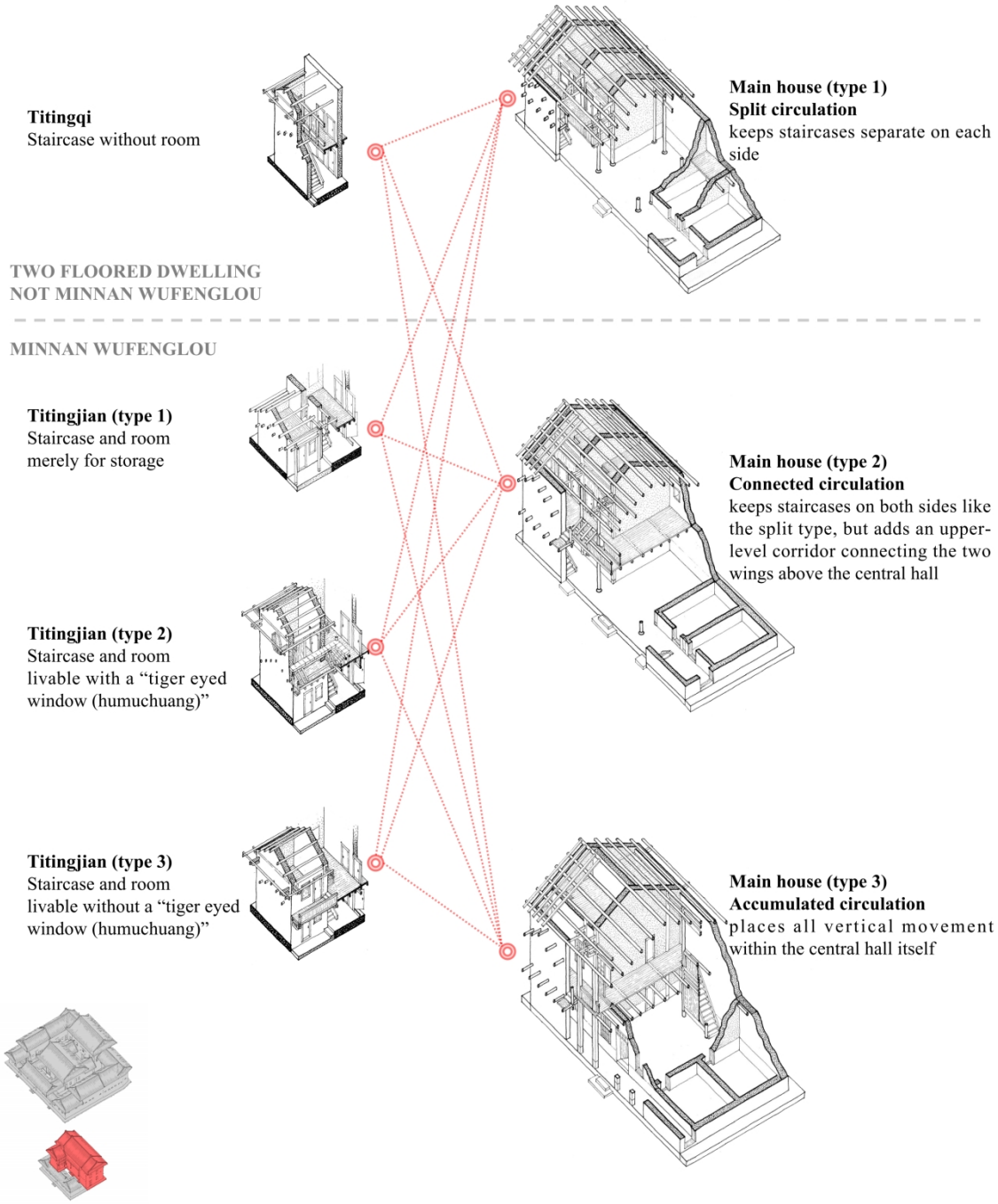

Figure 156. Combinations of Different Titingjian and Main House types in Minnan Wufenglou

Self drawn

- Subsidiary Spaces and Housing Expansion in Minnan Wufenglou

This section examines the service-oriented spaces within the five-volume system of Minnan Wufenglou, focusing on the corner rooms (jiaojian)—volume 4 and volume 5—and the auxiliary structures outside the five-volume base, such as the protective wings (hucuo). It distinguishes the hierarchical status, spatial articulation, and functional scope of the corner rooms, explains the distribution of daily operational spaces including kitchens, and clarifies how these differ from common axial bay dwellings in Minnan.

(1) Subsidiary Spaces in the Basic Type: Corner Rooms

The corner rooms (jiaojian, volume 4, 5) occupy the most frontal, outermost, and lowest stratum of the building envelope, positioned directly in front of titingjian (volume 2, volume 3). Rising only one storey, their roof ridge sits below the eave line of the titingjian gables, producing a stepped profile descending sequentially from the main house (volume 1) → titingjian → corner room—a defining formal attribute of Minnan Wufenglou when read in elevation or aerial silhouette.

Functionally, corner rooms are auxiliary and task-oriented. They commonly accommodate kitchens, firewood storage, agricultural tools, and general household operations. In some cases, interior partitions are removed to expand the entry width so that the entire frontal span becomes an extended entrance hall. Despite these variations, corner rooms are rarely formal sleeping quarters. By contrast, chambers flanking the main house primarily serve habitation; titingjian may oscillate between dormitory, storage, and kitchen use; while corner rooms remain strictly a “work-only” threshold zone.

Corner rooms and titingjian are operationally complementary but hierarchically distinct. Titingjian, with its two-storey configuration, may include bedrooms on the upper level, whereas corner rooms never enter the formal residential hierarchy, affirming their status as the most ancillary tier.

A crucial formal-volumetric trait is that, unlike in other axial bay dwellings—where front-end service rooms and stove spaces exist but remain visually subsumed within a unified roofline—Minnan Wufenglou intentionally articulates corner rooms as discrete roofed volumes. Their ridges, slopes, and breaks are plastically differentiated, forming a cascading multi-segmented roof profile likened to the wings of five birds (phoenixes)[51]. This deliberate volumetric expression is why corner rooms are classified as integral components of the five-volume system, not peripheral lean-to sheds.

[51] The literal meaning of Wufenglou’s “wufeng”. See Chapter I.

Nevertheless, corner rooms do not possess the ritual authority of the entrance volume, which establishes axial alignment, guest reception, and spatial address. Corner rooms remain subordinate extensions—appendages of the entrance volume rather than parallel ceremonial counterparts. Their inclusion as the "last two volumes" within the five-volume logic therefore derives from roof-form individuation and volumetric articulation, not from functional parity.

Some exceptions exist. At sites such as Liuzhaowu (Figure 157), corner rooms may show minimal roof accentuation, appearing visually understated. These examples are still classified as Minnan Wufenglou, as the diagnostic criteria rest on the integrity of the five-volume logic—especially the presence of symmetrical titingjian and systematic volumetric sequencing—rather than the absolute degree of corner roof prominence. In rare cases where a fully independent entrance volume is absent and the courtyard is enclosed on only three sides, the type remains valid as long as the combined spatial syntax of main house + titingjian + corner rooms is maintained.

Figure 157. Liuzhaowu's case: Although the corner rooms lack a forward gable for emphasis, the presence of intact Titingjian and the complete corners still identifies it as a Minnan Wufenglou.

Self taken in 2024

In summary, the corner rooms of Minnan Wufenglou can be defined by three essential characteristics: 1, They are the lowest and outermost front-edge tier, used for kitchens, storage, firewood, and household operations, rarely for sleeping. 2, They are formally emphasized as individual roofed volumes, constituting the final two members of the five-volume system rather than incidental service sheds. 3, Together with the entrance volume, titingjian, and main house, they produce a continuous outward and downward volumetric cascade, visually anchoring the characteristic stepped profile of the type.

(2) Housing Expansion of Minnan Wufenglou: Protective Wings (hucuo)

Once the basic Minnan Wufenglou configuration — comprising the main house (volume 1), symmetrical titingjian (volume 2, volume 3), and the frontal corner rooms (volume 4, volume 5) — is established, additional expansion units may extend laterally to accommodate growing family branches or functional demands. In Minnan, these peripheral extensions are referred to as protective wings (hucuo), meaning outer architectural bands that enclose, shelter, and reinforce the core compound ("cuo" in Minnan denotes a house or dwelling).

The protective wings form an outer layer wrapping the original structure, commonly extending symmetrically or semi-symmetrically along both sides of the main house. They are typically linked to the main house through a short covered passage via a lateral door cut from the side of the main house. Most are one to two storeys, seldom exceeding three, and generally lower than the main house. They continue the vertical gradient of stepwise descent from the core outward, not only toward the front but also to the sides or rear.

Their internal circulation follows multiple patterns:

Pattern 1: Some integrate a centrally placed stair, forming an independent vertical circulation core;

Pattern 2: Others feature a chonglou[52], a dedicated watch or defense tower appended to the front or rear, often exceeding the height of the wing itself (to be discussed further in the defense section of this chapter);

Pattern 3: At times, the roofline echoes the cascading sequence seen in the main house–titingjian–corner room group, preserving visual continuity through stepped ridge descent.

[52] Literally "Gun Tower" or "Firearm Tower." A fortified watchtower integrated into the domestic compound, specifically designed for defense against bandits. It usually features thick walls and gun loops (embrasures).

Functionally, the protective wings provide domestic accommodation, storage, production, and defense, encompassing all uses except ritual and assembly functions of the ancestor hall. They represent incremental outer-layer enveloping rather than linear extension: instead of elongating the main house along a single axis, Minnan Wufenglou expands by attaching an additional, nameable peripheral belt. The wings may not be fully symmetrical, follow consistent bay counts, or replicate the modular rhythm of the main house. Some appear as single-storey lateral ranges, others as two-storey deepened blocks, sharing circulation with the core or operating with partially independent vertical access, functioning as semi-autonomous residential clusters along the perimeter.

Unlike axial bay dwellings, which expand by increasing the number of bays in a linear sequence, Minnan Wufenglou develops by adding a recognisable outer architectural layer rather than stretching the original body. As the protective wings are not part of the essential typological core, their presence or absence does not affect the identification of a Wufenglou. The type remains valid as long as the key volumes—main house, titingjian, and corner rooms—are intact. The wings simply represent the building' s outward growth to support evolving domestic, storage, or defense needs.

4. Hakka and Minnan Wufenglou: Differences in Architectural Volumes

4.1. Comparison of the Nine-Square Grid Layout in Hakka and Minnan Wufenglou

Both Hakka and Minnan Wufenglou organise the central courtyard according to the Nine-Square Grid logic: the axial core aligns as entrance hall – courtyard – ancestor hall, flanked by symmetrical paired units. This tri-axial centre with mirrored side sequencing forms the shared deep structure underpinning both Wufenglou types.

In Hakka Wufenglou, the three axial squares consist of the entrance, the courtyard, and an independent ancestor hall, while the main house extends further behind but is excluded from the operative Nine-Square Grid zoning framework. The flanking grid positions follow a strict three-tier hierarchy. The pair directly beside the ancestor hall retains a nominal residential attribute but functions only in a weakened capacity—typically allocated for elderly or infirm family members on a temporary basis, or otherwise converted to storage. The middle pair, located on both sides of the courtyard, serves as a covered circulation gallery designed for rain-condition movement rather than habitable use, acting solely as a transitional connector between entrance, courtyard, and ancestor hall. The frontal pair adjacent to the entrance primarily accommodates storage for tools and grain. Thus, the internal nine-square sequence in Hakka presents a coherent order: ancestor-side = (weakened) residential, courtyard-side = circulation, entrance-side = auxiliary storage.

In Minnan Wufenglou, the axial sequence remains entrance–courtyard–ancestor hall, but the ancestor hall merges with everyday living space rather than existing as a detached ritual chamber. The paired rooms beside the ancestor hall function as primary bedrooms. The next forward pair consists of the vertically staggered titingjian, which support vertical circulation and may incorporate small kitchens, temporary rooms, or storage—forming a mixed-use transitional layer. The foremost pair comprises corner rooms, the lowest tier, used for firewood, cooking, and miscellaneous labour. Accordingly, Minnan also forms a three-band order: ancestor-side = primary residence, courtyard-side = transitional service layer, entrance-side = kitchen and utility. See Figure 158.

Figure 159 shows, Hakka isolates the ritual core and weakens residential use in the squares nearest it, employing circulation as a distinct middle band, while Minnan internalizes ritual and residence into a shared nucleus, expressing transition through stacked and descending service spaces. Despite functional divergence, both systems apply the same rule of symmetrical three-band delegation around the fixed axial triad, but articulate it differently—Hakka through axial segregation and hierarchical zoning, Minnan

through spatial coalescence of residence and service programs under a descending hierarchy.

Figure 158. Positional Differences in the Nine-Square Grid Layout of Hakka and Minnan Wufenglou

Self drawn

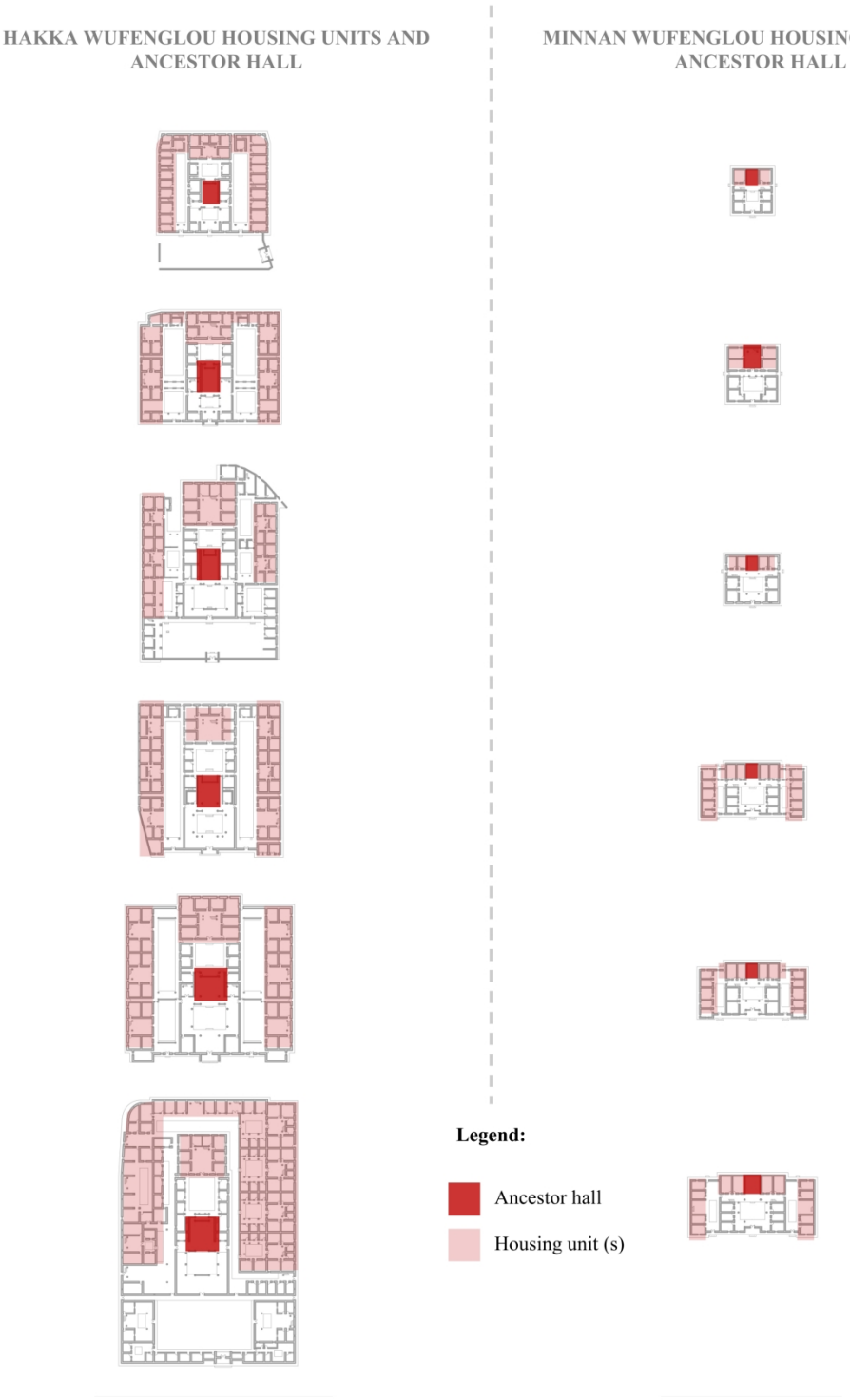

Figure 159. Positional Differences Between the Ancestor Hall and Housing Units in Hakka and Minnan Wufenglou

Self drawn

4.2. Distinguishing the Independent Side Volumes

In defining the lateral volumes, the side wing (hengwu) in Hakka Wufenglou is an essential component of its basic type, whereas the side wing (hucuo) in Minnan Wufenglou is not a constituent of the basic type, but an external appendage. Although both traditions deploy bilateral symmetry along a central axis, positional resemblance does not equate to typological equivalence. The Hakka hengwu can exist independently as a self-sufficient jian-ting-qijiao housing unit, possessing an autonomous spatial and functional logic. By contrast, the Minnan hucuo has no capacity for independent formation and can only exist when the central five-volume core of Minnan Wufenglou has already constituted a complete type on its own. In Minnan Wufenglou, the five volumes are fully realized within the central composition, and the lateral hucuo plays no role in defining the completeness of the basic type. This distinction highlights a fundamental divergence in typological constitution: Hakka side volumes are ontologically constitutive, while Minnan side volumes are ontologically dependent and derivative.

- Hakka Side Volumes, Hengwu, Constitutive Component of the Basic Type

In local Hakka terminology, “Three Halls and Two Wings” defines a complete Wufenglou[53], where the “three halls” refer to the gate hall, the ancestral hall, and the main house (rear hall), all refer to volume1, 2, 3 and the “two wings” refer to the paired hengwu (volume 4, 5). If the paired hengwu is absent, the building is locally described as Santangwu (Three-Hall House) and is not recognized as a complete Wufenglou; if only one side wing is present, it is called "house of Three Halls and One Wing" and is likewise considered incomplete. Even when land for side wings is temporarily occupied by neighbors, joint negotiation to reclaim space for bilateral hengwu reflects its constitutive necessity in defining Wufenglou completeness. Thus, in Hakka typology, the side wings and the three halls jointly determine the basic type, rather than functioning as optional additions.[54]

The hengwu is not an indiscriminate lateral cluster of rooms, but a serialized assemblage of modular housing units constructed on the jian-ting-qijiao system, including types such as “two-room units without a hall and with stair (qijiao),” “two rooms and one hall with stair,” “four rooms and one hall with stair,” or

[53] As previously mentioned, the term "three halls and two wings" is merely a conceptual summary used by local Hakka people to describe the Wufenglou. It does not represent the perspective of this text. The viewpoint of this work remains that "three halls and two wings" is not a precise definition of the Wufenglou architecture.

[54] Pan et al. 2013. pp. 110-111, 116-120, 135-138.; Ministry of Housing and Urban-Rural Development 2017. pp. 154-158.

“six rooms and one hall with stair.” Each unit is self-contained, providing its own access and vertical circulation. Side wings are formed by linearly repeating these units on the same side, producing a coherent lateral residential band. Sectionally, the massing follows a stable gradient of “higher at rear, lower at front,” generating a stepped eave and ridge profile toward the façade. Circulation is organized through a linear same-side corridor linking adjacent units, distinct from the ring-circulation gallery of Tulou. When combined with a kitchen block at the front end, the unit becomes a composite residential-and-kitchen housing unit, which can also be reiterated to form a complete hengwu sequence. Functionally, side wings perform the rigid role of household subdivision, ensuring independent access and living quarters for branch families. Without the paired hengwu, the five volumes required for Wufenglou constitution are not met. The first three axial volumes alone cannot later be extended linearly along the axis; completion must occur by adding the two lateral side wings. Only after the five volumes are established can further expansions be added to the exterior sides or behind the main house, provided the main house remains the highest volume. See Figure 160.

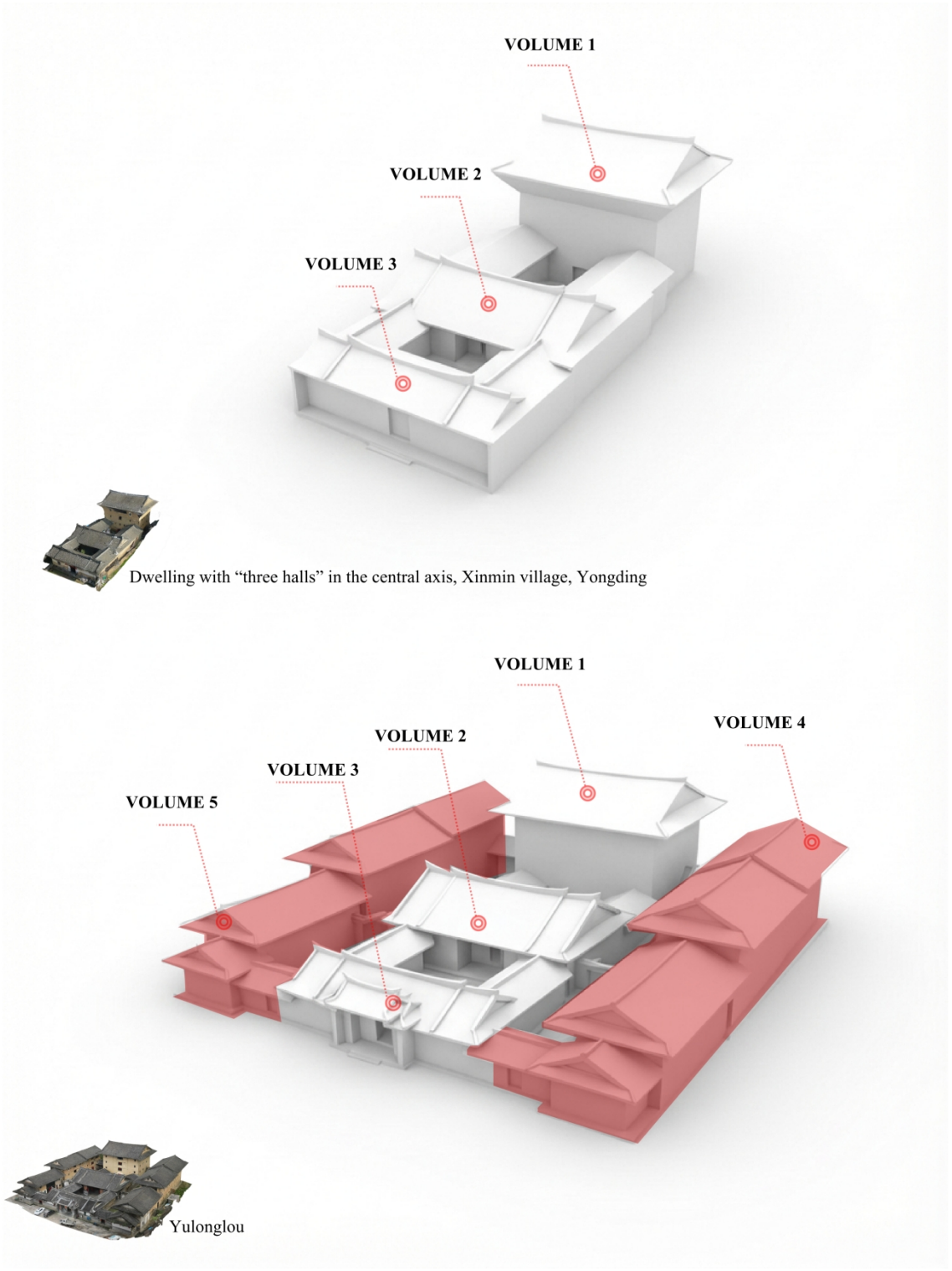

Figure 160. The Side Wing as an Indispensable Part of the Five-Volume Structure in Hakka Wufenglou

Self drawn

- Minnan Side Volumes, Hucuo, A Non-Constitutive Outer Extension Beyond the Basic Type

In Minnan Wufenglou, the basic type is self-sufficient through a core configuration of five volumes: the main house (dingluo, containing the central ancestral hall and flanking rooms), the paired titingjian, and the paired corner rooms. This composition encloses the courtyard and forms a consistent vertical hierarchy of "highest main house – intermediate titingjian – lowest corner rooms." Once this core is formed, the building is already recognized as a complete Minnan Wufenglou, without requiring lateral additions.

The hucuo emerges as an add-on envelope extending outward or wrapping slightly to the rear, functioning as supplementary space for demographic growth, storage, production, or defense. Its floor height (typically one to two stories, occasionally three), eave level, and sectional gradient all follow the external cascading logic of the core massing but vary case by case. Connections are pragmatic rather than modular, commonly achieved by opening side doors from the main block and linking to the hucuo by a corridor. The hucuo exhibits non-standardized forms: some incorporate internal staircases, some attach watchtowers (chonglou) for surveillance, and others echo the stepped roof logic of titingjian. These variations are adaptive responses rather than reiterations of a typological unit.

Criterion comparison further clarifies the distinction: without hucuo, the five central volumes already fulfill ritual hierarchy, habitation, circulation, courtyard enclosure, symmetry, and sectional order, thus constituting a complete system. In contrast, Hakka side wings serve a structural and typological mandate for bilateral completion and household partition, without which the building is conceptually and operationally incomplete. Therefore, hucuo represents elastic peripheral expansion rather than a constitutive typological requirement; and conversely, a hucuo cannot exist independently of, nor precede, the five-volume basic type. See Figure 161.[55]

Figure 162 shows the difference in side wings between Hakka and Minnan Wufenglou. In Hakka Wufenglou, the side wings are replications of a certain housing unit module and are part of the basic type. In Minnan Wufenglou, the connections are more pragmatic rather than modular and not part of the basic type.

[55] Ministry of Housing and Urban-Rural Development 2017. pp. 41-43.; Lin 1998. pp. 8-9.

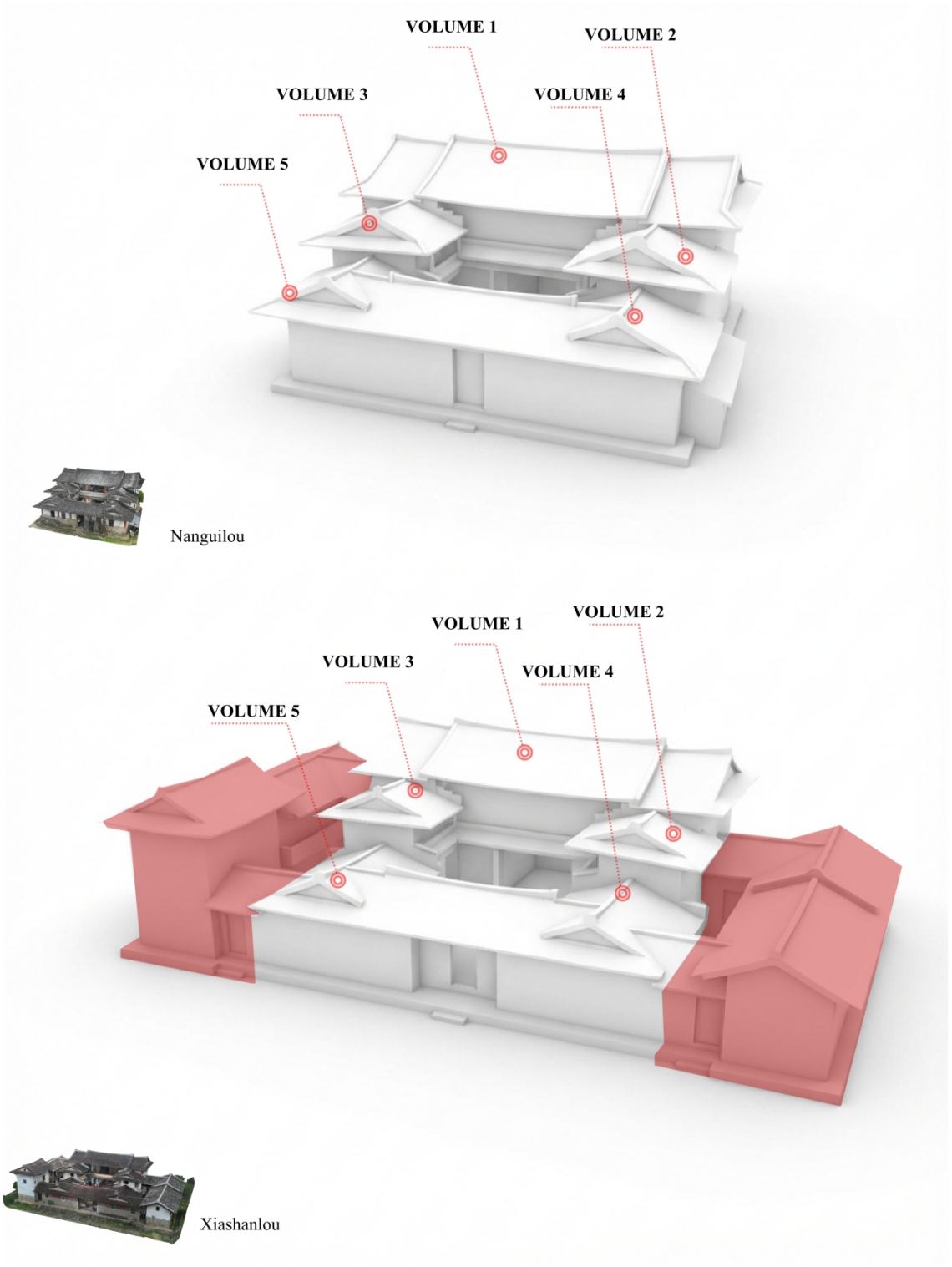

Figure 161. The Addition of Side Wings in Minnan Wufenglou After the Five-Volume Structure Is Complete

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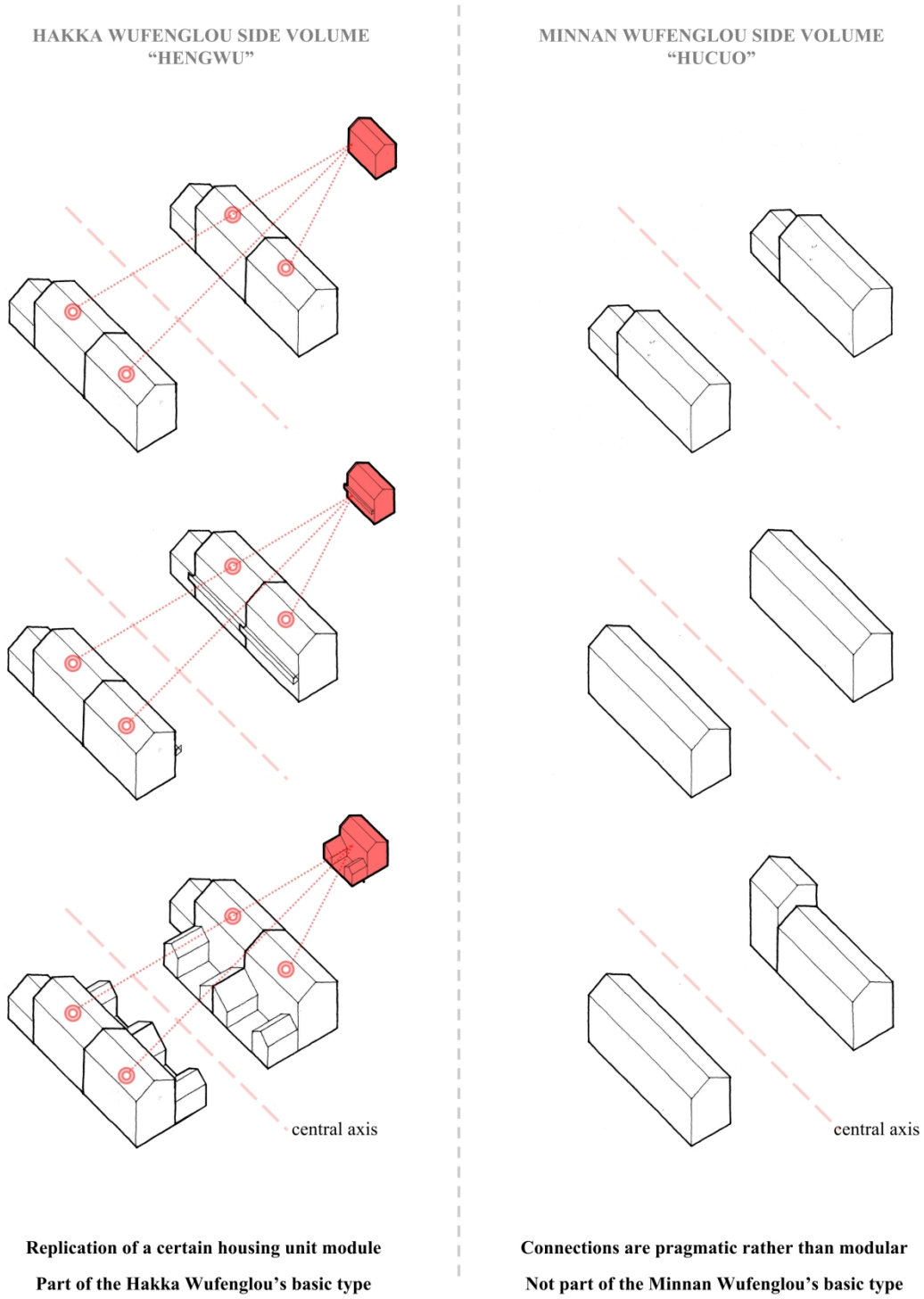

Figure 162. Combinational Forms of Side Wings in Hakka and Minnan Wufenglou

Self drawn

4.3. Defensive System

- Hakka Wufenglou: Housing Unit-Based Decentralized Defense

The defensive design of Hakka Wufenglou operates through different principles than the Hakka Tulou which features strong perimeter walls and defensive structures. Defense is embedded within the residential structure, allowing habitation and protection to coexist. Its strategy can be defined as decentralized defense, where protection is not delivered by a singular fortified envelope, but by a network of self-sealing residential units.

Although the overall arrangement of the five volumes forms a symmetrical composition of main house with paired hengwu, the collective envelope has limited defensive capacity due to the high number of openings and doors. Consequently, defense does not rely on the five volumes acting as a unified shield. Instead, protection is generated at the scale of individual housing units, each with independent access and the ability to be sealed autonomously. In emergencies, these units can detach defensively, transforming the building from an open residential system into multiple self-defended cells, preventing a total breach even if outer boundaries fail.

Occasional skylights or small apertures positioned above the main hall or upper walls may also support surveillance of internal courtyards or entrances. While not originally designed as defensive devices, they are operationally convertible into temporary observation points.

Thus, Hakka defense is neither expressed as fortification nor dependent on perimeter enclosure; rather, it resides in the internal logic of subdivision and unit autonomy. The building is defensible not as a whole, but through its capacity to partition, isolate, and self-secure at the level of housing units—a model where living structure itself becomes the defensive mechanism.

- Minnan Wufenglou: Reinforced Defense Through Additive Components

The defensive system of Minnan Wufenglou does not originate from its core basic type but is introduced through additive and visually explicit components. The core five volumes—main house, paired titingjian, and paired corner rooms—may occasionally incorporate defensive features, but may also contain none. In some cases, the titingjian is purely ornamental, lacking circulation or defensive function, and may open directly to the façade without protective intent. Thus, the basic type alone cannot be interpreted as a defensive structure.

Defensive reinforcement is instead concentrated in hucuo, the outer lateral appendages that serve as an upgraded protective envelope. In periods of conflict, inhabitants may retreat into hucuo rather than remain within the central core, which is spatially more exposed. Defensive elements commonly mounted onto hucuo include watchtowers (chonglou) and loopholes (qiangyan). Chonglou is always positioned on hucuo and does not belong to the five-volume composition. Its elevation often exceeds that of the main house, expanding sight and firing range, and overriding the conventional ritual hierarchy of “lower at front, higher at rear.” Qiangyan, frequently narrow outside and flared inside, also appear on chonglou, rear walls of main house, and along roof eaves, forming a distributed but auxiliary defensive network. In certain cases, the Minnan Wufenglou in this form features what are known, as mentioned above, “tiger-eye windows (Humuchuang)”. These windows, since they are located on the upper floor and face outward, serve a defensive function by allowing the occupants to observe potential threats. See Figure 163-165.

Therefore, Minnan defense is neither structural nor inherent, but external, aggregated, and selectively reinforced. Over time, many defensive components transitioned from practical use to symbolic presence, becoming recognizable visual markers rather than operational necessities. Here, defense is an additive syntax, not a constitutive one.

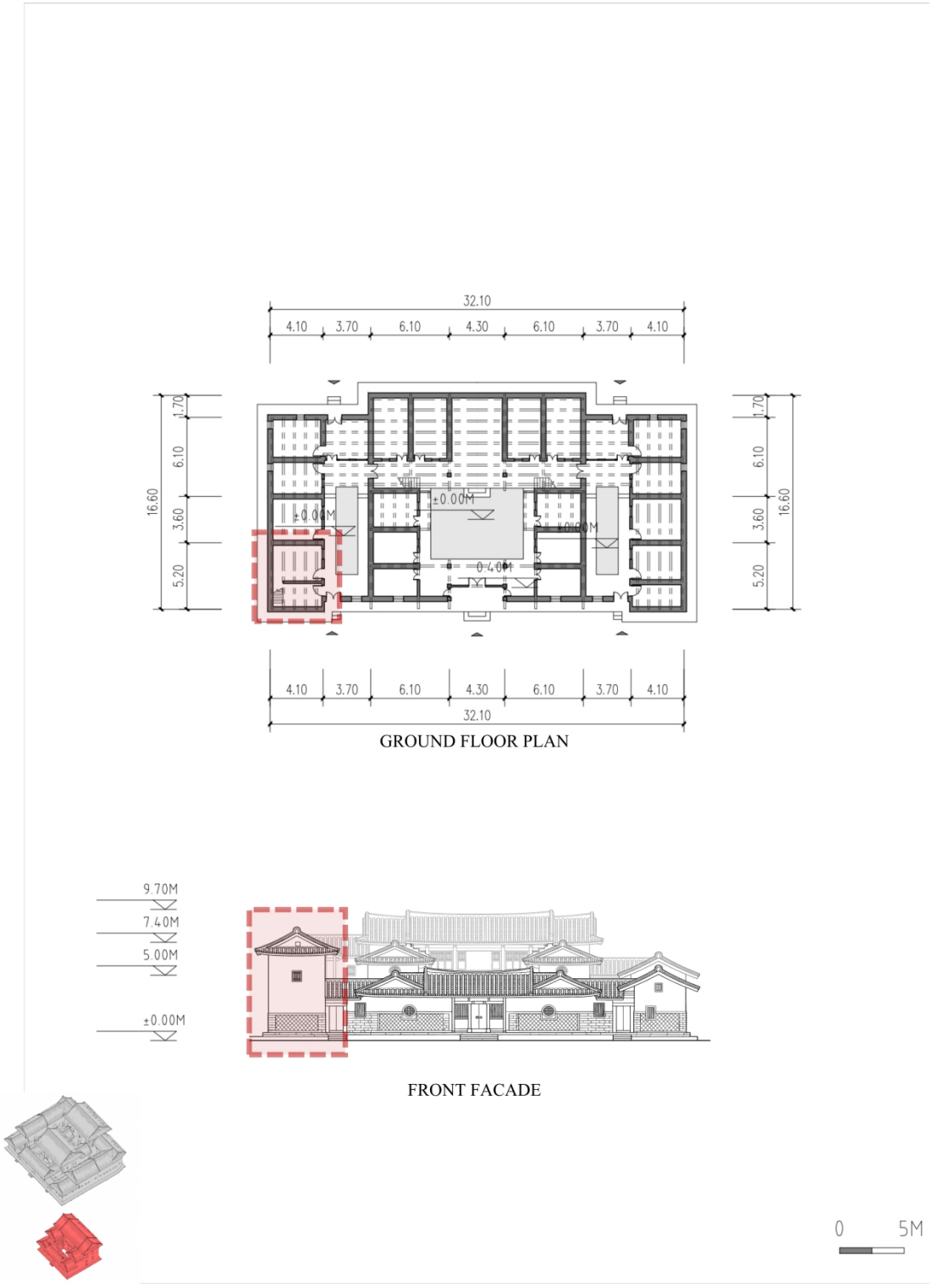

Figure 163. The position of the watchtower “Chonglou” in Minnan Wufenglou. Example: Xiashanlou

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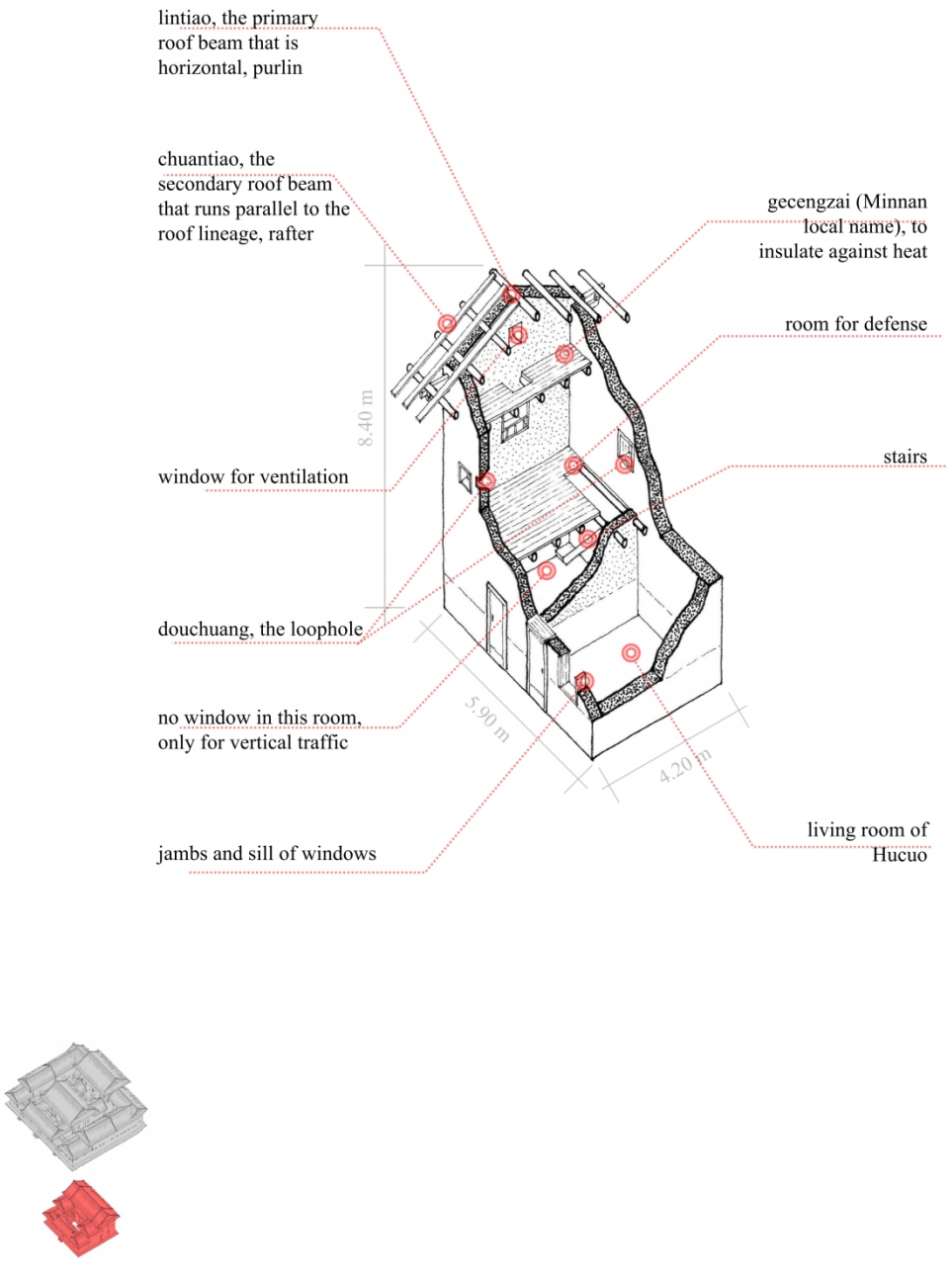
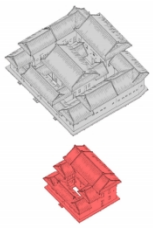


Figure 164. Axonometric Section of the watchtower “Chonglou” in Minnan Wufenglou. Example: Xiashanlou

Self drawn

Loophole (Qiangyan) at the back of the main house of Minnan Wufenglou, Nanguilou

Loophole (Qiangyan) from the inside



“Tiger-eye windows (Humuchuang)” in the Titingjian of Minnan Wufenglou, Xiashanlou

Figure 165. Loophole and “Tiger-eye-window” in Minnan Wufenglou

Self taken in 2024

5. Clan Spatial Order inside Wufenglou

- The Hakka Model: main house as Core, side wings as Auxiliary, Allocated among Sons

In Hakka Wufenglou, inheritance is organized around hierarchical spatial entitlement rather than partitioned property blocks. The main house functions as the primary inheritable core, accommodating mixed and overlapping residence for multiple nuclear units within the same lineage. Instead of being subdivided into exclusive zones, the main house remains a shared residential nucleus, reinforcing cohabitation and intra-lineage interaction.[56]

The side wings (also referred to as lateral wings) operate as auxiliary inheritable units allocated among sons, serving both as spatial entitlements and loci of residence. Unlike a rigid "one wing per household" model, wings do not constitute isolated sub-compounds. Instead, allocation results in distributed occupancy: a single household may simultaneously occupy rooms in the main house and portions of a side/lateral wing, forming interwoven domestic footprints rather than enclosed, independent quarters.

A key principle of distribution is lot-drawing, by which lineage members determine usage rights to rooms and wing segments. Crucially, inheritance confers spatial use-rights and residence entitlement rather than exclusive architectural possession, preserving the building as a coherent clan organism rather than fragmented estates. Communal kitchens, positioned along the central axis between the ancestor hall and the main house, remain non-privatized and collectively operated, supporting the continuing unity of domestic infrastructures rather than household segmentation.

The Hakka inheritance system thus constitutes an integrative spatial order centered on the main house, supported by side/lateral wings, and characterized by interwoven co-residence. Its succession path follows:

main house (shared and mixed dwelling) → side/lateral wings (allocated among sons) → axial shared kitchens → construction of new external dwellings,

through which architectural wholeness, spatial interdependence, and non-fragmented domestic continuity are consistently maintained. See Figure 166.

[56] Pan et al. 2013. pp. 106, 110-111.

- The Minnan Model: Axial Hierarchy and Left-Right Ranked Spatial Succession

In Minnan Wufenglou, inheritance follows a strict axial hierarchy rooted in ritual ranking. The ancestor hall remains the unallocated ceremonial core, while residential succession unfolds laterally by bay, which becomes the basic unit of inheritance.[57]

Spatial succession follows a fixed order: center prioritized, left before right, interior before exterior. In a typical five-bay configuration, once the ancestor hall is excluded from inheritance allocation, the first bay to the immediate left of the ancestor hall is assigned to the eldest son, followed by the immediate right bay for the second son; the sequence then extends outward, again left before right. Unlike whole-wing division, each bay constitutes a discrete inheritable unit ranked by axial proximity and ritual seniority.

When primary bays are fully allocated, spatial succession does not yet move outside the main house. Instead, expansion proceeds to the Titingjian (stair-hall unit, a transitional volume with temporary dwelling capacity used when the main house is fully allocated). Due to its liminal status—architecturally inside the main structure yet hierarchically secondary—Titingjian acts as a built-in expansion layer accommodating overflow residence without fracturing the axial core.

Only once both the principal bays and Titingjian are exhausted does inheritance extend to Hucuo, either pre-existing peripheral ranges or appended external rooms. These represent a secondary concentric layer of expansion, spatially dependent on the original structure rather than discrete branch households. Only when Hucuo can no longer absorb descendants does the lineage resort to constructing new dwellings beyond the ancestral compound.

The Minnan system therefore constitutes an axial, ranked, and centripetally anchored inheritance order:

main house bays → Titingjian → Hucuo → new external dwelling,

ensuring that spatial succession unfolds outward in concentric hierarchical layers while preserving architectural and ritual unity. See Figure 166.

[57] Ministry of Housing and Urban-Rural Development 2017.; Lin 1998.

Figure 166. Ideal Four-Branch Household Division Differences Between Hakka and Minnan Wufenglou

Examples: Yulonglou (Hakka), Nanguilou (Minnan)

Self drawn

6. Other Distinctions between Hakka and Minnan Wufenglou

- White Lime Wall Painting in Hakka vs. Red-Brick Imitation Painting in Minnan

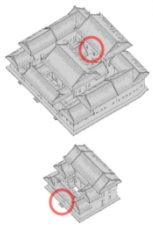
Taken together, façade treatment, gable construction, entrance technique, and naming practice show how typological difference appears not only in plan but also in surface, roofline, threshold, and name. The main building material of Hakka Wufenglou is rammed earth, but the exterior treatment is not entirely uniform. In some cases the rammed-earth surface remains visible with only local repairs or protective limewash, while in others the wall is fully coated with white lime for improved moisture resistance and durability. As a result, the facade often appears as a relatively continuous surface shaped by leveling, repair, and maintenance over time. Minnan Wufenglou, although also built mainly of rammed earth, typically adopts painted red-brick imitation rather than real brick masonry. This treatment usually consists of a light base layer over which red or dark grid lines are drawn to simulate brick coursing. Additional relief stucco or painted details often appear around door frames, corners, openings, and horizontal bands, giving the facade a more articulated rhythm and visual layering than the comparatively plain Hakka wall surface. See Figure 167.[58]

[58] Cai 2005.; Zheng 2018. pp. 18-22.

Jianzaitian

HAKKA WUFENGLOU WALL PAINTING

MINNAN WUFENGLOU WALL PAINTING



Yifulou

Figure 167. The differing preferences in wall plastering methods between Hakka and Minnan Wufenglou

Self taken in 2024

- Windowed Gable Walls in Hakka vs. Polychrome Gable Walls in Minnan

Hakka Wufenglou gables commonly expose rammed-earth texture or are fully lime-coated to form a unified weatherproof envelope. Gable windows are prevalent, serving attic ventilation, daylight admission, and roof-access. Field observations show a correlation between window count and Qijiao (stair core) configuration:[59]

– No-window gables typically align with 2-room (Jian) Qijiao or 2-room-1-hall (Ting) Qijiao;

– Single-window gables likewise relate to 2-room or 2-room-1-hall Qijiao;

– Double-window gables often correspond to 4-room or 6-room-1-hall Qijiao;

– Triple-window gables frequently match 8-room-1-hall Qijiao.

Roof purlin ends are commonly shielded by Bofengban (wind-shielding gable board), flanking a Xuanyu ornament (gable-end pendant serving sealing and symbolic closure functions). See Figure 168.

[59] Lan 2013.; Cai 2005.

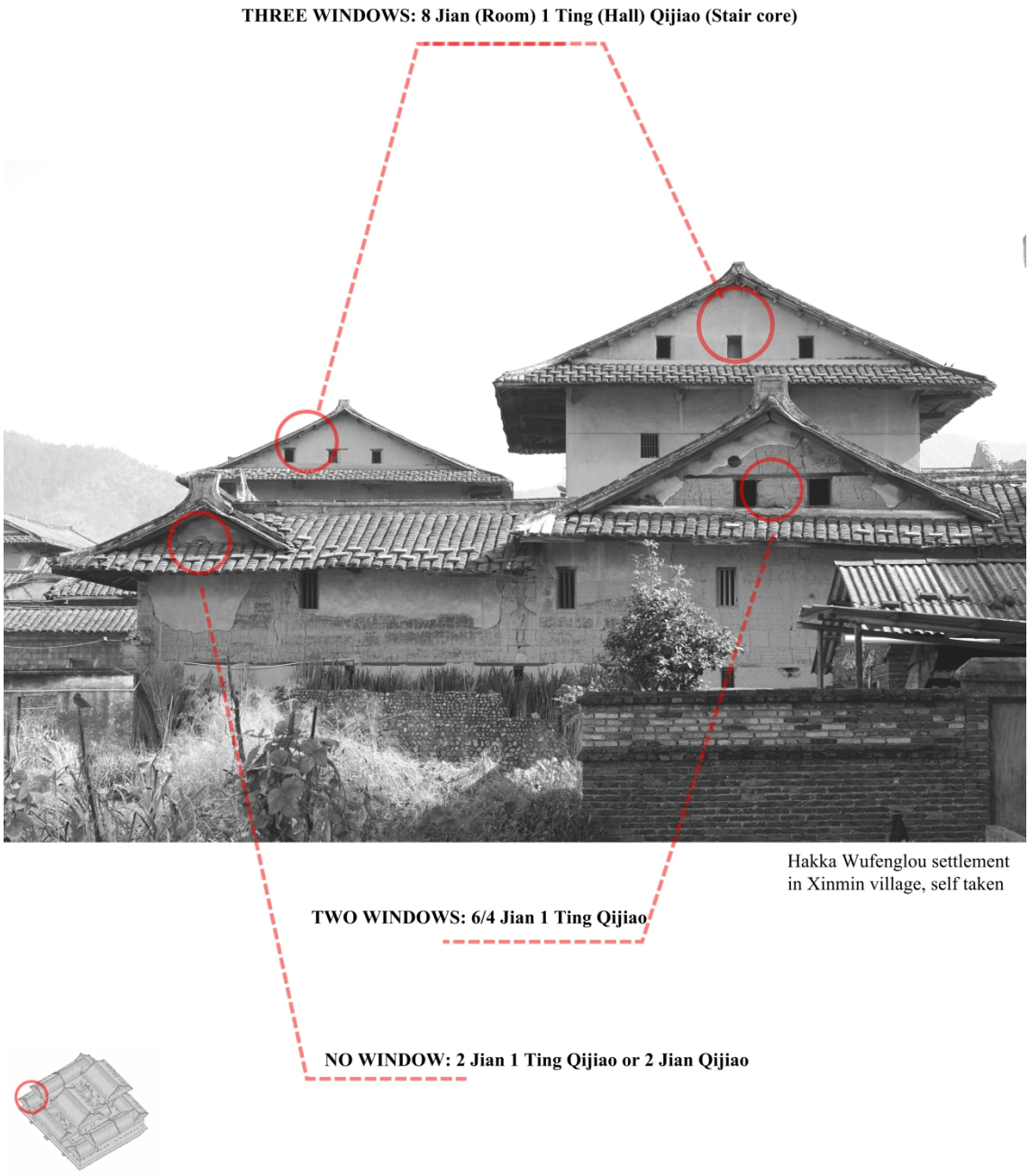


Figure 168. Hakka Wufenglou's gable.

Self taken in 2024

In contrast, Minnan Wufenglou gables generally omit windows and instead emphasize painted and stuccoed triangular compositions. Their purlin ends are often capped by ceramic yanfeng tiles, and where boards are used instead they are locally termed yanxian[60]; in more recent cases, plastic strips fixed with nails may appear as substitutes. Some roof ridges rise steeply into pronounced swallow-tail ridges[61] (Yanweiji). The upper cavity behind the gable functions mainly as a thermal buffer rather than as a space for residence or storage. See Figure 169.[62]

[60] In Minnan Wufenglou, the terms “yanfeng” and “yanxian” refer to techniques used to protect the ends of wooden purlins. “Yanfeng” involves sealing the end of the purlin in a point-like manner to prevent water damage, whereas “yanxian” involves sealing along the length of the purlin in a strip-like manner. In other words, “yanfeng” is point-like, and “yanxian” is strip-like. This practice helps protect the wooden components from rain and moisture.

[61] One special variation of the five elements gable, see Chapter III.

[62] Wu 1997a.; Wu 1997b.; Wu 1997c.; Zheng 2018. pp. 7-9, 80-81, 137.; Cao 2006.

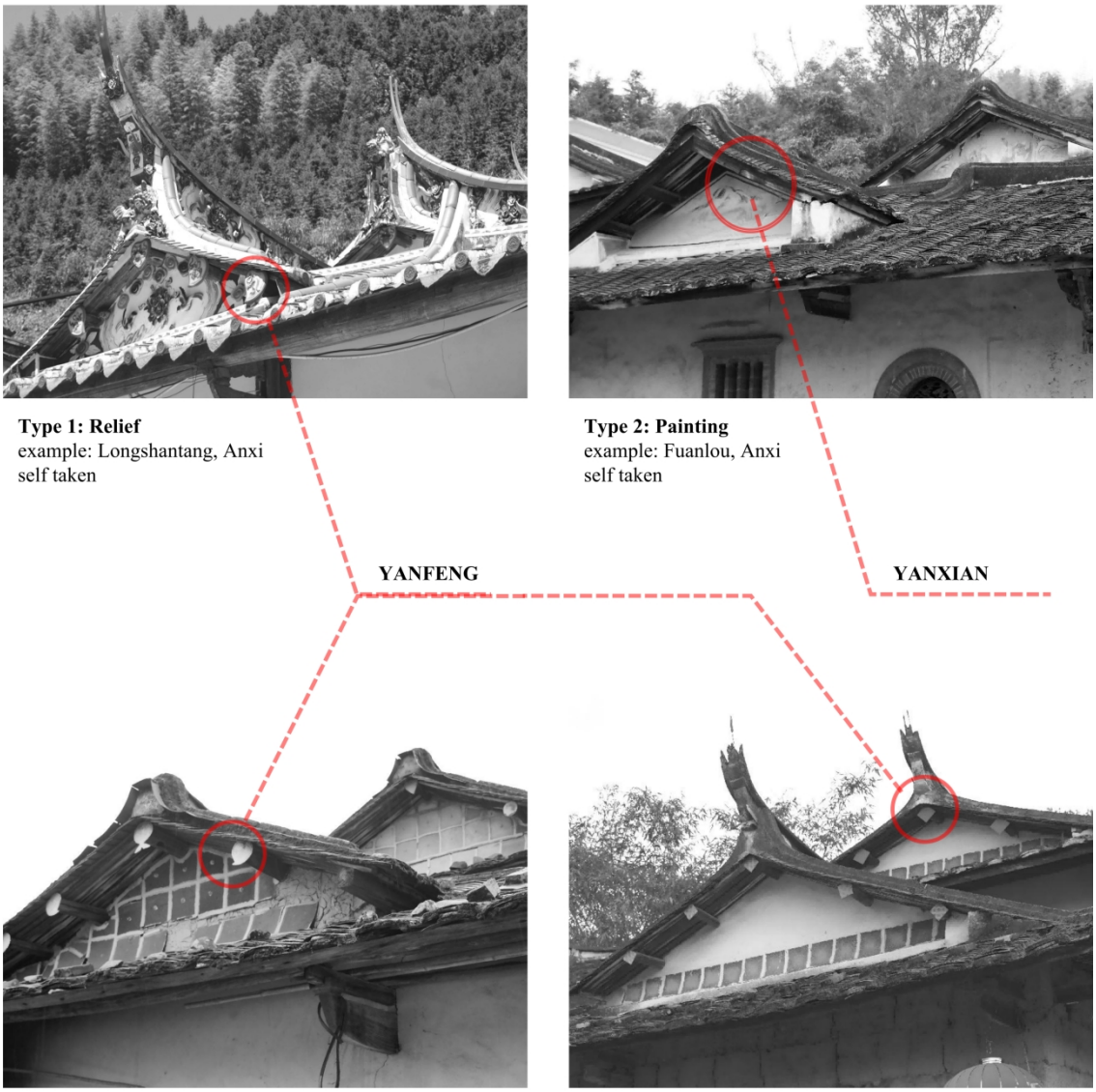


Figure 169. Minnan Wufenglou’s gable.

Self taken in 2024, 2025

- Entrance Emphasis: Hakka Menlou vs. Minnan Tashou

Hakka Wufenglou employ two principal gatehouse (Menlou)[63] strategies:[64]

(1) Merged gatehouse, in which the entrance is integrated into a thickened, deepened frontal volume, highlighted by massing, eaves articulation, and occasionally dougong brackets or stepped eave reveals, enhancing sheltered threshold recognition;

(2) Detached gatehouse, positioned along the front courtyard edge, creating a sequential spatial transition from exterior → courtyard → main threshold. Both variants typically use post-and-lintel or column-and-tie structural framing, topped by hip-and-gable or pitched roofs, combining protection with spatial legibility. See Figure 170.

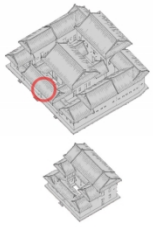
Minnan Wufenglou adopt Tashou[65], an introverted entrance technique where the doorway recedes inward to form a segmented depth gradient and shadow register. Doorframe, sidewalls, and lintel surfaces step inward in calibrated offsets, generating controlled procession and visually marking stopping zones and transitional layers within the façade profile rather than projecting outward. See Figure 171.[66]

[63] A "Gatehouse" or "Entrance Tower." In Hakka architecture, this is often a distinct, prominent structure marking the main entry point, sometimes serving defensive and ritual purposes.
[64] Lan 2013.; Cai 2005.
[65] Also known as "Aoshou," it refers to a recessed entrance technique common in Minnan and Teochew architecture. The façade is set back from the eaves line to create a semi-outdoor transition space under the roof, providing shelter and emphasizing the entry without a separate detached gatehouse.
[66] Zheng 2018. pp. 16-17.; Lin 1998. pp. 32-33.

Yaoyuanlou

“MENLOU” SEPERATED FROM THE BASIC TYPE

“MENLOU” CONNECTED TO THE BASIC TYPE (MAIN ENTRANCE)



Rulindi

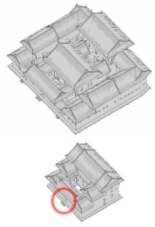
Figure 170. Forms of the Hakka Wufenglou “Menlou”: Separated vs. Integrated Entrance Volume

Self taken in 2024

Yifulou

MAIN ENTRANCE WITHOUT "TASHOU" STRUCTURE

MAIN ENTRANCE WITH "TASHOU" STRUCTURE



Fuanlou

Figure 171. Entrance Differences in Minnan Wufenglou with and without "Tashou"

Self taken in 2024

- Ancestor Hall Usage Differences

In Hakka Wufenglou, the ancestor hall functions as a flexible multipurpose ceremonial space for assembly, deliberation, and periodic rites. Ancestral tablets are not permanently installed; offering tables and ritual items are set up and removed contextually, keeping the hall spatially reconfigurable.

In Minnan Wufenglou, ancestor hall often retains its literal function, containing permanently installed shrines and tablets (including photographs), centrally positioned. The spatial choreography commonly follows a courtyard-fronted, shrine-backed axial sequence, sustaining persistent ritual display and enduring ceremonial anchorship.

- Structural "Four-Point-Gold" Columns vs. Plan-Based "Four-Point-Gold" Layout

Within the Hakka context, "Sidianjin pillars" refer to the four primary load-bearing columns around the central zone of the hall, structurally defining bay depth, width, and the principal roof support frame. The term belongs to vertical structural notation for load path and column network indexing.[67]

In the Minnan system, "Sidianjin layout" denotes a planimetric spatial organization placing major rooms at the four quadrants around the central hall, aligned with nine-square grid organizational logic. Here the term operates at the horizontal plane of spatial syntax rather than structural support. Although linguistically homologous, the two terms operate at different analytical layers—one structural, one spatial—and should be documented separately to avoid conflation.[68]

[67] Lin 1995. p. 81.; Liang 2006. pp. 14-16, 20-23.
[68] Lin 1998. pp. 8-9.; Ministry of Housing and Urban-Rural Development 2017. pp. 41-43.

- Variations in Building Naming Conventions

(1) Naming of the Entire Building

"Lou"

The fundamental naming format of Wufenglou is "x lou, where x represents the building name" in which lou specifically denotes a building volume of two or more stories in both traditional and local usage. Most Wufenglou possess a dedicated name, where lou identifies the building type and the preceding name distinguishes the individual entity, e.g., Yonghaolou, Longchanglou (Hakka), and Nanguilou, Fuanlou (Minnan). A building name functions only for typological and identity designation and cannot be used to infer bay width, depth, height, or other dimensional attributes, which must rely on measured drawings and archival records.

"Tang"

Tang refers to the ritual core space, but its naming logic differs by region. In Hakka Wufenglou, the ancestor hall serves as the spatial and symbolic core, and its name frequently extends to designate the entire property, such as Peijingtang or Mingjuntang, where tang simultaneously denotes the central ritual axis and the official hall name of the whole building. In Minnan, the term tang applies only when the central hall remains double-height and spatially continuous without an inserted floor slab; if subdivided into two independent stories with separated functions, the term tang is generally not used, and the building is referred to as lou to emphasize its two-story configuration. In summary, in Minnan, a double-height ancestor hall is termed tang, while a vertically partitioned counterpart is termed lou.

"Di"

Di commonly appears in inscribed plaques of Hakka Wufenglou, such as Rulindi or Dafudi, signifying lineage status and social aspirations. Di can coexist with the formal building name: the latter (e.g., Yonghaolou, Longchanglou) identifies the structure, while the former marks genealogical prestige. The two are semantically parallel but not equivalent. See Figure 172.

"Ju"

Ju primarily appears in the naming of small bay-module residences in Minnan and is also found in other Minnan axial-bay dwellings, such as Xinyuanju. This nomenclature expresses the identity or perceived scale of a residence and should not be used to determine actual building size or number of stories, which must be verified through surveying and historical documentation.

Figure 172. Locations of Building Names. Example: Yulonglou, with three formal names (from near to far): Dafudi, Yulonglou, and Wenyitang.

Self taken, 2024.

(2) Locations of Building Names

Hakka and Minnan Wufenglou share several name-placement locations, especially at the entrance gate, directly above the main doorway, or inside the ancestor hall, all of which function as external or internal identifiers of the building as a whole.

A key distinction occurs in Hakka Wufenglou: its spatial layout follows the "jian-ting-qijiao" housing unit system, in which the central hall extends laterally to form flanking wings containing relatively independent housing units. Since each housing unit carries semi-autonomous residential status, naming extends beyond the main building to individual housing units, each receiving its own lou name. Consequently, a single Hakka Wufenglou may contain multiple lou names simultaneously—at the main entrance, in the ancestor hall, and at each lateral housing unit. Therefore, the name commonly cited for a Hakka Wufenglou is often the name of one specific position or housing unit, not necessarily the formal name of the entire building. This naming stratification does not occur in Minnan Wufenglou, where housing units are not individually named. See Figure 173.

Figure 173. A different building name (Chengdelou) on an individual housing unit of Huaichuntang.

Self taken, 2024.

Chapter Summary

The basic types of Hakka and Minnan Wufenglou are two independent typological systems, not local variants of one shared type. Their similarity in silhouette—although it is a five-volume axial composition with stepped height from front to back—conceals fundamentally different generative logics. For this reason, similar outward massing cannot be used as the sole basis for classification. The distinction must therefore remain tied to generative logic, not silhouette alone.

The Hakka basic type is constructively defined by five constitutive volumes, including a pair of independent side wings (hengwu) formed by repeatable jian–ting–qijiao housing units. Ritual and residence remain spatially separated: the ancestral hall and entrance form a self-contained ceremonial axis, while habitation unfolds laterally in modular, self-defensive residential units, producing multiple enclosed courtyards and a decentralized defensive system. Side wings are mandatory—without them, the building is considered incomplete.

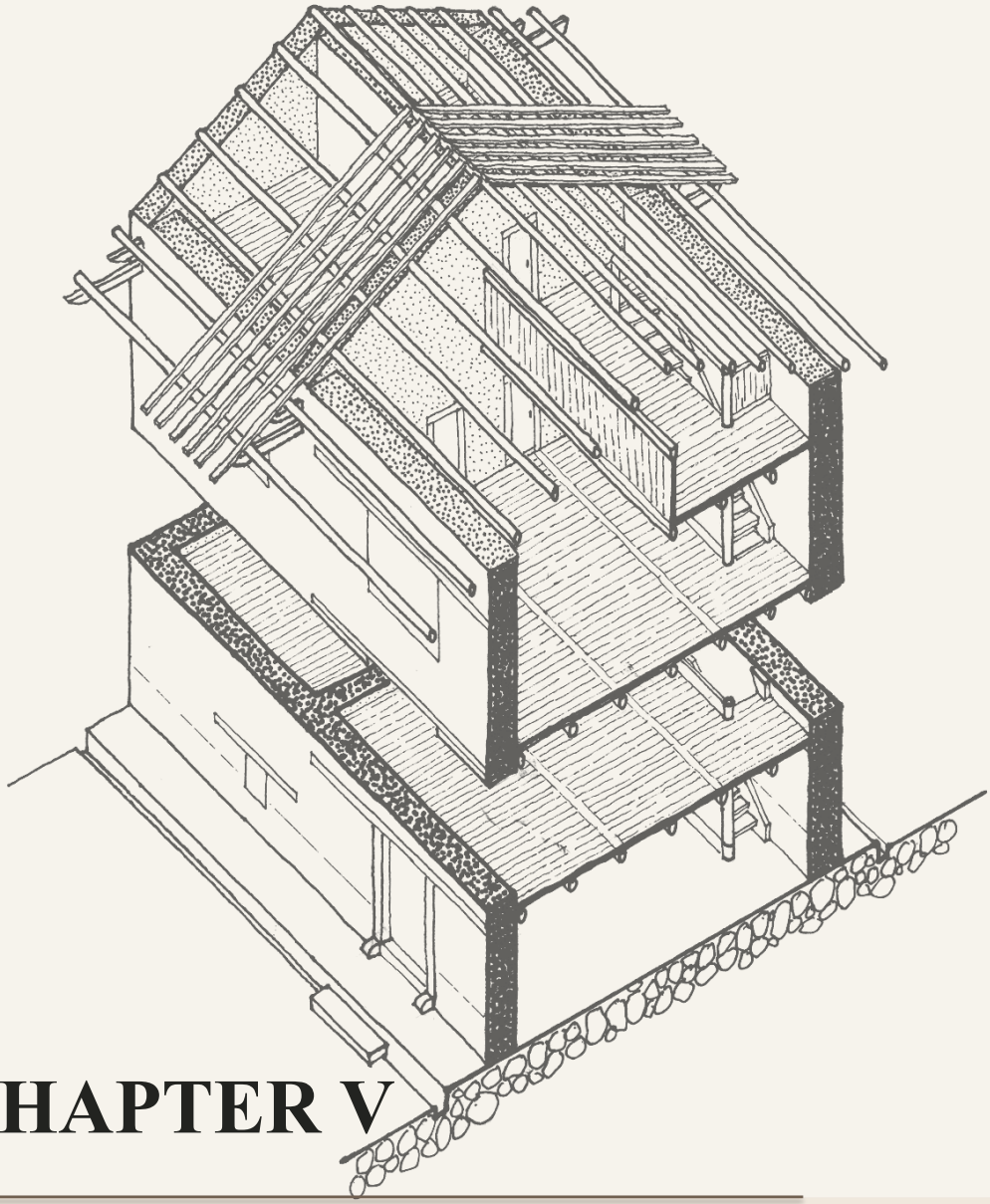
The Minnan basic type, in contrast, is organized as a single integrated core enclosure, in which ritual and residential programs are fused inside the main house (dingluo). Circulation, visual identity, and vertical hierarchy are mediated by the paired Titingjian, a typological marker unique to Minnan Wufenglou that cannot be substituted by any other volume. The system encloses one central courtyard, and defense or expansion occurs only later, externally, through non-constitutive hucuo or watchtowers (chonglou). Thus, Minnan side volumes are supplementary but non-defining.

The divergence is therefore not compositional but typological and systemic:

Hakka = modular housing logic + ceremonial/residential separation + constitutive side wings + decentralized defense + multi-courtyard order.

Minnan = Ritual-residential fusion logic + Titingjian as core identifier + single-courtyard order + additive perimeter defense.

Their difference is not in appearance, but in the unit of formation, spatial hierarchy, circulation system, inheritance logic, and criteria of completion. The five-volume form is a shared shell, but the basic types beneath it originate from two non-convertible spatial grammars.



CHAPTER V

Wufenglou and Fujian Rammed-Earth Architecture: A Preliminary Discussion

CHAPTER V. Wufenglou and Fujian Rammed-Earth Architecture: A Preliminary Discussion

This final chapter discusses what follows once Wufenglou is separated from Tulou, Tubao, and Zhuangzhai. The issue is not whether Wufenglou should be added as another name within the catalogue of Fujian rammed-earth dwellings, but whether it can be understood as an independent typological category with its own internal logic. This chapter argues that it can, because its layout rule, structural logic, and spatial grammar are not incidental features, but reproducible principles that operate on their own terms. The distinctions established earlier are therefore brought into a comparative frame. Hakka Wufenglou is read beside Hakka Tulou settlements and other rammed-earth dwellings, while Minnan Wufenglou is traced through the Kaijian, or Axial-Bay, system. Although Wufenglou and Tulou may coexist in both Hakka and Minnan regions, their formal development does not follow the same rule. Hakka Wufenglou grows from the Tanghengwu, or Hall-and-Wing, system governed by the jian-ting-qijiao housing module; Minnan Wufenglou, by contrast, develops from odd-numbered bay progression and a five-volume hierarchy centered on the ancestor hall. Both lineages are capable of producing coherent derivative forms, yet only a limited subset meets the strict criteria of the Wufenglou basic type. For that reason, Wufenglou is treated here not as a universal prototype applied across the whole Fujian corpus, but as a bounded terminal typological outcome. On this basis, the wider Fujian corpus can be reorganized through layout rule, basic type, variant, and parallel form.

1. Distinct Layout Rules between Two Types of Wufenglou

1.1. Tanghengwu (Hall-and-Wing House): The Layout Rule Hakka Wufenglou Applies

As discussed in Chapter I, Tanghengwu is also a local generic term used by Hakka communities to refer to a broader typological category that includes Wufenglou (Hall-and-Wing Type House)[1]. The spatial layout of Tanghengwu can be summarized as follows: the hall (tang) functions as the ritual–domestic core, while side wings (hengwu) are appended in symmetrical pairs, forming a basic spatial order in which the ancestral hall occupies the center and the wings flank both sides[2]. Its generative logic emphasizes both the centrality of ritual space and the capacity for continuous expansion — when population and functional demand increase, new residential units are added laterally to both sides, without disrupting the ceremonial order along the central axis. This layout rule is most prevalent in the Hakka heartland spanning southern Jiangxi[3], western Fujian, and northeastern Guangdong[4], and has migrated with Hakka diaspora into Guangxi[5], and Taiwan[6], demonstrating high adaptability and strong typological prototypicality.[7] See Figure 174.[8]

[1] Tanghengwu literally means Hall and Wing type house. Its layout module Hall-and-Wing is a spatial layout rule found in certain traditional dwellings, including Fujian Hakka Wufenglou. In this layout, the “hall” represents the central volumes—there is more than one central section—dedicated to ceremonial or communal use. The “wings” are the lateral volumes on either side, also more than one, which typically contain living quarters or secondary rooms. This configuration emphasizes a symmetrical arrangement and a strong central axis, balancing multiple central and lateral volumes.
[2] Cai 2019.; Xiao 2003.; Zhuo 2019.; Zhuo 2022.
[3] Wan 1996.; Wan 1998.
[4] Liu et al. 2024.; Chen et al. 2013.; Chen et al. 2025.
[5] Li 2002.; Xie 2007.
[6] Knapp 1996.; Dai 2003. pp. 212.
[7] Zhuo 2020.; Yang et al. 2021.; Zeng 2014. Leong 2013, pp. 35-55. Liu 2001.; Luo 1989, pp. 34-37.
[8] Pan et al. 2013. pp. 135-138.

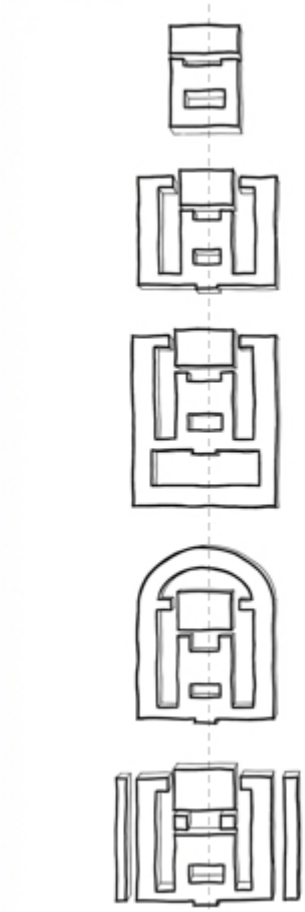


Figure 174. The "Hall-and-Wing" Layout Rule Applied in Hakka Wufenglou.

Self drawn

At the level of volumetric operations, Tanghengwu can generate multiple derivative forms through a set of recognizable spatial actions.

First, Enclosure: by adding a rear annex (zhenwu)[9] and a front-facing auxiliary range (daozuo)[10], the originally lateral composition is transformed into a four-sided courtyard enclosure of roughly consistent building heights like weiwu[11] in Jiangxi.

Second, Vertical Escalation: while preserving the canonical hall-and-wing layout, the elevation is

[9] Zhenwu: In traditional courtyard-based vernacular compounds, zhenwu refers to a long rear house placed behind the main house (or main house group). It is an added rear range aligned with the core, comparable in form to a transverse wing but defined by its location posterior to the principal hall, functioning as the "back pillow" that deepens the compound and strengthens enclosure.

[10] Daozuo (often daozuofang) denotes the front range on the opposite side of the courtyard axis from the main house. In a typical courtyard layout it sits on the south side facing inward (its doors open toward the courtyard, i.e., northward), so its orientation is "reversed" relative to the main house; accordingly it is conventionally ranked as a subordinate front building within the axial hierarchy.

[11] Weiwu (often called gan-nan Hakka weiwu or fangwei) are primarily rectilinear, four-sided enclosed fortified compounds. They typically present a square/rectangular "guo-zi" outer wall with corner watchtowers, and a multi-courtyard, axial interior organized around ancestral and residential halls; the emphasis is on strong perimeter defense and tight inward enclosure.

reorganized into a hierarchical sequence of front low, rear high, and staggered rooflines, forming the signature vertical order recognized in Hakka Wufenglou.

Third, Transformation: without increasing the number of storeys, the rear enclosure may shift from a linear alignment into a curved profile, giving rise to derived forms such as weilongwu[12] in Guangdong.

These three operations — Enclosure, Vertical Escalation, and Transformation — demonstrate that Hakka Wufenglou is not an independent architectural invention, but a typological escalation derived from the Tanghengwu lineage through its vertical reconfiguration. Elements such as zhenwu and daozuo further reflect a calibrated balance between domestic function and defensive capacity.

In terms of topographic and economic adaptability, Tanghengwu typically aligns the hall backing mountains and facing valleys, with side wings extending along contour lines. On sloping terrain with shallow depth and wide frontage, units expand laterally—from two-hall-two-wing or three-hall-two-wing formats — forming linear villages stacked along elevation contours. In broader basin landscapes, the layout can develop greater depth, evolving into compound configurations composed of multiple halls with front and rear wings. The side wing functions as a modular unit, offering low-cost and flexible incremental expansion according to lineage size, which partly explains the extensive distribution of this type across Hakka regions.

The Hakka side wings (hengwu) appear in other regional variants, all referring to side-oriented residential ranges positioned perpendicular to the ridge of the main hall and accommodating everyday domestic life. These units are connected to the hall via corridors or small courtyards, producing both a spatial distinction and dialogue between ritual axis and daily circulation. This bilateral system—a central hall with symmetrically extensible side wings—constitutes the most fundamental criterion for recognizing Tanghengwu and its derivative lineage, including Wufenglou.[13]

1.2. Kaijianshi (Axial-Bay House): The Layout Rule Minnan Wufenglou Applies

As outlined in Chapter I, the local name based on the planar feature of Minnan Wufenglou can be summarized as Dawujian, referring to a "big five-bay form", the most applied Wufenglou in terms of the bay numbers, while three- and seven-bay configurations appear less frequently. This housing module, as

[12] Weilongwu, by contrast, is defined by a hybrid square-front / round-back scheme: a front hall-and-wing core is extended by a rear semicircular "weilong" enclosure, often paired with a frontal ban-yue-tang (half-moon pond). Its silhouette is horseshoe-like and reads as a hall complex embraced by curved rear housing, expressing fengshui water-and-mountain symbolism more explicitly than the Jiangxi rectilinear fortress model.
[13] Pan et al. 2013. pp. 110-111, 116-120.; Knapp 1986. pp. 43-48.

discussed in Chapter IV, is called “Kaijian (axial-bay system)”, and the dwellings based on this layout rule are called Kaijianshi (Axial-Bay Type House)[14]. Its spatial core is the ancestor hall, from which a bilateral, odd-number bay sequencing (3/5/7…) extends outward along the central axis. Although this system also adheres to axial symmetry, it does not follow the logic of the Hakka volumes where living and ritual spaces are separated; instead, the living span expands through a linear bay-based progression from the ancestor hall toward both sides.[15] See Figure 175.[16]

In volumetric composition, a typical Minnan Wufenglou is organized as a five-volume configuration comprising the main house (dingluo) at the rear, a pair of titingjian on both sides, and corner rooms. The main house forms the vertical and ceremonial apex. The titingjian function as hybrid spatial connectors integrating front–rear circulation and vertical access; within broader Minnan residential nomenclature, the same positional interfaces are often referred to as luojie, guoshui, shenjiao, or jutou, yet within Wufenglou discourse, the term titingjian denotes a canonical proper name signaling a transformation from a staircase-scaled element into a room-scaled composite volume. The corner rooms complete the enclosure and regulate the façade cadence.

It is crucial to note that a large corpus of single-storey rammed-earth dwellings in Minnan follows the identical bay sequencing and five-volume assembly logic of Wufenglou, and likewise exhibits a main house and symmetrical side volumes, full enclosure, and multiple entry points. In these single-storey cases, as no staircase element exists, the designation titingjian is absent, and the positions are instead named luojie, guoshui, shenjiao, or jutou. These buildings share comparable housing-unit expansion principles with the two-storey Wufenglou, demonstrating that the generative syntax of Minnan dwellings is not determined by storey count, but rather by the odd-number bay sequence centered on the ancestor hall and by the two volumes stretching laterally forward from the principal bays.[17]

[14] Kaijianshi literally means “axial-bay type” and refers to a housing expansion module characteristic of the Minnan Wufenglou region. The term “shi” can be translated as “type, form, or style” and it denotes a type of dwelling that expands horizontally based on an axial-bay layout. This can include Wufenglou or other residences that adopt this rule of layout.
[15] Cao 2016. p. 18.
[16] Lin 1998. pp. 8-9.
[17] Cai 2005.; Zheng 2018.; Lin 1998. pp. 8-9.

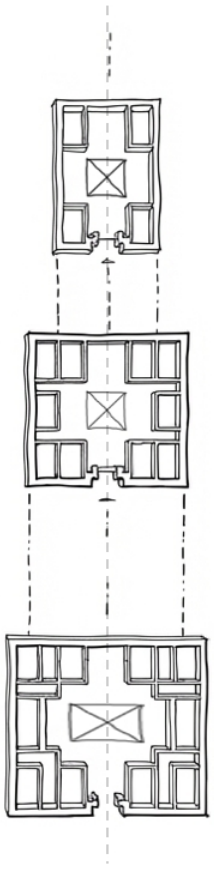


Figure 175. The “Axial-Bay” Layout Rule Applied in Minnan Wufenglou.

Self drawn

In addition, a transitional subtype known as the titingqi type can also be observed in Minnan. In this variant, the main house reaches two storeys, as in Wufenglou, while the lateral positions retain staircase-scale dimensions without evolving into room-scale titingjian, expressing their intermediary status primarily through roof and facade articulation. This variant further corroborates the developmental trajectory from staircase to titingjian as a scale- and programmatic upgrade within the Minnan system.

2. Hakka & Minnan Regions: Wufenglou and Tulou's Different Layout Rules

- Type Parallelism in Hakka Region

Yongding's historical territorial division comprised five "li" administrative regions[18] such as Fengtianli, Jinfengli etc. Spatially, the well-known corridor type rammed-earth settlements[19], among which some are developed for tourism, including those in Hukeng and Hongkeng, are concentrated in Jinfengli; whereas Hakka Wufenglou and another lineage of rectilinear rammed-earth dwellings are primarily found in Fengtianli, a region where no circular Tulou tradition exists (see Figure 176).[20] This spatial divergence reflects two stable yet fundamentally distinct craft genealogies and building logics.[21]

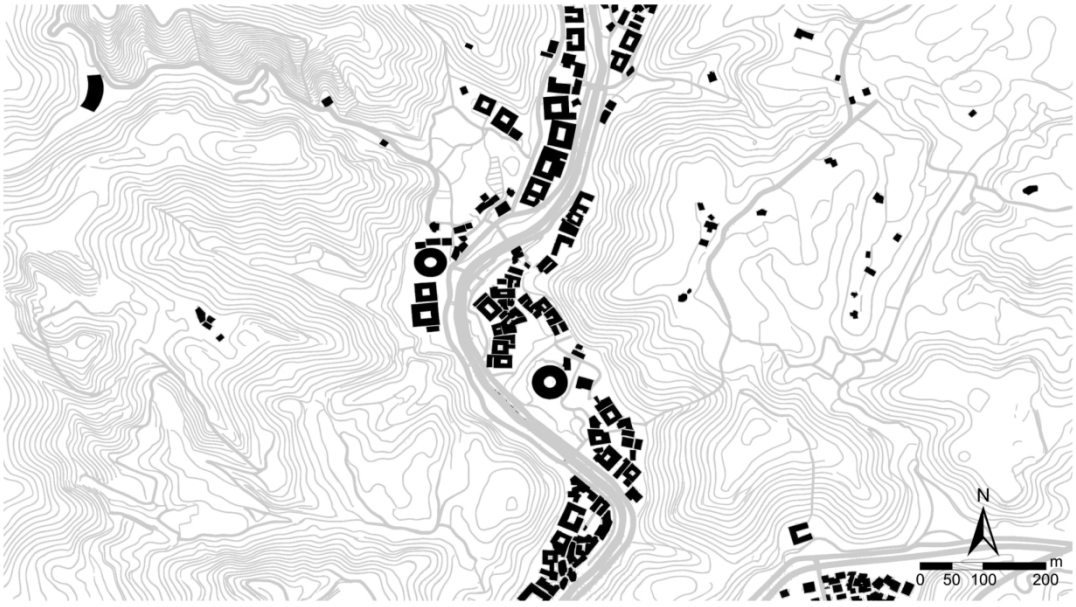
[18] The Kangxi edition of the Yongding Gazetteer records that, when Yongding County was established in the Ming Chenghua period (1478–1479) by separating "five li and nineteen tu" from Shanghang County, its territory was organized into five historical li administrative units: Xinan li, Jinfeng li, Fengtian li, Taiping li, and Shengyun li. The same gazetteer notes that each li corresponded to a former xiang (village-district) of the same name, showing continuity from earlier local divisions into the Ming–Qing li system.

[19] Corridor type describes the main characteristic of Hakka Tulou in which the exterior load is carried by rammed earth walls, and the interior load is supported by a wooden post structure. In this type, each floor's residential units are linked by a common internal corridor that runs along the length of the building. Colafranceschi et al. 2020.

[20] Zeng and Cheng 1967.; Pan et al. 2013. pp. 104, 135-138.

[21] Yang 2011.

Urban fabric of Xinming Village in the Fengtianli Region, where the buildings are rectangular-shaped rammed-earth structures.



Urban fabric of Hongkeng Village in the Jingfengli Region, where buildings are circular and rectangular-shaped in mix.

Figure 176. The rammed earth dwelling forms in Fengtianli and Jinfengli regions

Example: 1. Xinmin village in Fushi township, Fengtianli; 2. Hongkeng village in Hukeng township, Jinfengli.

Self drawn

Figure 177 shows the distribution of different Hakka Tulou and Wufenglou building forms in Yongding (square Tulou in yellow, circular Tulou in red, and Wufenglou in green). The pattern indicates that square Tulou occur in both northern and southern areas, whereas Wufenglou is concentrated in the north and circular Tulou in the south. This distribution suggests that external shape alone is insufficient for classification. Specifically, while square Tulou share certain formal features with both circular Tulou and Wufenglou, Wufenglou and circular Tulou share few internal structural features despite often being discussed together. Classification based on external shape alone therefore duplicates categories and obscures the structural and modular differences that define each type. In this sense, the map supports the argument that visually similar rammed-earth buildings may still belong to different typological systems.

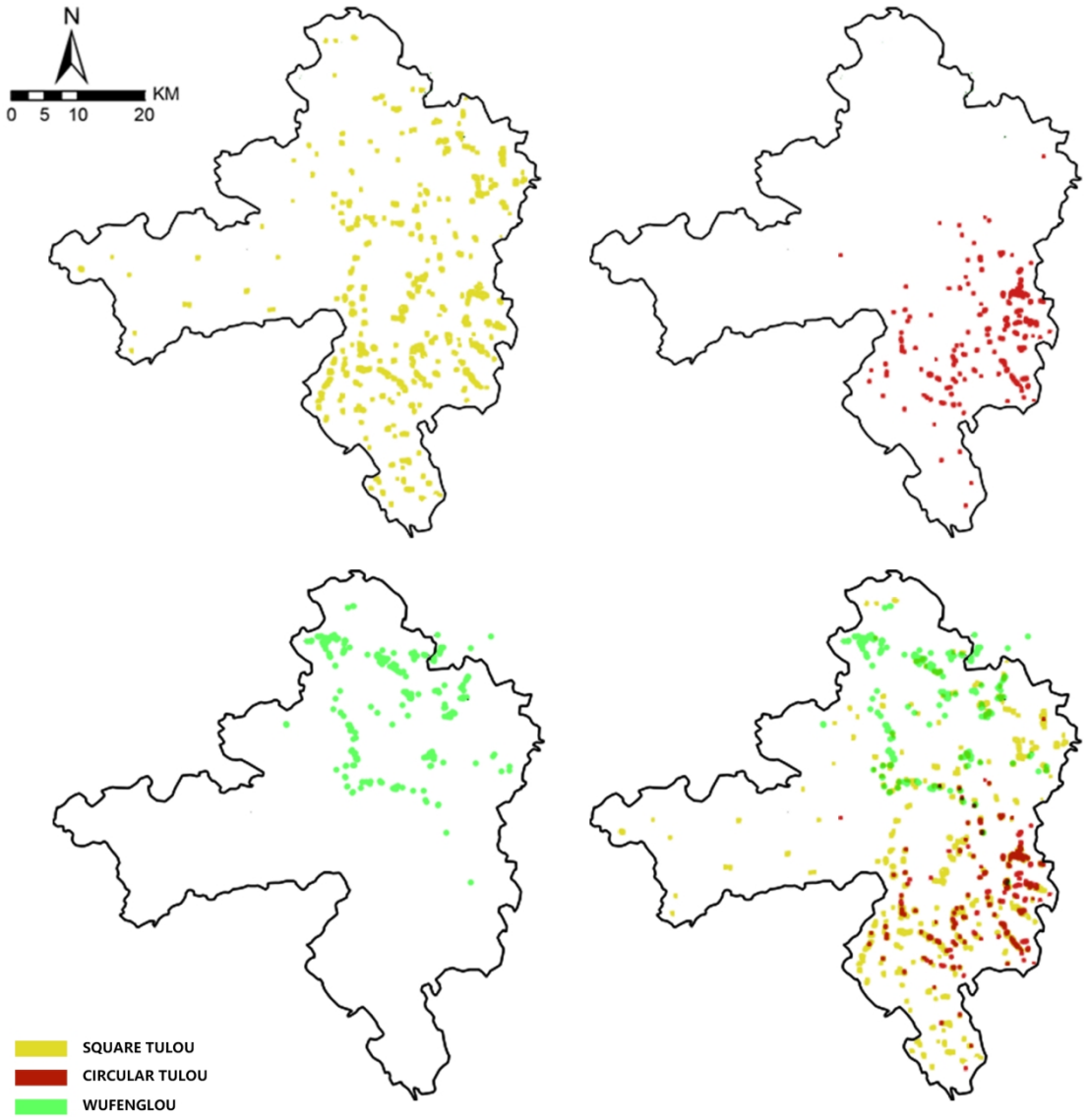


Figure 177. Distribution of Hakka Tulou and Wufenglou in Yongding. Wufenglou distribution based on the author's field research; square/circular Tulou distribution based on Huang and Fan 2023, " Yongding Traditional Architecture".[22]

[22] Huang & Fan 2023.p. 017.

The Fengtianli lineage follows a full rammed-earth load-bearing aggregation system that applies strictly to the housing units themselves, creating a cellular, consolidated enclosure. While the entrance hall and ancestor hall do not follow this full rammed-earth load-bearing logic, the housing units form a continuous and dense structural network based on this principle. The following figures illustrate four possible variations of this full rammed-earth construction method found in the Fengtianli area.

The first example (Figure 178) shows that all walls which include exterior walls and interior partition walls function as load-bearing walls that receive full rammed-earth construction. The building structure depends on rammed-earth for its entire support system which makes the entire enclosure function as a single load-bearing system.

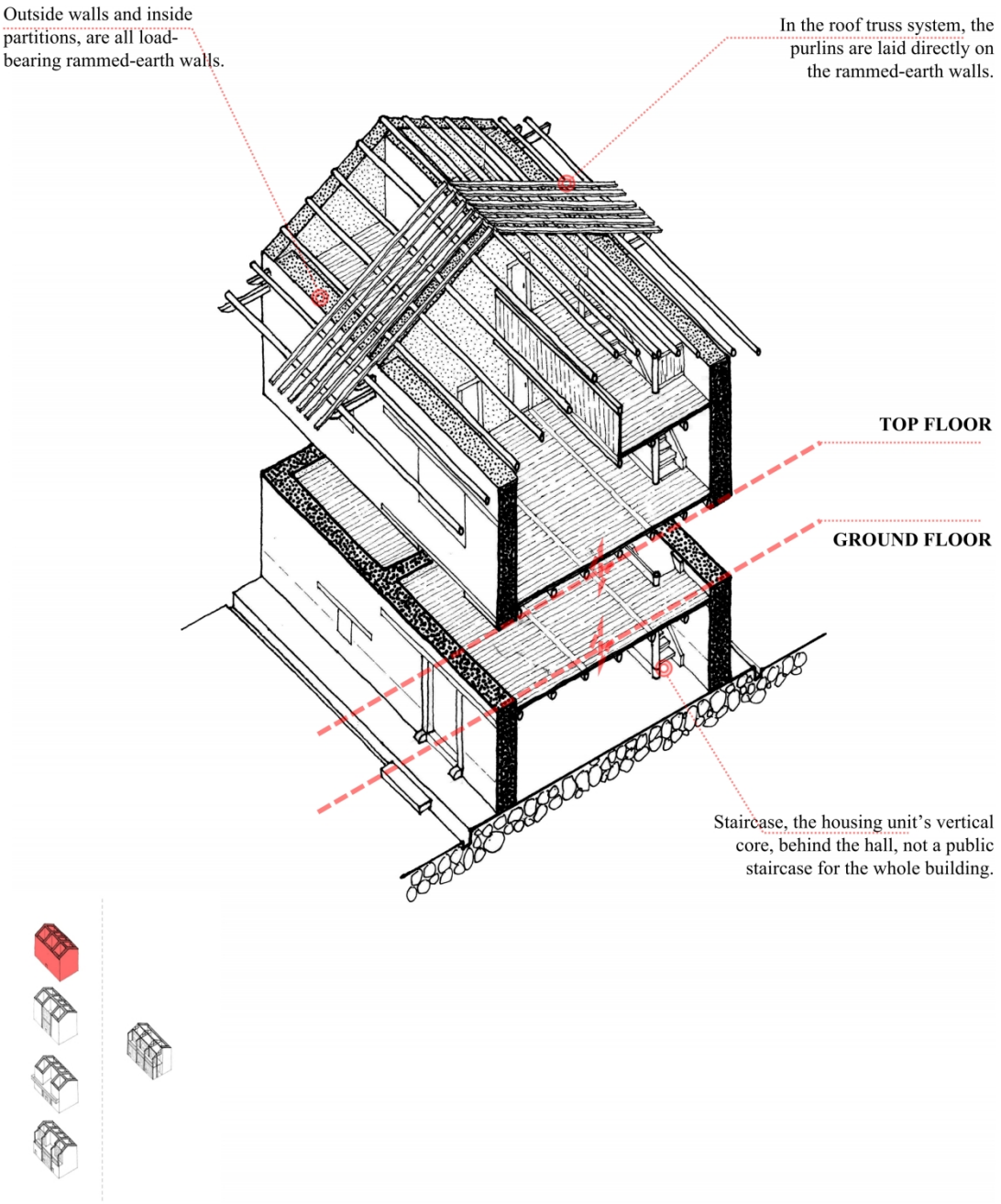


Figure 178. Fully Rammed-Earth Load-Bearing Walls Throughout.

Example: The side wing of Yulonglou

Self drawn

The second example (Figure 179) maintains rammed-earth walls for both exterior and interior walls which match the first scenario. The central hall features a non-load-bearing wooden panel which replaces the rammed-earth wall to create visual emphasis on this space. The wooden section functions as a non-load bearing element yet the entire building structure continues to use rammed earth as its load-bearing material.

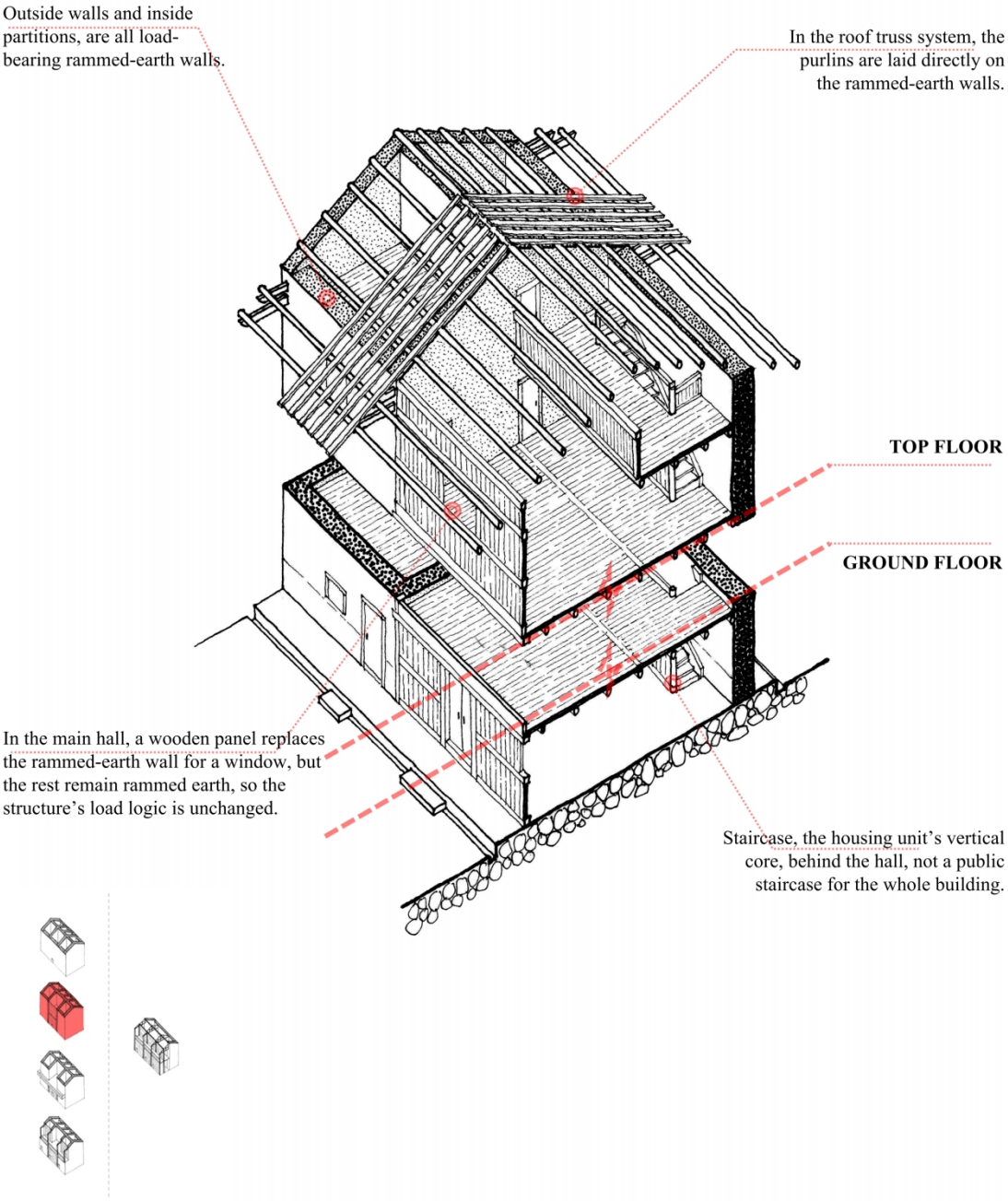


Figure 179. Central Hall with Non-Load-Bearing Wood Panel.

Example: The front part of Yulonglou's side wing

Self drawn

The third example (Figure 180) shows how beams which extend from the central hall area where the wall does not support weight create a corridor. The building maintains its original load-bearing design because all structures including the corridor extension depend on rammed-earth walls for support.

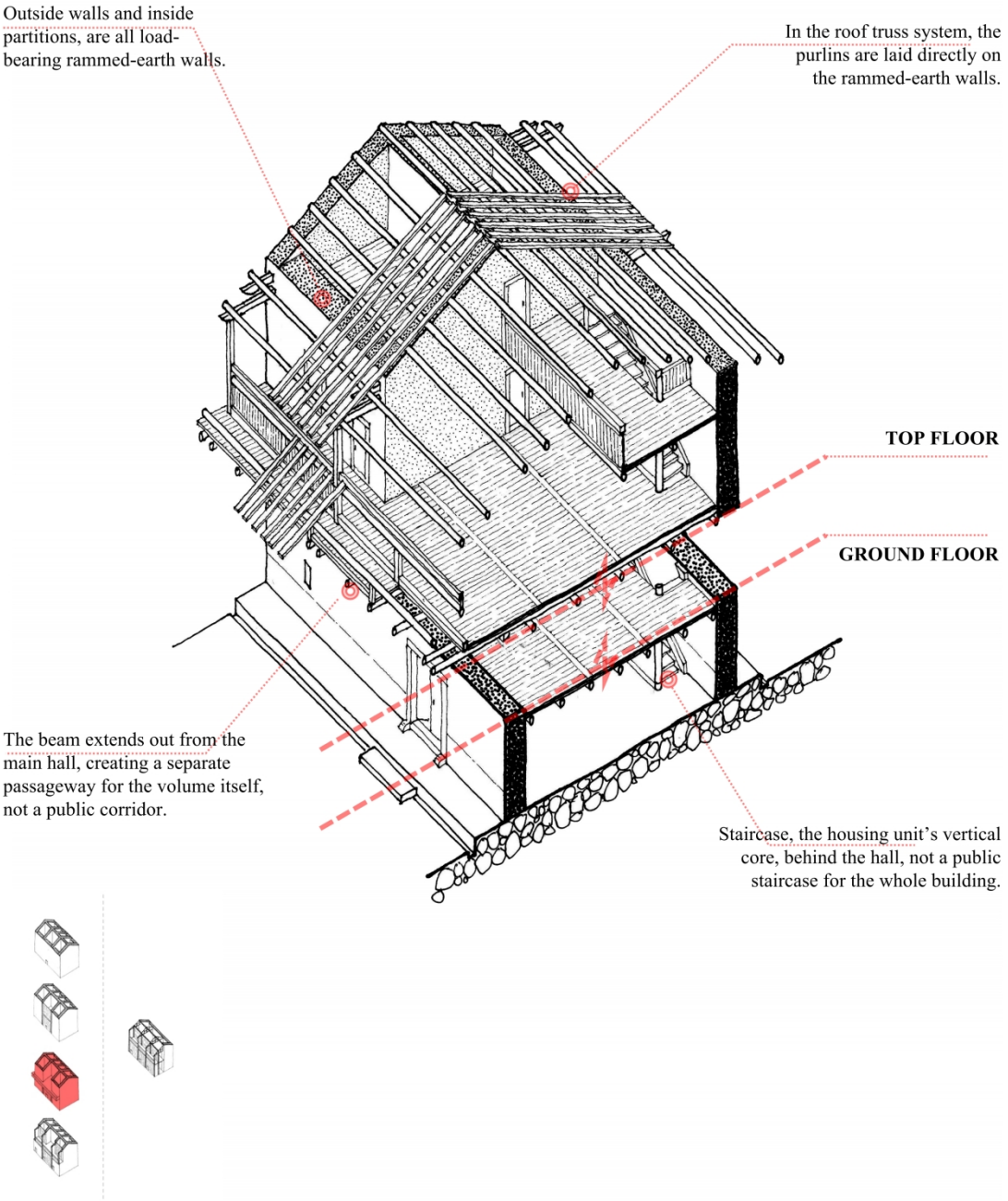


Figure 180. Corridor Extension from Central Hall Within Rammed-Earth Structure.

Example: The main house of Xishanyixiu

Self drawn

The fourth example (Figure 181) shows a corridor which exists as a separate space from the building structure instead of extending through the entire facility. The corridor receives support from two different elements which include projecting beams and recessed floor sections that create the lowest level corridor space. The upper building section creates a corridor area through its slight withdrawal from the main structure.

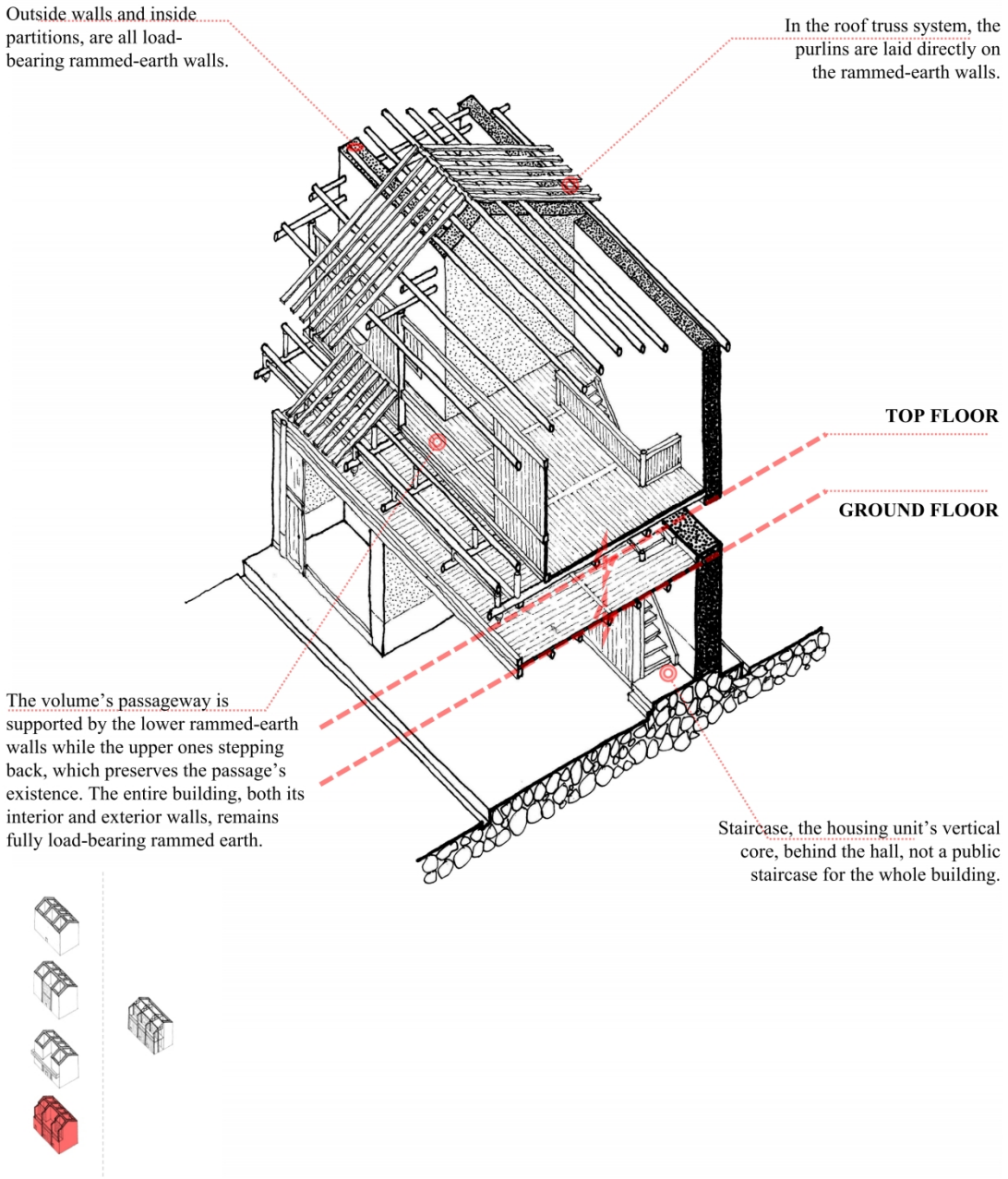


Figure 181. Corridor Extension from Central Hall Within Rammed-Earth Structure.

Example: The Side Volume of Yijinglou

Self drawn

Despite these variations, the entire building still maintains a fully rammed-earth load-bearing system for both exterior and interior walls.

Although this typology was described as honeycomb rammed-earth dwellings in Huang Hanmin's 2023 publication, this study adopts the spatial-modulation term jian ting qijiao to describe the same logic in accordance with its bay-based compositional grammar. As elaborated in Chapter IV, this system expands according to the modular syntax of jian-ting-qijiao (e.g., 2-jian qijiao, 4-jian qijiao, 6-jian 1-ting qijiao, 8-jian 1-ting qijiao), whereby volumetric aggregation and load transfer are realized entirely through mutually load-bearing rammed-earth walls. This construction logic encompasses Hakka Wufenglou and a wider range of built forms operating upon the same axial generative principles, such as 3-tang houses, 2-tang houses, and 3-tang 1-heng houses, as well as single jian-ting-qijiao units functioning as self-contained buildings, all of which, including the rectilinear rammed-earth dwellings of Fengtianli, derive from the same structural paradigm. When both lateral building wings at the entry side are vertically elevated, the entire mass consolidates into a closed rectilinear volume. Not all of these examples should be classified as Wufenglou in the strict sense. In this region, the expansion and transformation of rooms are entirely based on individual jian–ting–qijiao units, with the entire building essentially assembled from these uniform housing modules. The corridors are also limited to these individual modules rather than spanning entire floors. As a result, no continuous full-building corridors have been found here. In other words, the modular logic remains consistently rectangular. While the focus is on these rectangular forms, we note that no circular Tulou have been observed in this context.

By contrast, the Jinfengli lineage employs the corridor type system[23], in which perimeter rammed-earth walls carry the primary vertical and lateral loads, while internal timber frames and non-load-bearing partitions organize spatial circulation, producing a composite structure defined by an outer load-bearing ring and an inner circulation ring.[24] This typology, appearing in both rectilinear and circular forms, corresponds to what the academic field widely recognizes as Hakka Tulou.[25]

Figure 182 shows the volume variation process of the rammed-earth dwellings in Fengtianli, including the Wufenglou. It can be observed that regardless of how the volumes change—whether it's the main building or the side volumes—even if a corridor emerges, that corridor only serves the individual volume and does not form a large, continuous passage running through the entire building.

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[23] Lin 1995. pp. 46-47.; Qu and He 2009.; Colafranceschi 2019.
[24] Cao 2003.; Huang et al. 2009.; Katayama 2011.
[25] Colafranceschi et al. 2020.; Porretta et al. 2022. Huang 2020, p. 263.

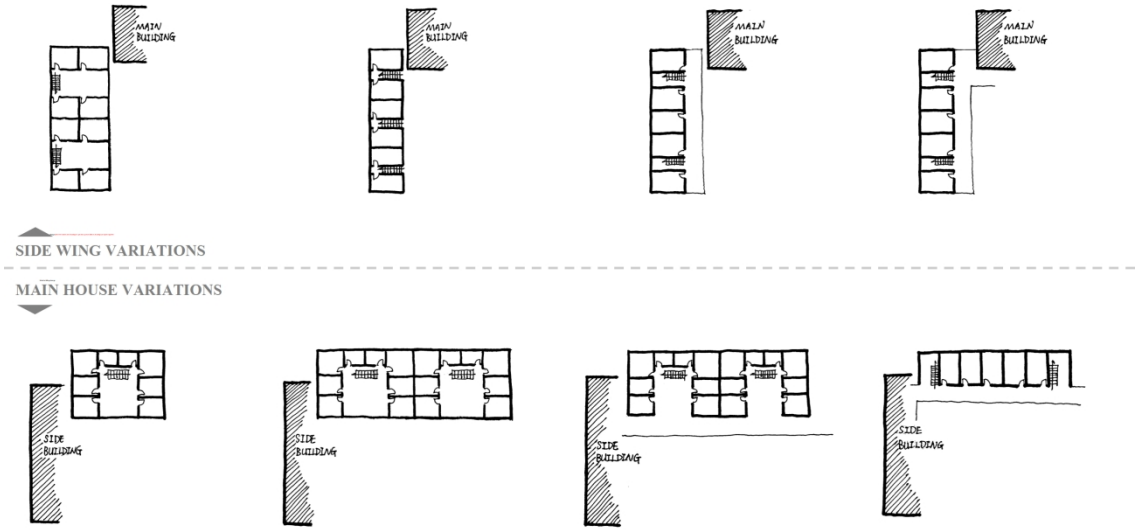

Figure 182. Conceptual Diagram of How the Rammed Earth Dwellings in Fengtianli Vary in a Rectangular Frame. Self drawn

Figure 183 are pictures taken near collapsed buildings - one set from Jinfengli, another from Fengtianli - both part of earthen dwelling clusters. On the left sits Jinfengli, where the rammed earth make up only the outside shell, inside lies a framework built entirely from wood. Flip over to Fengtianli on the right, its walls inside divided too by compacted soil, taking weight like the frame itself does not carry columns made of wood at all.

Sectional cut of an unidentified Tulou ruin in Meilin Village, Nanjing County.

Sectional cut of an unidentified Wufenglou ruin in Xinming Village, Yongding District.

Figure 183. Different Rammed Earth and Timber Arrangements in Jinfengli (Left) and Fengtianli (Right)

Self taken in 2024

The figure below (Figure 184) illustrates the construction logic of this type of Tulou in Jinfengli. First, the exterior walls are load-bearing, and each level of the exterior wall gradually tapers upward, with the thickest section at the base and the thinnest at the top. Second, the interior structure relies on a timber frame for load-bearing. Even though there are partition walls inside, these partitions do not carry loads; the wooden posts and beams handle all the structural support. Third, the roof uses a wooden truss system. Based on this load-bearing approach, each floor features a continuous internal corridor that runs throughout the entire level.

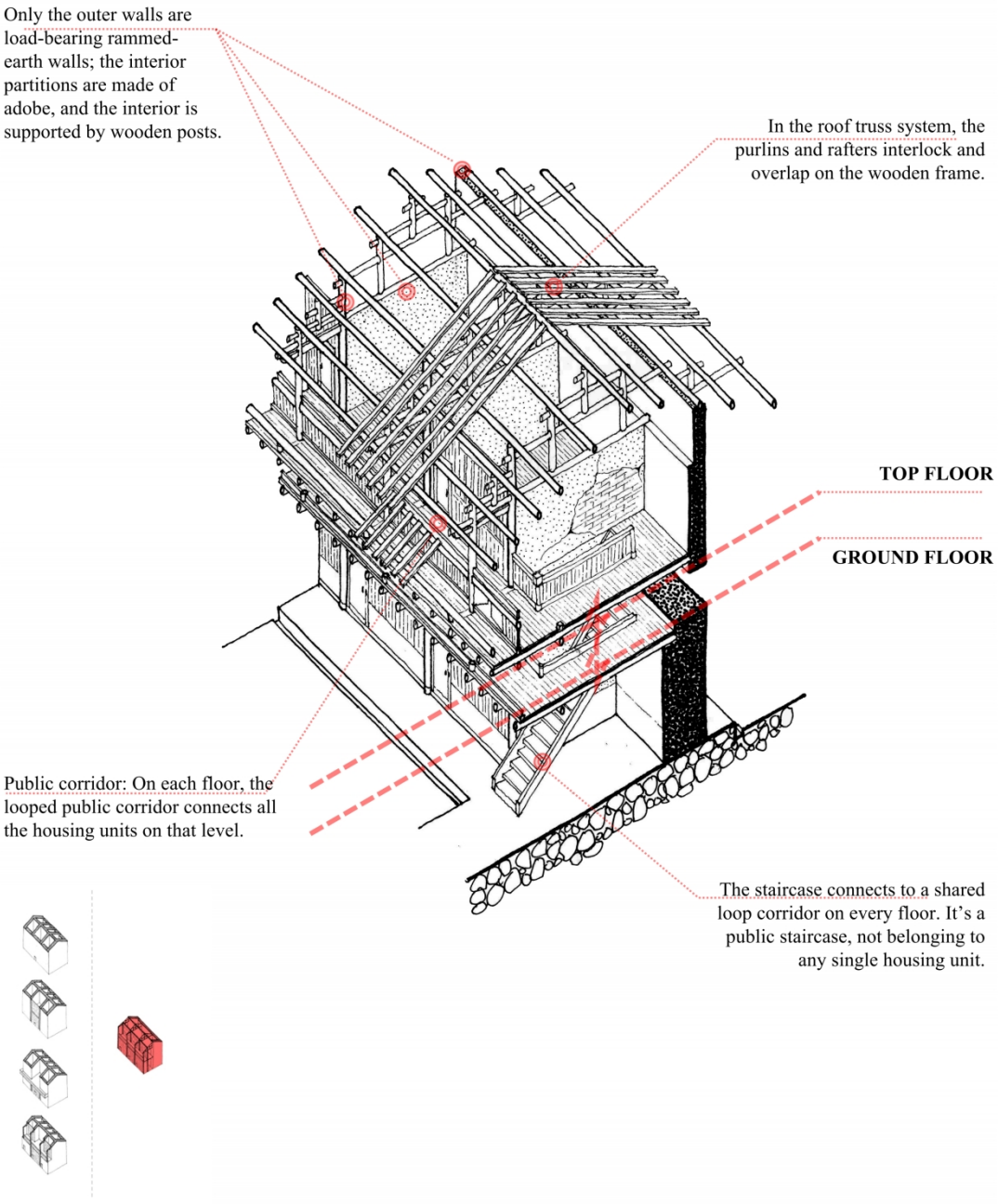

Figure 184. Basic Structural Logic of Hakka Corridor-Type Tulou

Example: The Heguilou

Self drawn

Within a typological framework of Fujian Hakka rammed-earth dwellings structured by load-bearing logic and spatial organization, two primary systems can be identified (Figure 185):

(1) Corridor type—outer-wall load-bearing, internal frame-defined circulation, distributed primarily in Jinfengli;

(2) Jian ting qijiao type—a full rammed-earth load-bearing aggregation model in which spatial units expand through modular enclosure logic, a system shared by both Hakka Wufenglou and the rectilinear rammed-earth dwellings of Fengtianli.

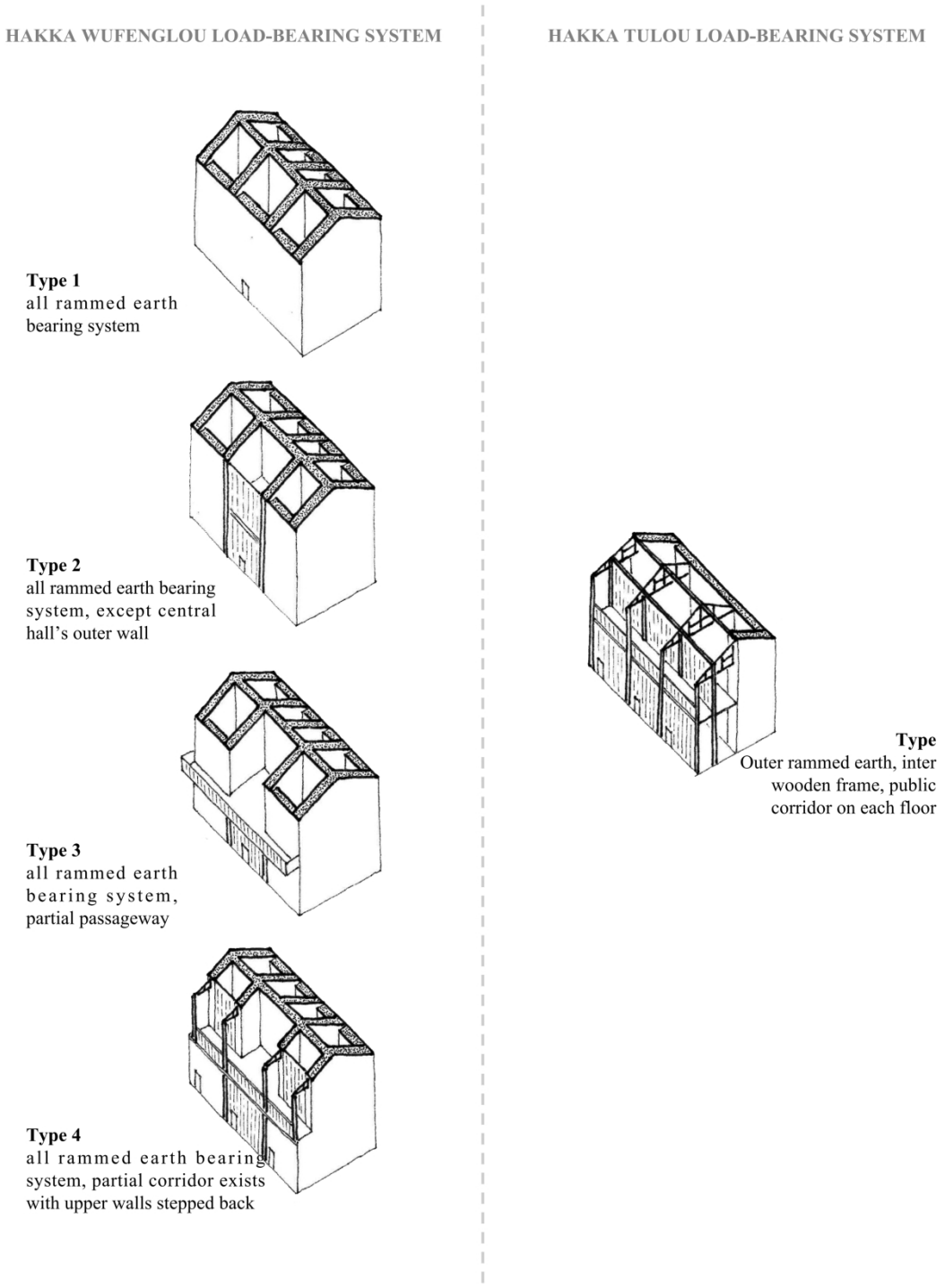

Figure 185. A Comparison of Rammed Earth Construction Methods in Hakka Fengtianli and Jinfengli Regions

Self drawn

- Type Parallelism in the Minnan

The Hua'an and Anxi cluster forms a transitional zone between the mountainous interior and the coastal lowlands of Minnan, with this relationship organized through the Jiulong River system and its tributaries. The character of this transition is expressed in a sequence of low hills, gorge entrances, and basin terraces, through which the terrain opens gradually toward the coast. Settlements in this region are not distributed randomly, but follow river valleys, terraces, and piedmont basins, producing a settlement pattern closely related to the direction of the river system. Within this corridor, two principal rammed-earth dwelling systems can be observed and distinguished: the Unit Type and the Axial-Bay Type. These two systems differ clearly in spatial organization, circulation, and three-dimensional composition. The Unit Type[26] is defined by unit subdivision plus independent staircases. The building footprint is segmented—radially or linearly—into relatively self-contained household units, most equipped with their own staircases, resulting in limited inter-unit connectivity. Both circular and rectangular forms are common. This model corresponds to the widely recognized typology of Minnan Tulou. The core identifying feature is the discrete adjacency of household slices aligned either along an arc or a straight axis, paired with individually served vertical circulation. The rammed-earth wall in this type begins at approximately 1 m thick at the base and progressively tapers in stepped increments toward the roof.[27]

The Unit Type is characterized by a circular or rectilinear enclosed configuration in which individual housing units are continuously arranged around a central core, forming an enclosed spatial system. By contrast, the Axial-Bay Type follows a fundamentally different organizational logic. Its housing units extend linearly from the central axis in an odd-numbered bay sequence, without enclosing any space, and therefore do not constitute a single continuous circular or ring-shaped pattern. In terms of vertical circulation, staircases in the axial-bay type are typically positioned on both sides of the main house, rather than being individually assigned to each housing unit as in the unit type; in some designs, stair elements are entirely omitted. Consequently, the axial-bay type is governed by a linear bay arrangement, in clear contrast to the circular or enclosed spatial logic of the unit type. See Figure 186.

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[26] Unit type describes the main characteristic of Minnan Tulou, where there is no common corridor; instead, each span or bay forms an independent housing unit, all housing units combine in a looped enclosed form of dwelling. For this reason, scholars called it a unit type, and it is relatively common in the Minnan region. Colafranceschi et al. 2020.; Porretta et al. 2022. Huang 2020, p 185.

[27] Zeng Wuyue 2006a. pp. 7, 31, 36-38.; Zhen 2013. pp. 114-116.; Colafranceschi 2019.

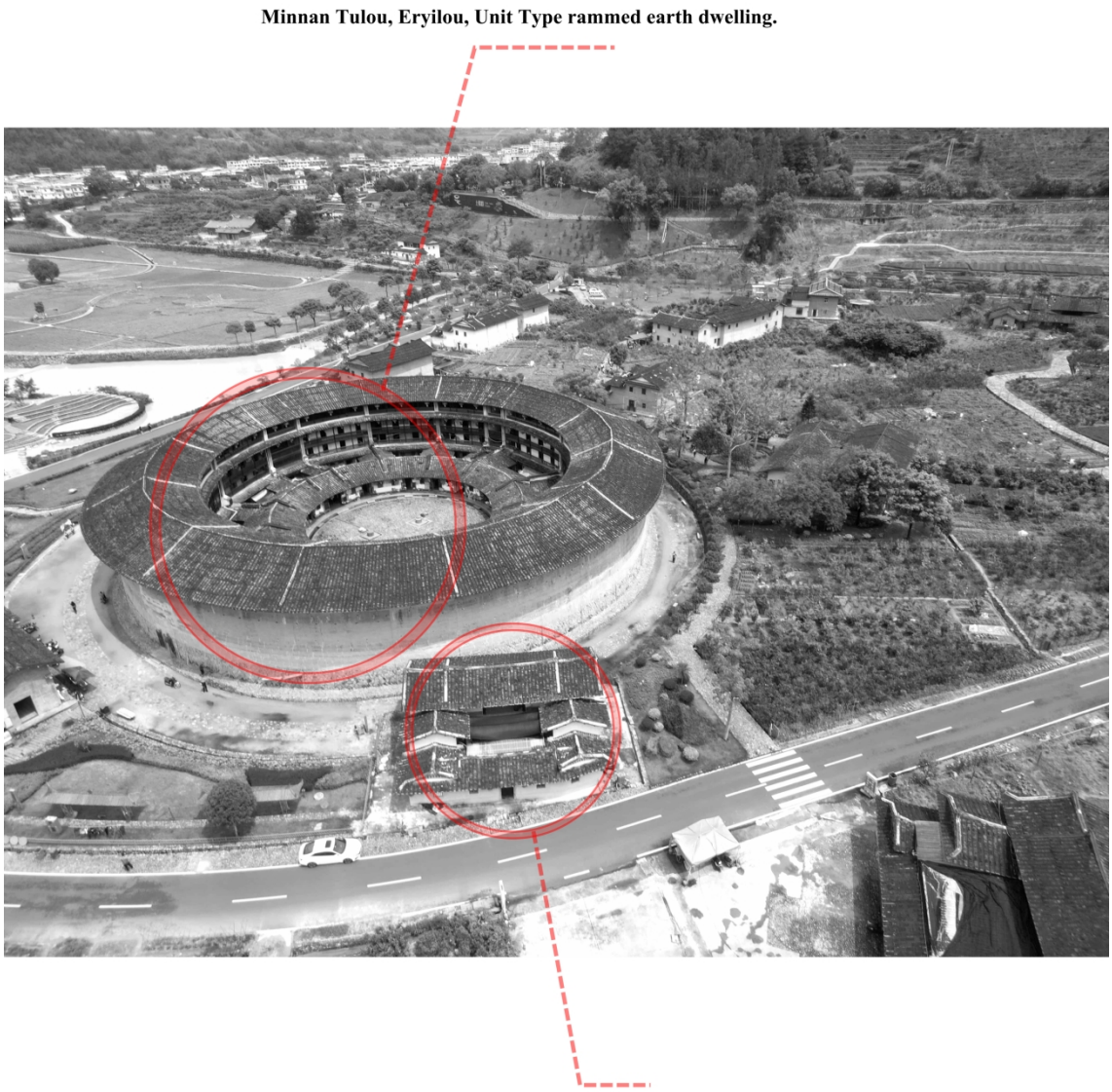


Figure 186. A bird's-eye view on Minnan Tulou, Eryilou, and a Minnan Wufenglou next to it. Dadi village

Self taken in 2024

In the Axial-Bay Type, the rammed-earth wall maintains a consistent thickness from base to roof.

The typological framework of Fujian Minnan Rammed-Earth Dwellings, organized by structural logic and spatial formation, can therefore be summarized as:

(1) Unit Type — unit subdivision with independent staircases; household units are arranged as arc- or segment-based slices with weak interconnection.

(2) Axial-Bay Type — ancestor hall core plus odd-number bay expansion; enclosure and circulation are generated through a five-volume system, represented by the single-storey dacuo[28], the two-storey Minnan Wufenglou, and the titing-ascending variant.

3. Rethinking Wufenglou in Fujian Rammed Earth Dwellings

3.1. Scholarly Consensus on the Fujian Rammed-Earth Dwellings Classification

Within existing scholarship, Fujian's rammed-earth vernacular dwellings are conventionally categorized into three overarching types: Tubao, Zhuangzhai (Zhailu), and Tulou.[29] All three employ rammed earth as the primary material for enclosure and/or load-bearing, and share lineage-based co-residential organization, yet display distinct logics in spatial generation, structural organization, and the balance between defense and everyday life. This tripartite framework serves as the conceptual basis for situating and re-examining the classification of Wufenglou.[30]

- Tubao (earthen fortress)

The dwelling units of Tubao are nested within a dual spatial system defined by external fortification and internal habitation. The outer perimeter consists of a continuous defensive envelope—thick rammed-earth walls, parapets, patrol paths, corner watchtowers, and firing apertures—while residential life unfolds inward, in courtyard clusters or parallel row-house arrangements. Scholarship describes this as a configuration of "outer defensive corridor + internal residential units[31]." Circulation prioritizes defense: patrol and movement occur along the outer ring, while everyday activities operate within. Residential units typically organize around small courtyards or central axes in layouts resembling "one hall with two side rooms" or linear rows, each retaining semi-independent bays containing hearths, cooking niches, and storage, while sharing entrances, courtyards, and selected upper-level galleries.

[28] A dacuo is a common term in the Minnan region for a specific type of single-story dwelling. It refers to a one-story Minnan house that uses the Axial-Bay type in its main house as a housing module. This kind of dwelling is constructed from red bricks and is also known locally as a "red-brick cuo."
[29] Ye et al. 2024.; Lin et al. 2023.; Lin et al. 2024a. Lin et al. 2024b.
[30] Cao 2002.; Lin Jiashu 1995. pp. 23-28.; Qu and He 2009.
[31] Cao 2002.

Larger Tubao often include interior perimeter corridors serving as buffers that separate domestic circulation from the external defense routes. Unlike Tulou, which evenly subdivides an entire ring into homogeneous living modules, Tubao first establishes a defensive shell and subsequently inserts residential compounds where daylighting and drainage permit. Its defining organizational principle is the spatial recession of domestic life behind a clearly delimited defense hierarchy.[32]

- Zhuangzhai (Zhailu)

Zhuangzhai units emerge from a fortified manorial aggregation model in which residence, defense, and enclosure are generated as a structural whole. A single estate or micro-settlement operates as an integrated layered compound consisting of nested enclosures, courts, and axial sequences of lineage spaces. Its typical composition comprises an outer defensive wall or fortification, followed inward by a primary ancestral court, flanked or succeeded by secondary, lateral, or rear courtyards, forming serial clusters such as "main court – side court – rear compound" or "primary hall – branch residences – subordinate annexes." These clusters form discrete yet nested residential units, each equipped with autonomous entrances, halls, kitchens, and subsidiary open space, enabling semi-independent domestic life while maintaining hierarchical deference to the main ancestral axis. Sub-lineages co-residing within a single Zhuangzhai occupy differentiated compounds marked by internal walls, eave thresholds, and auxiliary gates. Unlike Tubao, where dwellings are inserted into a pre-defined defensive shell, Zhuangzhai spatializes lineage segmentation into named and bounded residential units, creating an addressable hierarchy of domestic ownership, function, and status. For this reason, it is frequently interpreted as a composite system of "co-residence and co-defense through nested courtyards."[33]

- Tulou

The residential units in Tulou follow a uniform pattern which surrounds a central courtyard to create circular, square, and polygonal building plans. The external wall serves as a single defensive structure that supports loads while domestic areas are organized into equal bay modules that stack vertically. Each vertical segment typically constitutes a household unit spanning multiple floors.[34] UNESCO documentation similarly notes that interior allocation follows a vertical household division, commonly two to three bays per household[35]. Exterior openings are minimized, orienting life inward toward the

[32] Dai 2001.; Dai 2012.; Cao 2000.
[33] Li 2018.; Zhang et al. 2019.
[34] Zhang, Wang, and Chen 2021.
[35] UNESCO. (2008). Fujian Tulou. Retrieved 20 March, 2025, from https://whc.unesco.org/en/list/1113/.

shared courtyard, producing a paradigm of "closed outward, open inward." Many Hakka and Minnan Tulou feature shared staircase cores or vertical shafts that organize households into cluster groups linked by shared galleries, communal circulation, and social interfacing. Scholarship further notes higher communal integration in Hakka corridor-based Tulou and comparatively stronger unit autonomy in Minnan variants.[36] The ground floors of these buildings serve as spaces for kitchens and storage and livestock and collective production while the middle floors function as residential areas and the top floors serve for storage and watch and drying purposes. The vertical organization of the building meets the lateral design principles to create a standardized system of segmental co-residence which exists within a single structural framework.[37]

Table 13. A Brief Comparison among Tubao, Zhuangzhai, and Tulou

Dimension	Tubao	Zhuangzhai	Tulou
1. Basic Type (minimum identifiable form)	Earthen perimeter + inserted clusters	Outer wall + main hall court + side/rear courts	Continuous ring wall + central void + stacked modules
2. Spatial Logic	Shell first, dwellings after	Serial courts along one axis	Concentric living around void
3. Defense vs Domestic	Separated belts	Merged into court hierarchy	Unified in single envelope
4. Household Pattern	Small units with partial sharing	Branch courts with own halls/kitchens	Vertical family stacks
5. Circulation	Perimeter patrol + inner paths	Longitudinal spine + lateral links	Ring corridors + shared stairs
6. Typological Identity	Fortress-dominant	Manorial-compound	Ring-residential

3.2. Reasons for Recognizing Wufenglou as an Independent Category

- A Reproducible and Independent Basic Type

Across both Hakka and Minnan regions, Wufenglou embodies a stable and recognizable spatial principle centered on the nine-square grid as a geometric and ritual core, organizing the entrance hall, central courtyard, and ancestral hall into a three-part axial sequence, flanked symmetrically to form a ground-floor order of "three axial segments with bilateral pairing." This is coupled with a frontal

[36] Mao 2018.; Zheng 2011.; Zheng 2014.; Colafranceschi 2019.
[37] Li 2008.; Lowe 2012.; Turchiarulo 2024.

interface that contains multiple subsidiary openings but maintains a single central and single-storey main entrance, and a tiered sectional profile that ascends from front to rear. These elements have been repeatedly confirmed in academic writings and diagrammatic records.

Although the five-volume basic type differs fundamentally between the Hakka and Minnan traditions, each system has been reproduced at scale with strong internal consistency within its respective region, forming two parallel but independent typological lineages: the Hakka lineage constitutes five volumes through the main house–central hall–entrance hall sequence with paired transverse wings, while the Minnan lineage composes five volumes through the main house, paired titingjian (stair pavilion room), and paired corner rooms. Their shared morphological grammar is articulated through a stepped roof and height regression (highest at rear, intermediate at center, lowest at front) and a legible five-volume configuration in elevation and aerial view; however, this formal legibility operates within two distinct spatial-ritual systems, each satisfying the typological criteria of stability, legibility, and reproducibility.[38]

- A Self-Sufficient Structural and Spatial System

Structurally, Wufenglou should not be classified as a derivative of Tulou, Tubao, or Zhuangzhai. Its load-bearing system depends on a collaborative structural regime in which the housing unit's external walls and internal partition walls, made of rammed earth, jointly serve as load-bearing elements, while timber columns only support the central core. Load paths are distributed through a network of short-span walls, where timber beams are directly embedded into the wall mass, and the joist – floor assembly provides lateral binding to the earthen structure. Wall thickness, embedded beam bearing details, and opening reinforcements exhibit internally consistent construction principles distinguishable from other earthen building types. Wufenglou also operates through an autonomous spatial grammar. In the Hakka lineage, living space is produced through the jian–ting–qijiao modular system, assembled in width and depth to form a cellular structural logic, fundamentally distinct from the organizational principle of Hakka Tulou, which relies on a load-bearing outer ring and internal column–corridor circulation. In the Minnan lineage, the main house organizes interior space around an odd-numbered bay system centered on the ancestral hall, or two-storey configurations such as "two-room seeing hall (2 Fang Kanting)", "four-room seeing hall (4 Fang Kanting)" where the titingjian no longer functions as a staircase core but as rooms that complete both vertical and horizontal circulation. This system is not based on the Unit Type

[38] Wang & Shu 2010; Wang 2019. pp. 10, 13-20.

logic of independent modules with private staircases but on an axial bay-based spatial order centered on the main hall.

In terms of programmatic and defensive orientation, Tubao emphasizes defense, Zhuangzhai integrates residence and fortification, and Tulou prioritizes inward communal enclosure. Unlike these systems, Wufenglou is characterized by its unique basic type and distinctive layout. Its defensive features differ from the previously mentioned structures[39].

- Internally Coherent Derivation and Expansion of the Layout

Beyond possessing a stable basic type, Wufenglou also generates region-specific and internally coherent typological lineages in both areas through their respective constructive and spatial logics, enabling a verifiable range of derivative and parallel variations. In the Hakka lineage, the minimal local terminal configuration "three halls and two wings" (santang liangheng) anchors the composition of a central courtyard with a tripartite axial core and paired transverse wings. Through generative operations such as enclosure, vertical amplification, lateral networking, volumetric merging, and linear extension, derivative forms emerge, including raised frontal segments, side-linked corridors, multi-layered rear expansions, and transitional forms approaching square layouts. Even when derivative forms fall outside the strict naming of Wufenglou, they retain the modular grammar of jian–ting–qijiao and the nine-square grid core, operating within clear defining threshold conditions.

In the Minnan lineage, the composition is structured by the five-volume skeleton of main house–titingjian–corner room, progressing by sequential odd-numbered bays (3/5/7…). Its internal typological sequence contains the differentiation of Wufenglou (two-storey main house and fully roomified titingjian), single-storey ones, and the titingqi derivative, where the titingjian remains transitional rather than fully habitable. Elevational hierarchy is maintained through a sectional logic in which the corner room constitutes the lowest frontal volume and the titingjian forms the intermediate transition between front and rear. This evolutionary grammar coexists alongside but remains non-conflated with the Unit Type system of Tulou, producing a dual lineage model that is typologically measurable and verifiable.

Figure 187 visually synthesizes the typological derivation of the two Wufenglou lineages. On the left, the Hakka lineage illustrates the transition from the loose "Three halls and two wings" layout toward the integrated "Hakka Wufenglou" through vertical escalation and the linkage of front and back volumes. On

[39] See Chapter IV.

the right, the Minnan lineage demonstrates the evolution from the single-story "Axial-bay" dwelling to the transitional "Titingqi" type, finally culminating in the standard two-story "Minnan Wufenglou" characterized by fully developed “Titingjian”. The comparison highlights that while both systems achieve a five-volume hierarchy, they strictly adhere to their respective generative rules—tanghengwu for Hakka and kaijian for Minnan—defining a clear spectrum from basic prototypes to complex variations.

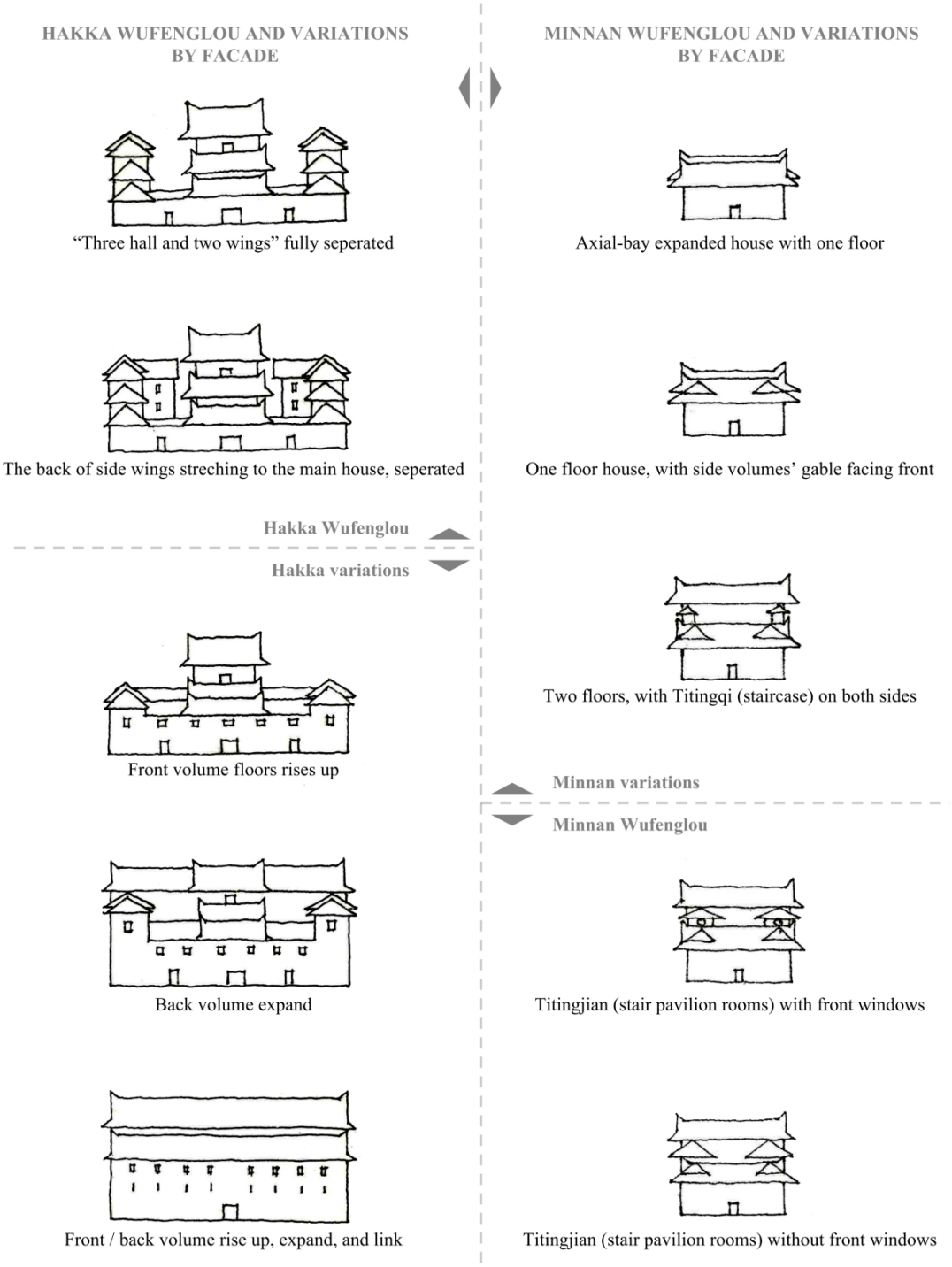


Figure 187. Hakka and Minnan Wufenglou and their variations.

Self drawn

3.3. A New Classification of Wufenglou

- The Necessity of Clarifying Wufenglou's Typological Boundaries

As established earlier in the dissertation, Wufenglou is not a subordinate subtype of Tulou or other fortified rammed-earth compounds, but an independent system possessing its own basic type and construction-spatial grammar. It should therefore be recognized as a distinct category within the rammed-earth dwelling system of Fujian. A practical challenge remains: the standard basic type of Wufenglou requires a stringent set of criteria—five aligned volumes on the central axis, a front-low–rear-high profile, a nine-square-grid courtyard core, and strict bilateral symmetry. However, many extant buildings approximate this conceptual principle without fully satisfying these thresholds. Although highly similar to Wufenglou in volume composition, expansion logic, storey arrangement, and bay progression, they fall short of the definitional threshold and are frequently labeled as "Wufenglou" or loosely grouped under "Tulou" in documentation, renovation, and administration, leading to persistent classification ambiguity. To support accurate identification, assessment, conservation, and management, this fragmented reality must be reorganized into a classification that proceeds from region, to structural lineage, and finally to internal differentiation into basic type → variant → parallel.[40] Basic type defines the precise typological identity of Hakka and Minnan Wufenglou; variant refers to changes derived from the same rule of layout; while parallel refers to other forms in the same region originating from different rules of layout.[41]

- Separating Wufenglou from Tulou Because They Overlap in the Same Region

The rammed-earth dwellings referred to as "Wufenglou" in Fujian today are primarily distributed in two major regions: the Hakka area in northern Yongding centered on Fengtianli, and the Minnan area covering Hua'an and Anxi. As discussed in Chapter III and IV, although both regions share the name Wufenglou and show substantial morphological similarities, their differences are typological, rooted in distinct construction systems and spatial generative logics rather than being two decorative branches of a single type. The discrepancies extend beyond language, social structure, and local traditions, to the fundamental spatial syntaxes.

Because Wufenglou spatially coexists with Tulou clusters, it has long been misidentified as a subtype or variant of Tulou. For this reason, a necessary first step in classification is to separate Wufenglou from

[40] Chang 2017.; Xue et al. 2021.
[41] Shen 2010.; Wang 2002.; Wang 2019. pp. 10, 13-20.; Moudon 1994.

Tulou before proceeding to internal subdivision within the Hakka and Minnan lineages. Other rammed-earth dwelling forms, such as Tubao and Zhuangzhai, that do not overlap with Wufenglou in the same way may be sorted more directly by region, but Wufenglou requires an additional step of typological clarification precisely because of this geographic entanglement. Consequently, the following sections focus on the comparative framework of Hakka Wufenglou and Hakka Tulou settlements, as these constitute the core cases for typological clarification.

- Parallel Systems in Hakka and Minnan Regions

Across both regions, the terms Tulou and Wufenglou are both used in everyday description. As clarified in Chapter I, however, Tulou carries cross-linguistic ambiguity: in Chinese it may refer broadly to all rammed-earth dwellings or, more narrowly, to certain named subtypes, while in English it usually refers only to types recognized within the World Heritage framework. To avoid merging all rammed-earth buildings into the category of Tulou, this study consistently uses rammed-earth dwellings as the overarching material-structural category, under which more specific types can then be placed. Under this framework, what is commonly called "Hakka Tulou" corresponds to a well-defined Corridor Type system: rammed-earth perimeter walls, internal timber structures, and circulation organized by continuous surrounding corridors, in both circular and square plans. What is commonly called "Minnan Tulou" corresponds to the Unit Type system, where the overall mass is divided into joined household units, each with its own staircase, also often circular or square.

Alongside these two systems stands Wufenglou, which follows a separate rule of layout rather than serving as a variation of the other two. In the Hakka region, Wufenglou is based on the Hall-and-Wing layout rule, organized around three aligned volumes on the central axis with bilateral wings. In the Minnan region, Wufenglou follows the Axial-Bay layout rule, centered on the ancestral hall and arranged according to an odd-number bay sequence.

The same settlement area includes Tulou buildings and Wufenglou buildings which local people recognize as separate from Tulou structures. The Corridor Type and Hall-and-Wing Type dwellings appear in Hakka regions while Minnan areas feature Unit Type and Axial-Bay Type dwellings. In each region, the two systems are parallel, not hierarchical, and follow different basic types, structural logics, and internal circulation rules.

The following figure (Figure 188) presents a new classification between Wufenglou and Tulou in their own regions.

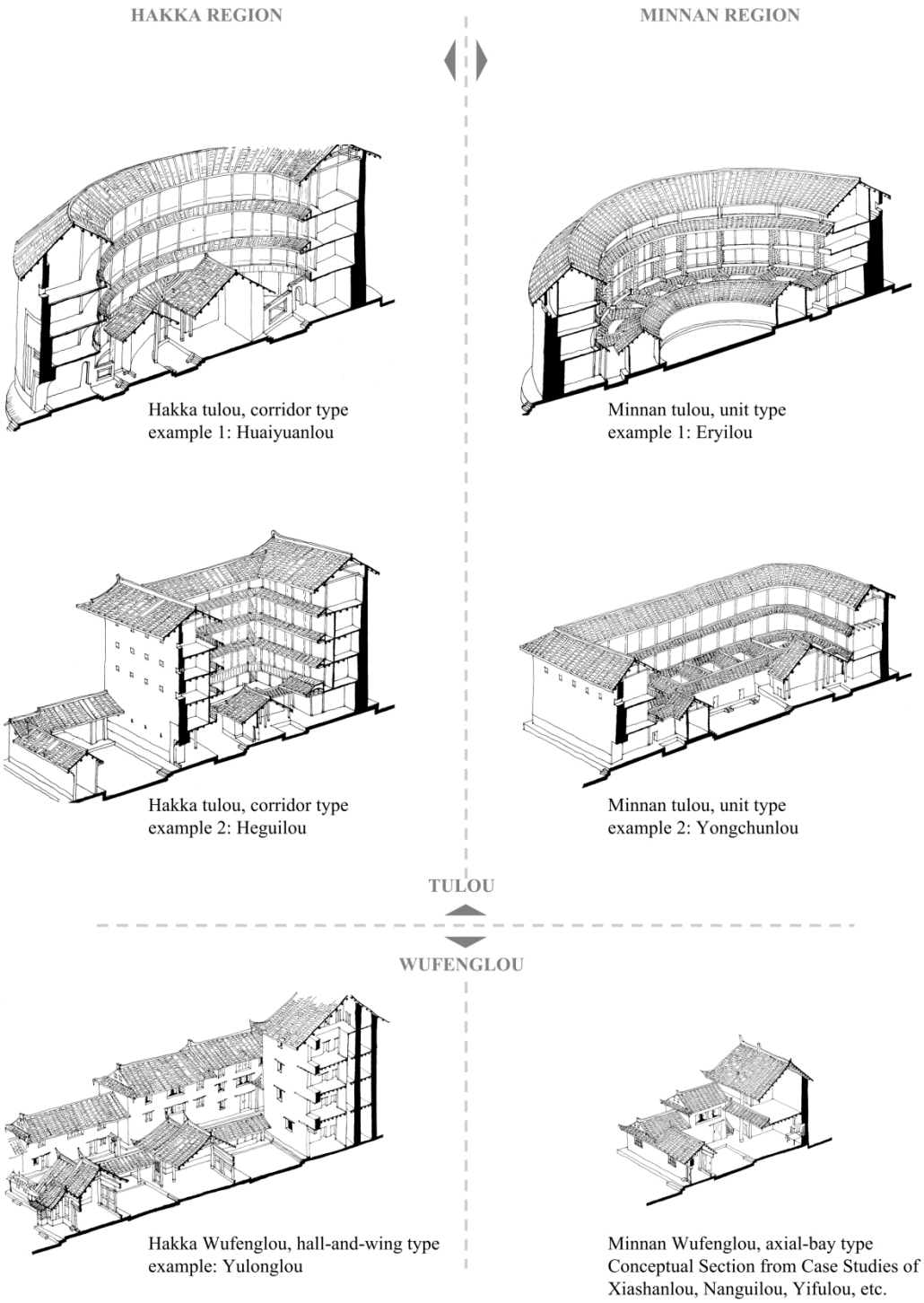


Figure 188. Hakka and Minnan Tulou and Wufenglou: A Possible New Classification.

Self drawn

- Classification in Hakka Region: Based on Corridor Type and Hall-and-Wing Type

Rammed-earth dwellings in the Hakka region derive from two distinct structural lineages: the Corridor Type and the Hall-and-Wing Type. The Corridor Type corresponds to what is widely known as "Hakka Tulou," organized around a continuous peripheral corridor and differentiated mainly by circular or square geometry. The Hall-and-Wing Type forms the basis of Wufenglou and related dwellings, structured around an axial three-volume core with bilateral wings. Within this system, the Hall-and-Wing housing-unit logic (including what is termed jian-ting-qijiao) functions as an internal method of composition rather than an independent category.

Within the Hall-and-Wing lineage, secondary classification is determined by the completeness of the axial and wing volumes rather than by whether a building meets the standard definition of Wufenglou. Three conditions are identified:

Condition 1: Incomplete five-volume arrangements in which the axial core or the wings are partially missing or unbalanced.

Condition 2: Standard Hakka Wufenglou, where a full five-volume or extended symmetric arrangement is formed and the bilateral wings are fully established.

Condition 3: Four-side enclosed courtyard layouts that extend the same layout rule into a complete perimeter enclosure, while remaining based on the Hall-and-Wing compositional logic. Figure 189 lists each condition with two field examples.

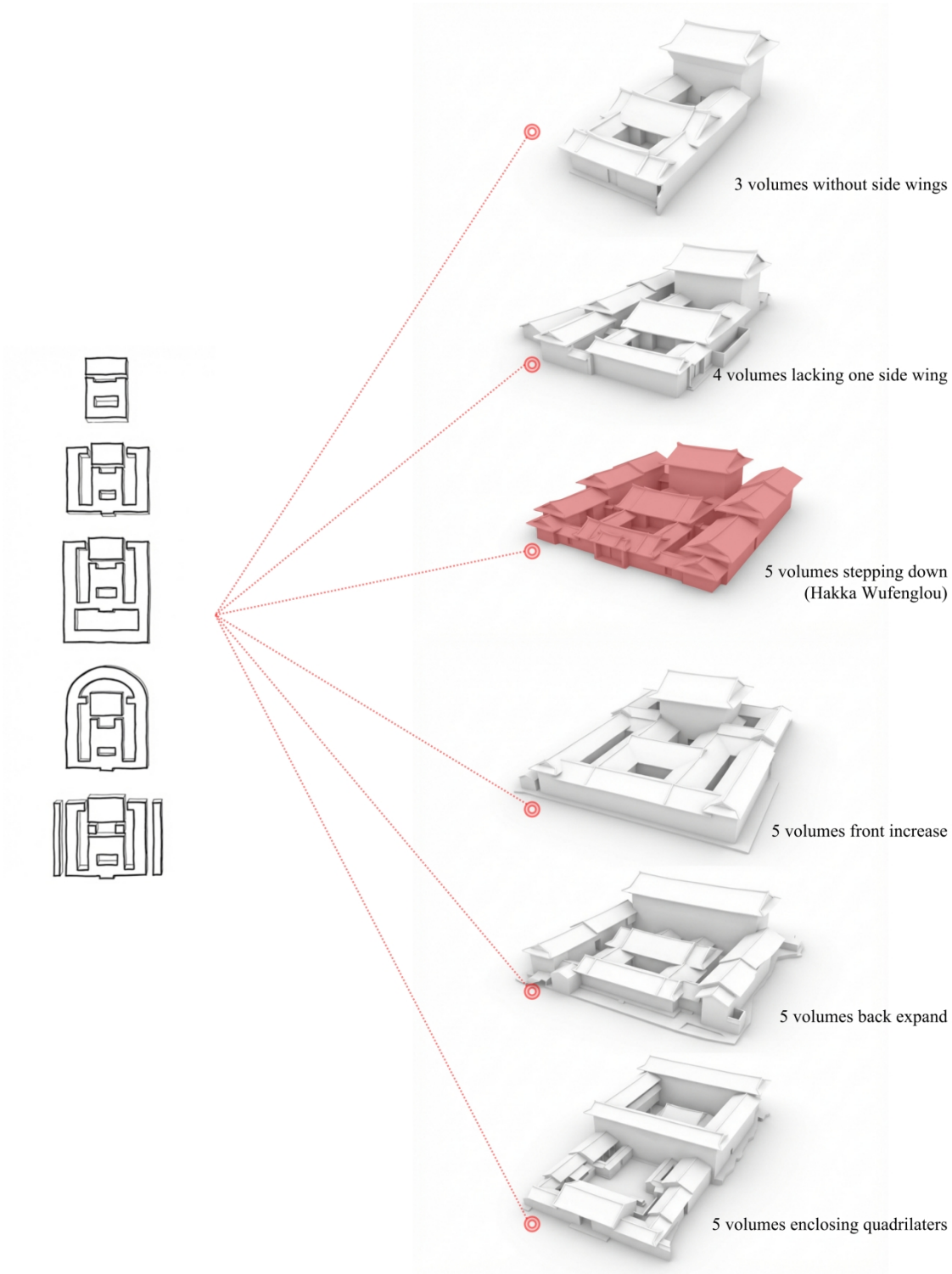


Figure 189. Hakka Wufenglou in Hall-and-Wing typed dwellings

Self drawn

Although many rammed-earth dwellings in the Hakka region follow the general Hall-and-Wing layout rule, the threshold for a building to be classified specifically as a Hakka Wufenglou is far more stringent. Unlike the Corridor Type, where the mere presence of a continuous surrounding corridor is sufficient for a building to be identified as a Tulou, the Hall-and-Wing lineage does not grant the title of Wufenglou simply on the basis of adopting its compositional rule. Only those cases that fully satisfy the demanding criteria of a complete five-volume axial system, strict bilateral symmetry, and the ritual-geomantic requirements outlined earlier can be recognized as standard Hakka Wufenglou. Because these spatial, formal, and symbolic requirements are exceptionally exacting, buildings that truly meet the definitional threshold are rare, and many structurally similar compounds must instead be understood as partial, incomplete, or extended variants within the broader Hall-and-Wing system rather than as Wufenglou proper.[42]

- Classification in Minnan Region: Based on Unit Type and Axial-Bay Type

Rammed-earth dwellings in the Minnan region follow two parallel structural lineages. The Unit Type corresponds to what many visitors recognize as "Minnan Tulou," in which the overall mass is subdivided into adjacent household units, each with its own staircase, typically in circular or square plans. The Axial-Bay Type forms the basis of Minnan Wufenglou, structured around an ancestral hall and organized along the central axis according to odd-number bay progression.

Within the Axial-Bay lineage, secondary differentiation depends on storey condition and the completeness of the layout rather than on whether a building is formally identified as Wufenglou. Three conditions are identified:

Condition 1: Single-storey layouts that already follow the axial-bay rule and ancestral-hall-centered arrangement but remain one storey.

Condition 2: Two-storey transitional layouts in which vertical expansion begins, but the lateral volumes mainly function as connectors or staircase spaces rather than full room blocks, and a stable five-volume arrangement has not yet formed.

Condition 3: Standard Minnan Wufenglou, a two-storey layout in which a stable five-volume arrangement is established and the axial hierarchy of volumes is clear. See Figure 190.

[42] Pan et al. 2013. pp. 104, 110-111, 116-120.

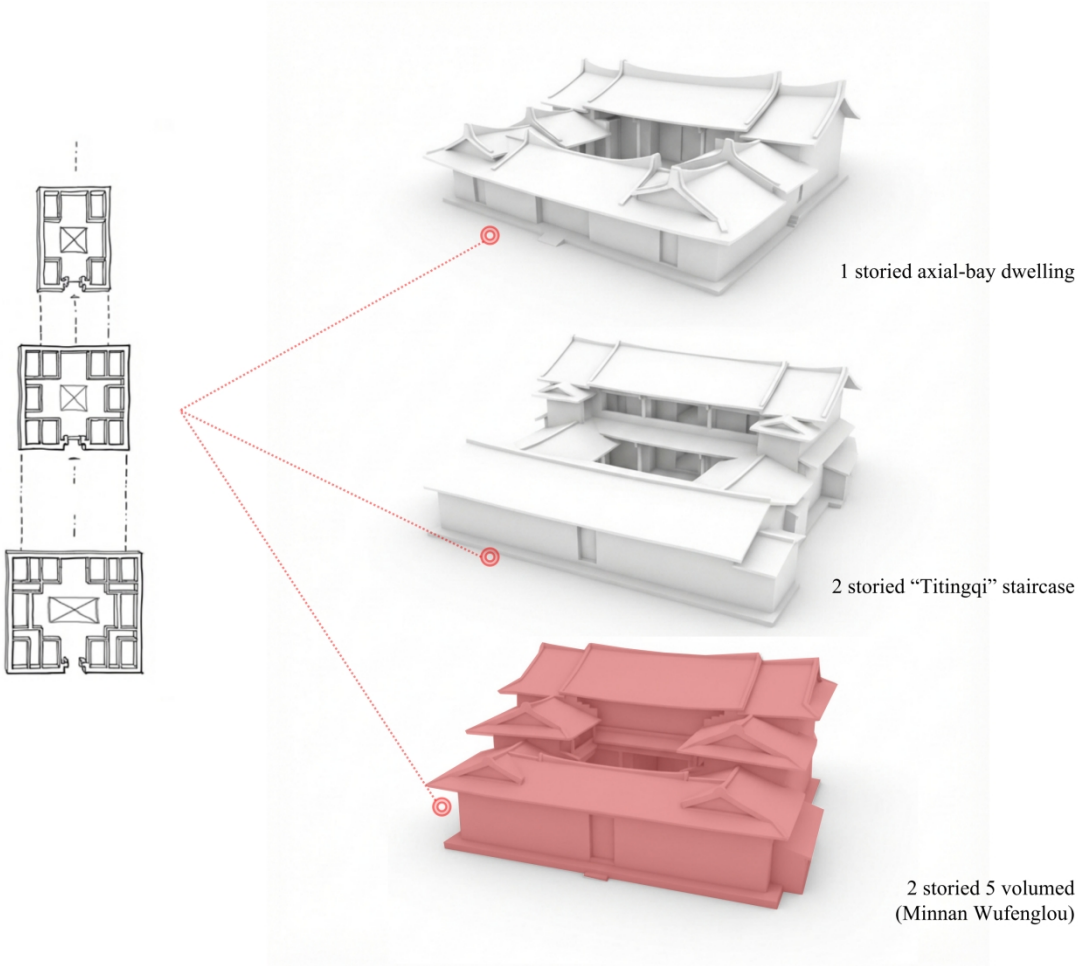


Figure 190. Minnan Wufenglou in Axial-bay typed dwellings

Self drawn

Although many rammed-earth dwellings in the Minnan region adopt the Axial-Bay layout rule, the threshold for identifying a building specifically as a Minnan Wufenglou is similarly stringent. The presence of an ancestor-hall-centered axial progression alone does not suffice for classification; only those compounds that fully meet the demanding requirements regarding storey condition, ritual hierarchy, bay configuration, and the formation of a stable two-storey five-volume system can be recognized as standard Minnan Wufenglou. Unlike the Hakka case, where the strict criteria result in a very limited number of surviving examples, the Minnan basic type is more numerous today because construction continued into recent decades and the overall scale is generally smaller. Even so, Minnan Wufenglou remain geographically constrained: they occur almost exclusively in Hua ' an and Anxi, and similar Axial-Bay dwellings across the wider Minnan region do not develop into the two-storey five-volume configuration required for this type. This spatially restricted distribution underscores that the definitional threshold of Minnan Wufenglou is not only typological but also regional in nature.[43]

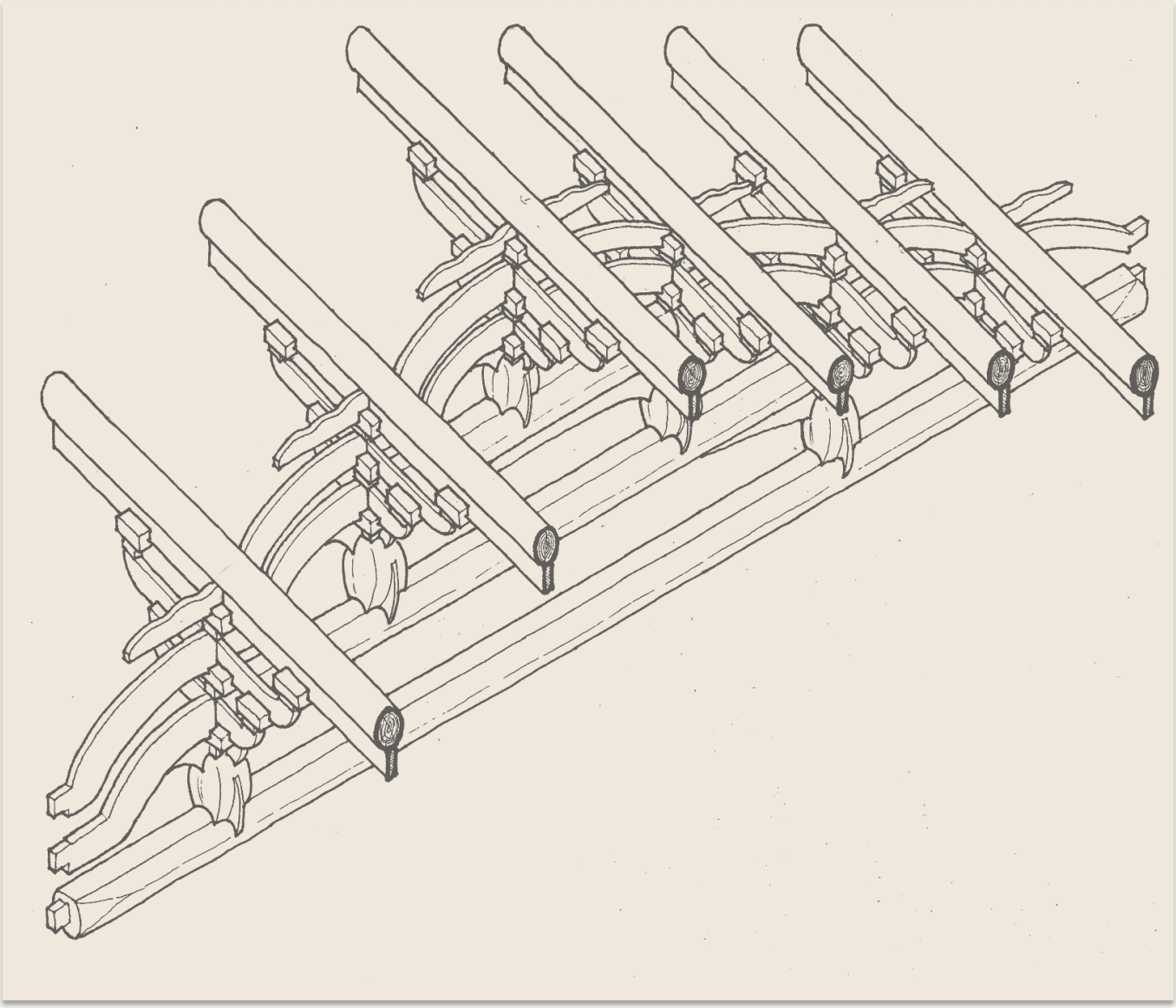
[43] Lin 1998. pp. 8-9.; Zheng 2018. p. 3.

Chapter Summary

As indicated in the classification diagram, neither Hakka Wufenglou nor Minnan Wufenglou serves as the principal prototype of rammed-earth dwellings within their respective regions; rather, each represents a highly constrained derivative branch emerging from a broader prototype system—the Hakka lineage rooted in the Hall-and-Wing (tanghengwu) prototype, and the Minnan lineage in the Axial-Bay (kaijian) prototype. By contrast, Tulou constitutes the demographically dominant, geographically expansive, and structurally reproducible prototype in both regions, where Hakka Tulou (Corridor Type) and Minnan Tulou (Unit Type) form the mainstream systems optimized for collective dwelling, defense, and scalable replication.

Wufenglou, on the other hand, is not a foundational prototype nor a widely applicable model, but a formally bounded terminal outcome that can only emerge once a prototype system matures and its spatial grammar stabilizes. Its formation requires strict axial governance, symmetrical volumetric completeness, articulated hierarchical order, and multi-block compositional coordination. Its rarity is therefore structural rather than incidental: most Hall-and-Wing compounds do not achieve the five-volume completeness required of Hakka Wufenglou, just as most Axial-Bay rammed-earth houses do not reach the vertical and spatial integrity necessary for Minnan Wufenglou. In both linguistic regions where Tulou and Wufenglou coexist, the latter is frequently overlooked due to terminological overlap, despite representing a sub-type with markedly higher thresholds for formal qualification — any deviation from its strict compositional criteria invalidates the classification.

This also elucidates its distinct cultural role. Tulou primarily responds to pragmatic demands for habitation and communal defense, whereas Wufenglou spatializes ancestral order, ritual hierarchy, cosmological symbolism, and clan-based spatial governance, architecturalizing principles of axiality, symmetry, vertical gradation, and centripetal ascendancy. Consequently, Wufenglou occupies a smaller typological branch with greater formal codification, structural resolution, symbolic intensity, and generative constraints. Its value lies not in hierarchical comparison with Tulou, but in its different operative logic. Each therefore demands a differentiated preservation framework, with Tulou requiring strategies for large-scale settlement systems and social continuity, and Wufenglou requiring protection of formal-volumetric integrity, ritual spatial order, and typological completeness.



CONCLUSIONS

CONCLUSIONS

1. Fujian Wufenglou Should be Classified Independently from the Broad Category of Fujian Tulou

1.1. Terminology, Etymology, and the Operative Definition

This dissertation set out to resolve two questions: whether Wufenglou belongs to the category of Tulou or constitutes an independent type, and whether "Fujian Wufenglou" names one regional dwelling or two distinct types that share only a name and a silhouette. Both were investigated through a three-tier method — documentary archiving, field survey of six core cases in each region with supplementary variants, and combined hand-drawn axonometric and drone-based modelling. The first obstacle was terminological. In Chinese, Tulou oscillates between a macro sense — any "house made of earth" — and a micro sense fixed by the 2008 "Fujian Tulou" World Heritage inscription, which denotes the Corridor-Type and Unit-Type perimeter compounds defined by continuous surrounding corridors, ring or square envelopes, and the egalitarian subdivision of living units along the outer wall. This study therefore reserves "rammed-earth dwellings" for the material family, "Tulou" for the UNESCO type, and retains "Wufenglou" as an untranslated proper noun, since renderings such as "Five-Phoenix Building" reduce it to dwelling, size, or silhouette and discard its cosmological charge.

The name itself warrants this care. Wu (five) is symbolic rather than numerical, signalling — together with three, seven, and nine — a tiered order; feng (phoenix) carries totemic and auspicious meaning; and lou, in its classical sense, denotes a structure of two storeys or more, a definition that excludes one-storey houses otherwise meeting the formal criteria. The term was, moreover, "word-first": Wufeng began as a Han regnal title (57–54 BC) and as the name of a Tang imperial palace-gate before it was ever attached to a vernacular dwelling, and of the many structures bearing the name — palace gates, pagodas, ancestral halls, elite mansions — only the palace-gate form and the Fujian regional residence show consistent typological character. Vernacular labels are no firmer: tanghengwu, dafudi, and fudishi are too generic, while dawujian and hutoucuo are too local. Clearing this away yields the operative definition the thesis defends: a repeatable spatial system of five axial volumes, a front-low / rear-high stepped profile, a nine-square-grid courtyard core, and two related but distinct Hakka and Minnan genealogies.

1.2. A Distinct Spatial, Constructional, and Distributional System

Spatially, Wufenglou is generated from the inside out. A Luoshu-derived nine-square grid holds the central cell (5) open as the courtyard and links the rear ancestor hall (1), the courtyard (5), and the front entrance (9) along a single axis, assigning the residential core to the rear corners (6, 8), auxiliary functions to the front cells (2, 4), and circulation to the lateral cells (3, 7). Orientation is read from the building's own body rather than the compass, and where a true south orientation is impossible the same order is preserved by a rear mound (huatai) and a front half-moon pond (banyuechi). Tulou, by contrast, are generated from the perimeter inward, their living units lining a corridor-served defensive ring. The two grammars are opposed in principle — one centripetal and axial, the other circumferential and ring-based.

Construction confirms the divergence. Wufenglou walls hold a near-uniform thickness from base to top — both outer and inner partition walls load-bearing, timber columns reserved for the central hall — whereas Tulou walls taper inward as they rise (rangqiang); Tulou walls are characteristically more than one metre thick, while Wufenglou walls remain below one metre. The building is raised through a codified ritual-technical sequence — dashijiao, chongqiang, xianjia, heji, and xietu — and responds to a typhoon-prone climate through sishui-guitang courtyard drainage, water-cutting eaves, and multi-ridge roofs, while the span techniques yizhuzao and jianzhuzao open large clear ritual halls without metal, the frame relying on timber joinery and very few nails.

Distribution further confirms the distinction. In Yongding, the Fengtianli district holds Wufenglou with no circular Tulou, while neighbouring Jinfengli holds the corridor-type Tulou now developed for tourism; mapped together, square Tulou occur in both north and south, but Wufenglou only in the north and circular Tulou only in the south — demonstrating that outer shape alone cannot classify these buildings. Wufenglou is therefore neither Tubao, whose domestic life is inserted behind a primary defensive shell, nor Zhuangzhai, the fortified manor of nested enclosures, nor Tulou, whose uniform vertical bay-units ring a courtyard in a "closed outward, open inward" pattern. It is a multi-storey, non-circular courtyard residence whose defensive capacity is absorbed into its ritual and domestic order, and it must be recognised as a fourth, independent category of Fujian rammed-earth dwellings — not a primitive prototype, but a formally bounded, terminal outcome that can appear only after a parent layout rule has matured.

1.3. Conservation and the Assertion of Independence

This boundary has practical force. So long as Wufenglou is subsumed under Tulou, conservation continues to privilege settlement-scale replication, defensive imagery, and perimeter form — and, in tourism settings such as the Eryilou scenic area, to narrate Minnan Wufenglou through Hakka-derived criteria and to stack mismatched components in repair — while the internal compositional integrity that actually defines the type is left unprotected. The urgency is acute and asymmetrical: new construction of Hakka Wufenglou effectively ceased after the 1980s, and field documentation conducted between 2021 and 2024 located only 142 standard compounds of five or more principal volumes, 137 retaining the three axial units but missing one volume, and 21 surviving as reduced variants, many in advanced decay — a condition the study describes as "decline preceding recognition," disappearance before definition. Recognising Wufenglou as independent reorients conservation toward safeguarding its compositional completeness, ritual-spatial order, and construction grammar, and is the precondition for consistent criteria of evaluation, restoration, and adaptive reuse. Wufenglou belongs to the broad rammed-earth family, but it is not Tulou, and its conservation must begin from that typological boundary rather than from the Tulou framework.

2. Hakka and Minnan Wufenglou Are Two Distinct Architectural Types

2.1. Two Origins, Shared Foundations

Beneath the single name lie two lineages with different histories. Hakka Wufenglou is the older of the two: its emergence presupposes the opening of the Ting River waterway after 1213, which made the large-scale transport of building materials possible, and the founding of Yongding County in 1478, and it precedes the canonical Hakka Tulou of the Bopingling range; its legitimacy was narrated through imperial connection, in legends of palace replicas granted by the emperor. Minnan Wufenglou is recent: it grew from single-storey Minnan dacuo and Minnan Tulou around the turn of the twentieth century, surged after 1949 and especially in the 1970s when the name came into broad use in Hua'an, and is still being built and inhabited today; its legitimacy rested not on imperial favour but on cosmic symbolism, the myth of five celestial phoenixes descended to earth. Yet both share a common foundation — orientation toward auspicious mountains and water, the nine-square-grid translation of yin–yang balance and the five phases, and a hybrid of rammed-earth walls, timber frames, raised stone bases, and deep stepped eaves. Even here they diverge: Hakka Wufenglou turns the grid into a public ceremonial core, reducing

residence within it to quarters for the eldest members, whereas Minnan Wufenglou absorbs the grid into the everyday dwelling through stair-pavilion rooms (titingjian).

2.2. Divergent Rules, Modules, and Thresholds

Once analysis shifts from shared principles to generative rules and housing units, the divergence becomes systematically decisive. Hakka Wufenglou follows the Hall-and-Wing rule (tanghengwu): its five volumes comprise a main house (zhulou), ancestor hall, and entrance hall aligned on the central axis, flanked by two side wings (hengwu), while living space is carried by the repeatable Jian‑Ting‑Qijiao module housed in those wings. Ritual and residence remain spatially separate — a self-contained ceremonial axis beside modular living wings — the side wings are constitutive, so a compound lacking them is incomplete, and the type grows modularly by multiplying and extending its wings; defence is decentralised across individual housing units. Minnan Wufenglou follows the Axial-Bay rule (kaijian, locally dawujian): its five volumes comprise a main house (dingluo) containing the ancestor hall, paired stair-pavilion rooms (titingjian), and paired corner rooms (jiaojian), while living space is organised as odd-numbered bays facing the hall (n-fang-kanting) within the main axial volume. Here ritual and residence are fused inside the dingluo; the lateral protective wings (hucuo) and watchtowers are additive rather than constitutive; the type grows integrally by thickening its edges, not adding modules; and defence works through additive perimeter reinforcement. At the threshold, the Hakka type is identified by its gate-tower (menlou) and hengwu, the Minnan type by its irreplaceable titingjian and front tashou; the two occupy distinct territories — the Hakka in west Fujian, centred on Fengtianli in northern Yongding, the Minnan in south Fujian, in Hua’an and Anxi.

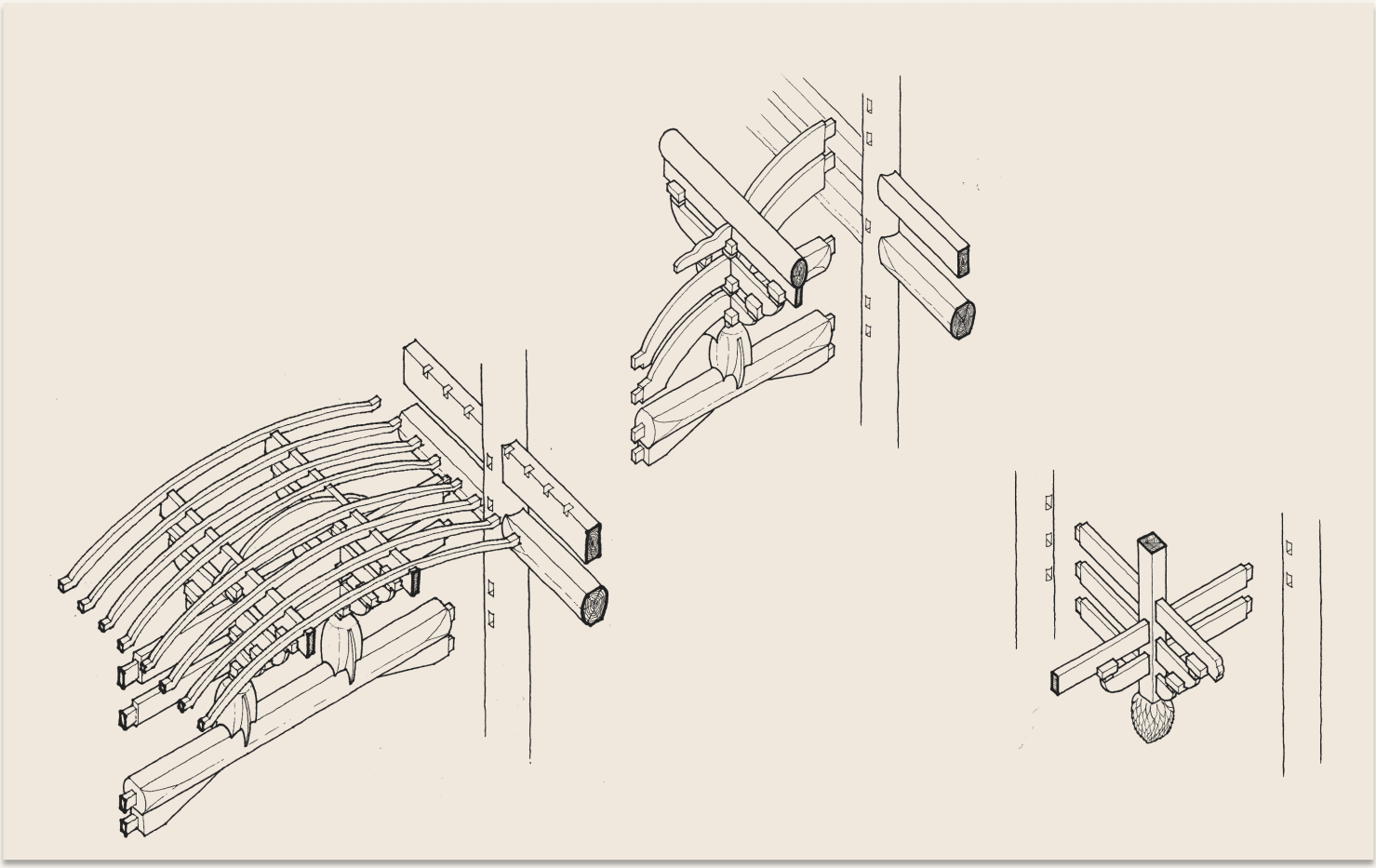
These contrasts extend further into growth, inheritance, and surface. The Hakka lineage escalates from the Hall-and-Wing rule through enclosure, vertical escalation, and transformation, so that Wufenglou is a vertical reconfiguration of a widely distributed prototype rather than an independent invention; the Minnan lineage progresses from single-storey axial-bay dwellings (dacuo) through a transitional titingqi stage to the standard two-storey Wufenglou, the moment its stair-scaled side element matures into a room-scaled titingjian. In the Hakka type the ancestor hall stands as a discrete axial volume and inheritance distributes the side wings among branch lines, so that genealogy is written laterally across the plan; in the Minnan type the ancestor hall is merged into the dingluo and succession follows an axial, left-superior / right-subordinate ranking of bays. Even the surfaces differ in step — Hakka gable walls

carry windows, while Minnan gables bear painted drawings and tiles. Each type, finally, holds to a strict admission threshold: a Hakka compound qualifies only by completing the full five-volume axial system with strict bilateral symmetry, which makes genuinely standard cases rare and scattered; a Minnan compound only by attaining a stable two-storey, five-volume, dingluo-centred arrangement, which confines the type almost entirely to Hua ’ an and Anxi. They stand, therefore, as two parallel, non-reducible basic types.

2.3. Contribution, Heritage Implications, and Future Research

The dissertation thus makes four connected contributions. It stabilises the terminology of Fujian rammed-earth architecture, fixing the macro/micro ambiguity of Tulou and retaining Wufenglou as an untranslated proper noun. It clarifies the outer boundary of the UNESCO “Fujian Tulou” category and establishes Wufenglou as a fourth, independent class alongside Tubao, Zhuangzhai, and Tulou. It replaces form-based labelling with an operable, progressive classification — layout rule → basic type → variant → parallel — within which Hakka and Minnan Wufenglou are defined as two discrete basic types with explicit thresholds. And it grounds these arguments in the first systematic, field-based record of the type, moving Wufenglou study from qualitative description toward a quantifiable model. In doing so it carries forward and corrects a line of scholarship: from Liu ’ s “three-halls-and-two-wings” genealogy, through Huang and Chen ’ s 2012 separation of Wufenglou from Tulou by contrasting the Dafudi of Gaobei with the transitional Fuyulou, to the first Minnan descriptions by Cao Chunping and the recent field archives of Huang Hanmin and Fan Wenyun.

For heritage practice, the dual-type finding requires region-sensitive evaluation, since the tectonic systems, defensive strategies, and inheritance orders of Hakka and Minnan examples are not interchangeable, and one conservation template cannot serve both. The study ’ s limits are clear — its thresholds rest on surviving cases in the surveyed counties and remain morphological rather than fully parametric — and they mark its next steps: a quantitative model based on bay width, depth ratio, and spatial sequence; a wider survey across adjacent counties and Hakka–Minnan transition villages; and cross-referencing clan genealogies with building chronologies. None would overturn the core finding. Under a single name, Fujian preserves two codified architectural types that arise from different generative rules and stand parallel to, but outside, Tulou; only once that typological boundary is acknowledged can this declining yet exceptionally codified heritage be properly understood, evaluated, and preserved.



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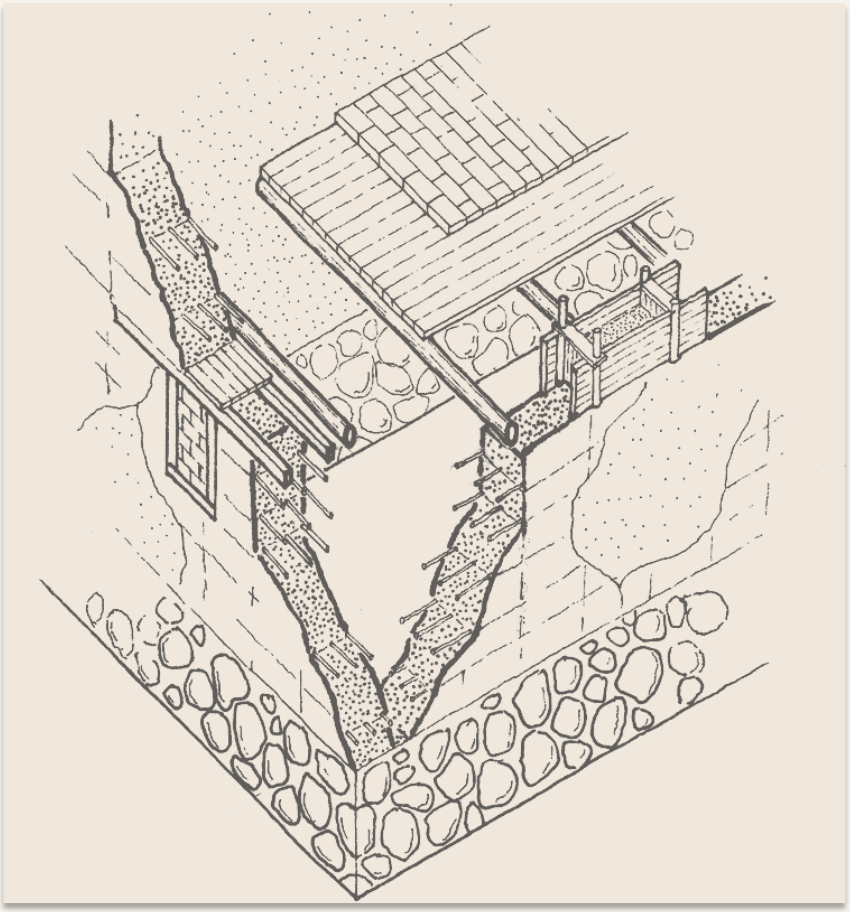


APPENDIX

Glossary / Self-Hand-Drawn Illustrations
Self-Mappings / Study Cases Information
Third National Cultural Relics Census / Interview Transcripts

APPENDIX

1. Glossary

A

Ancestor Hall (祖堂/中厅) – The central volume on the axis of a Wufenglou (Volume 2 in Hakka, integrated in Volume 1 in Minnan), serving as the primary ritual and family assembly space.

Axial-Bay Type (开间式) – The layout rule applied by Minnan Wufenglou, organized around an ancestor hall with odd-numbered bays extending laterally.

Azure Dragon (青龙) – The celestial animal symbolizing the left direction (East ideally), representing protection and healthy living.

B

Baihu (白虎) – See White Tiger.

Banmu (版/板木) – Two parallel timber panels used as formwork to hold the earth mixture during rammed-earth wall construction.

Banyue (半月) – Semicircle; referring to the shape of the pond.

Banyuechi (半月池) – Half-moon shaped pool; a shallow, crescent-shaped body of water located at the front of the building to accumulate Qi.

Basic Type (基型) – The fundamental, reproducible configuration of five volumes (Hakka or Minnan) that defines the Wufenglou typology.

Bofengban (博风板) – Wind-shielding gable board used to shield roof purlin ends on the gable wall.

Bujia (步架) – The horizontal distance between two purlins, often used as a unit of measurement for enlarging spans in Yizhuzao.

C

Chaliangshi (插梁式) – A hybrid roof frame type where one or both ends of a primary beam are inserted directly into the body of a column.

Chonglou (枪楼/铳楼) – A dedicated watch or defense tower, often appended to the hucuo (protective wings) in Minnan Wufenglou.

Chongqiang (舂墙) – The process of rammed-earth walling using layered compaction between timber panels.

Chongzi (舂子) – Wooden tampers used to compact the earth mixture during wall construction.

Chuan (椽) – Secondary roof beam (rafter) laid on the Lin (purlin) to support the roofing tiles.

Chuanfang (穿枋) – A tie-beam that passes through intercolumn spaces in a Chuandoushi system.

Chuantiao (椽条) – See Chuan.

Chuanwashan (穿瓦衫) – A technique of sheathing rammed-earth walls with hung flat or fish-scale tiles locked with lime mortar for weather protection.

Chuandoushi (穿斗式) – A roof-truss system defined by pillars placed directly beneath purlins and tie-beams passing through columns.

Chuihua (垂花) – A pendant column suspended beneath the eave, used for stabilization and ornament (also Diaotong).

Chushui (出水) – The completion of tiling the roof to make it weather-tight.

Corridor Type (通廊式) – The structural lineage of Hakka tulou, defined by outer load-bearing walls and internal timber frames with continuous corridors.

D

Dacuo (大厝) – A multi-courtyard, single-story mansion common in the coastal plains of southern Fujian.

Dacuoqi (大厝起) – Literally “big house risen”; a vernacular term broadly applied to local dwellings, including single-storey houses and tulou.

Dafudi (大夫第) – Literally “officials' residence”; a generic term often found on plaques of Hakka Wufenglou signifying lineage status.

Daqijian (大七间) – Literally "big seven-bay building"; a colloquial term for large-scale Minnan dwellings.

Daozuo (倒座) – A front-facing auxiliary range added to a Tanghengwu layout to form a courtyard enclosure.

Dashijiao (打石脚) – The construction phase of laying the stone footing to stabilize the foundation and prevent dampness.

Dawujian (大五间) – Literally "big five-bay building"; a colloquialism in Hua'an and Anxi for Minnan Wufenglou.

Di (第) – A term appearing in plaques (e.g., Rulindi) signifying a residence of status or scholarship.

Diaotong (吊筒) – See Chuihua.

Diedou (叠斗) – Small timber blocks stacked above column heads or beams to elevate and level roof loads.

Diedoushi (叠斗式) – A roof-framing technique where Dou and Gong are stacked to support purlins, replacing short columns (Guazhu).

Dingluo (顶落) – The main house (Volume 1) in Minnan Wufenglou, containing the ancestral hall and residential rooms.

Dishui (滴水) – A roof tile component with a downward lip that cuts capillary backflow to prevent splash on walls.

Dou (斗) – A block-shaped wooden bearing block used in brackets or Diedoushi structures.

Duolou (垛楼) – Auxiliary buildings or watchtowers flanking the main building in ancient palace Wufenglou.

F

False 4 point gold pillars (假四点金) – A structural layout visually resembling four pillars but structurally reduced to two primary load-bearing pillars to open up space.

Fang (房) – Rooms; in the "n Fang Kanting" pattern, it refers to rooms facing the central hall.

Fang (枋) – A timber member spanning the building depth, often forming a loop with beams (Liang).

Fangjianqiang (防溅墙) – Splash-guard wall; a low ridge or short wall on the roof to intercept rainwater splashes.

Fangshui (放水) – The principle of drainage where water should bend rather than run straight to slow velocity.

Feng (凤) – Phoenix; the legendary sacred bird symbolizing the five-volume composition.

Fengtianli (丰田里) – A historical administrative region in Yongding where Hakka Wufenglou are concentrated.

Fenjin (分金) – Precise directional subdivision used in Fengshui compass calibration.

Five-Phoenix Building (五凤楼) – A common English semantic translation (rejected in favor of proper noun Wufenglou).

Form School (形势派) – A Fengshui school emphasizing harmony between landform (mountains/water) and orientation.

Four-Point-Gold (四点金) – Sidianjin; refers to either the four primary load-bearing columns (Hakka) or a plan-based four-room layout (Minnan).

Fudishi (府第式) – Literally “mansion style”; a generic term used by scholars to describe large-scale, symmetrical Hakka dwellings.

Fudishi fanglou (府第式方楼) – "Mansion style square building"; a generic term used by scholars for the description of Hakka Wufenglou.

G

Gecengzai (隔层仔) – The thermal/insulation buffer board in Minnan Wufenglou.

Gelinshi (搁檩式) – Purlin-on-wall system; a roof structure where purlins sit directly on rammed-earth walls.

Gereban (隔热板) – Thermal/insulation buffer board installed between the roof structure and interior space.

Geshan (搁栅) – Upper beams embedded directly into the wall top during construction.

Gong (拱) – A bow-shaped bracket arm used in Dougong or Diedoushi systems.

Guazhu (瓜柱) – Melon pillar; short wood columns placed on beams to support the roof structure above.

Guoliang (过梁) – Lintels used to bridge openings for doors or windows.

Guoshui (过水) – A term for the transitional covered passage (or volume) connecting the main house to side rooms in Minnan architecture.

Guoshuilang (过水廊) – Rain-proof corridor; lateral passages connecting the entrance hall and ancestor hall in Hakka Wufenglou.

H

Hakka Wufenglou (客家五凤楼) – A multi-storey courtyard dwelling in west Fujian defined by a "Three Halls and Two Wings" layout.

Hall-and-Wing House (堂横屋) – Tanghengwu; the generic layout rule where a central hall is flanked by symmetrical side wings.

Hankong (涵孔) – Surface inlet opening guiding water into the hidden drainage channel.

Hankou (涵口) – The outlet of the drainage system linking to external open drains.

Hanjing (涵井) – Intermediate sedimentation or buffer pit in the drainage system.

Heji (合脊) – The ritual and process of ridge joining, marking the completion of the roof.

Hengbian (横匾) – Horizontal name plaque located above the main entrance or hall.

Hengwu (横屋) – Lateral side wings (Volumes 4 & 5) in Hakka Wufenglou.

Hetu (河图) – Yellow River Chart; a cosmological diagram reflecting Yin-Yang balance through numbers.

Huanggongqi (皇宫起) – Literally “imperial palace risen”; a vernacular term for grand Minnan mansions evoking imperial style.

Huangji (皇极) – The supreme center; the central cell (Position 5) of the Nine-Square Grid.

Huangli (皇历) – Imperial Almanac; the lunar calendar used for selecting auspicious dates (Zerixue).

Huatai (化胎) – A semicircular constructed earthen mound at the rear of a building to symbolize a backing mountain.

Hucuo (护厝) – Protective wings; outer peripheral extensions in Minnan Wufenglou (not part of the basic 5 volumes).

Hudui (户对) – Door-header pair; paired protruding elements (wood/brick) at the upper edge of the door header.

Hukouting (虎口厅) – Tiger-Mouth Rooms; side chambers next to the ancestor hall in Hakka Wufenglou, often for elder care.

Humuchuang (虎目窗) – Tiger-eye window; a small frontal window on the Titingjian in Minnan Wufenglou.

Hutoucuo (虎头厝) – Literally "tiger head house"; a common name for Minnan Wufenglou in the Anxi region.

J

Jian (间) – A room or bay unit in the Jian-Ting-Qijiao system.

Jian-Ting-Qijiao (间厅起脚) – The modular housing unit system of Hakka Wufenglou consisting of rooms, a hall, and a stair core.

Jianbai (见白) – "Unobstructed sky glimpse"; a rule requiring a view of the sky from the ancestor hall above the front roof.

Jianzhuzao (减柱造) – A construction method that reduces the number of interior pillars to enlarge space.

Jiaojian (角间) – Corner rooms (Volumes 4 & 5) in Minnan Wufenglou, located at the front corners.

Jinfengli (金丰里) – A historical region in Yongding where tulou (Corridor Type) are concentrated.

Jinjiao (金角) – Block stones added at corners and door sides of the foundation for reinforcement.

Jinxincuo (进新厝) – The ceremonial move-in ritual in the Minnan region.

Ju (居) – A term appearing in names of small bay-module residences (e.g., Xinyuanju).

Jutou (榉头) – A vernacular term describing the Titingjian volume as a structural extension or "beam head".

Juzhe (举折) – The slope change or curvature of the roof, enabling rapid drainage.

K

Kaijian (开间) – Axial-bay system; the module of expanding outward from the central hall by bays (3, 5, 7...).

Kaijianshi (开间式) – Axial-Bay Type House; dwellings based on the axial-bay layout rule.

Kaimen qibao (开门七宝) – Seven precious items for opening doors brought in during the entry ritual.

L

Liang (梁) – Beam; a timber member spanning the bay along the building's long side.

Lin (檩) – Purlin; the primary roof beam running perpendicular to the gable wall.

Lintiao (檩条) – See Lin.

Lou (楼) – A building volume of two or more stories.

Louhua (漏花) – Decorative perforated lattice used on windows, eaves, and beams.

Luojie (落阶) – Literally "descending step"; a vernacular term for the Titingjian emphasizing its stepped-down massing.

Luopan (罗盘) – A geomantic compass used to determine orientation and layout.

Luoshu (洛书) – Luo River Writing; a cosmological diagram forming the basis of the Nine-Square Grid.

M

Mendang (门当) – Stone gate base blocks placed at the lower sides of the main entrance.

Menlou (门楼) – A gatehouse; in Hakka Wufenglou, it serves as the entrance emphasis.

Menshen (门神) – Gate-god; images placed on doors for protection.

Menting (门厅) – Entrance Hall (Volume 3 in Hakka Wufenglou), the lowest volume containing the main entrance.

Mingjian (明间) – The central clear span or bay of a hall.

Mingtang (明堂) – The bright forecourt; the open space in front of the main façade.

Minnan Wufenglou (闽南五凤楼) – A multi-storey courtyard dwelling in south Fujian defined by a 5-volume "Main House + Titingjian + Corner Room" layout.

Muleng (木楞) – Timber studs embedded in walls to reinforce openings.

N

Nine-Square Grid (九宫格) – A spatial layout principle derived from Luoshu organizing the courtyard and surrounding functional cells.

P

Pashi (爬狮) – Literally “climbing lion”; a term describing the stepped-up massing of Minnan architecture.

Piyan (披檐) – Secondary drip eaves installed at the lower segment of the gable wall.

Q

Qi (气) – Vital energy or flow that circulates through the architectural space.

Qiangyan (枪眼) – Firing apertures or loopholes for defense.

Qidacuo (起大厝) – Literally "construct a big house"; an inverted vernacular expression.

Qijiao (起脚) – The vertical stair-core module in the Hakka Jian-Ting-Qijiao system.

Qikou (气口) – Mouth of Qi; the main gate of the house.

Qinglong (青龙) – See Azure Dragon.

Cheshangmingzao (彻上明造) – Exposed roof framing; a method where the roof structure is visible from the interior.

Quelou (阙楼) – Ceremonial towers placed in front of ancient palace Wufenglou.

R

Rammed-earth dwellings (土楼 - macro sense) – A broad category for any dwelling constructed primarily of rammed earth (academic English term).

Rangqiang (让墙) – The method of tapering walls upward (common in tulou, less in Wufenglou).

Rulindi (儒林第) – "Confucian Scholars' Residence"; a specific named Hakka Wufenglou case.

Ruwu (入屋) – The ceremonial move-in ritual in the Hakka region.

S

Santang liangheng (三堂两横) – "Three Halls and Two Wings"; the vernacular formula for Hakka Wufenglou layout.

Santang yiheng (三堂一横) – "House of Three Halls and One Wing"; a term for an incomplete Wufenglou layout.

Santangwu (三堂屋) – A house with three halls on the axis but lacking the paired side wings.

Shangliang (上梁) – The ridge-raising ceremony.

Shenchangshou (伸长手) – "Over-extended arms"; a taboo where side volumes extend too far forward relative to the main hall.

Shenjiao (伸脚) – "Extended foot"; a vernacular term for Titingjian implying a subordinate appendage.

Shixiangzuo (狮象座) – Lion-Elephant Base; a carved base used in combined structural and symbolic function in Diedoushi.

Shigandang (石敢当) – Stone steles placed at vulnerable points to deflect cutting flows of Qi.

Shijiao (石脚) – See Dashijiao.

Shoushan (收山) – The inward recession of the ridge terminus in orthodox Xieshan roofs.

Shuo (朔) – New moon; relevant to the lunar calendar (Huangli).

Shuigoudu (水沟堵) – A removable stone plug or cover for the drainage intake.

Sidianjin (四点金) – See Four-Point-Gold.

Sijiao Jingzhai (四角净宅) – A purification ritual performed at the four corners of the house.

Siqi (死气) – Dead or depleted Qi.

Sishui guitang (四水归堂) – "Four waters returning to the hall"; the drainage configuration guiding roof water into the central courtyard.

Sixiang (四象) – Four Celestial Animals; the Fengshui model of Azure Dragon, White Tiger, Vermilion Bird, and Black Tortoise.

Sizheng siyu (四正四隅) – The four cardinal (Yang) and four corner (Yin) positions in the Nine-Square Grid.

Split circulation type (分立式) – A Minnan Wufenglou pattern where left and right upper wings are not connected and require ground-floor transit.

Sunmao (榫卯) – Mortise-and-tenon joinery.

T

Tailiangshi (抬梁式) – A frame logic where beams support purlins and posts support beams, common in ceremonial halls.

Tang (堂) – A term for the ritual core space (hall), often used to name the entire building in Hakka regions.

Tanghengshi (堂横式) – It is a volume module of Hakka Wufenglou, where the volume on the central axis is dominated by hall (tang), including entrance hall, ancestor hall, and hall in the main house, etc., while the building volumes on both sides are called heng (side wings). It is a building volume arranged sequentially to both sides along the central axis composed of volumes of hall.

Tanghengwu (堂横屋) – Hall-and-Wing House; a broader typological category including Wufenglou.

Tashou (塌寿) – An introverted entrance technique where the doorway recedes inward to form a localized depth gradient.

Tianjing (天井) – See Courtyard.

Ting (厅) – The central hall within a Jian-Ting-Qijiao unit.

Titingjian (梯亭间) – Stair-pavilion Rooms (Volumes 2 & 3 in Minnan Wufenglou); transitional volumes housing stairs and services.

Titingqi (梯亭起) – Staircase hall; the functional stairwell space before it evolves into a full room-volume.

Tubao (土堡) – Earthen fortress; a dwelling type with a distinct separation between external defense and internal habitation.

Tulou (土楼 - micro sense) – A specific heritage type of rammed-earth compound (Corridor or Unit type) recognized by UNESCO.

U

Unit Type (单元式) – The structural lineage of Minnan tulou, defined by independent vertical household units with private stairs.

W

Wadang (瓦当) – A roof tile end that seals the edge and guides water to the eave.

Wang (旺) – Prosperous/Flourishing; a desired state in Fengshui.

Weilongwu (围龙屋) – A Hakka dwelling form where the rear enclosure forms a curved profile (dragon).

Weiwu (围屋) – A Hakka dwelling form with a four-sided courtyard enclosure of consistent height.

White Tiger (白虎) – The celestial animal symbolizing the right direction (West ideally), representing power.

Wu (五) – Five; symbolic of the five volumes and five elements.

Wufeng (五凤) – Five Phoenixes; the totemic and symbolic name of the typology.

Wufenglou (五凤楼) – The proper noun for the specific stepped, five-volume axial rammed-earth dwelling type.

Wujianzhang (五间张) – See Dawujian.

Wumen (午门) – Meridian Gate; a palace-type Wufenglou in Beijing.

Wuxing (五行) – Five Elements (Wood, Fire, Earth, Metal, Water) used in cosmology and gable design.

X

Xiaji (下基) – Setting the foundation; a minor ritual involving burying symbolic items at the four corners.

Xianjia (献架) – The construction phase of erecting timber pillars and beams.

Xiang (向) – "Facing"; the front orientation of a building.

Xiangsheng (相生) – Mutual generation; the regulatory cycle of the Five Elements.

Xiangke (相克) – Mutual restraint; the controlling cycle of the Five Elements.

Xiaosanjian (小三间) – Literally "small three-bay building"; a colloquial term for smaller Minnan dwellings.

Xiashanhu (下山虎) – "Tiger descending the mountain"; a Minnan term for massing that descends from back to front.

Xietu (谢土) – The closing ritual of offering thanks to the earth upon completion of construction.

Xingshipai (形势派) – See Form School.

Xuanlang (轩廊) – The front veranda or porch area in Wufenglou ritual spaces.

Xuanshan (悬山) – Overhanging gable roof; a double-sloped roof where eaves project beyond the gable wall.

Xuanyu (悬鱼) – Gable-end pendant serving sealing and symbolic closure functions.

Xuanwu (玄武) – The Black Tortoise & snake, the celestial animal symbolizing the rear direction (North ideally), representing support and defense.

Y

Yang (阳) – The active, bright, open cosmological force (South, Odd numbers).

Yanweiji (燕尾脊) – Swallow-tail ridge; a roof ridge with bifurcated, upward-sweeping ends.

Yanxian/Yanfeng (掩线/掩封) – Boards or tiles covering roof purlin ends in Minnan architecture.

Yazhuan (压砖) – Bricks used to compact and seal ridge intersections.

Yiming liangan (一明两暗) – "One bright, two dim"; the spatial gradient rule of a central bright zone flanked by dim zones.

Yin (阴) – The passive, dark, enclosed cosmological force (North, Even numbers).

Yizhuzao (移柱造) – A method of extending space by shifting a pillar outward and using Diedou cantilevers.

Youhengwu (右横屋) – Right Side House (Volume 5) in Hakka Wufenglou.

Yuwei (隅位) – Corner positions (even numbers) in the Nine-Square Grid (Yin).

Z

Zerixue (择日学) – The traditional study of selecting auspicious dates and times.

Zhailu (寨庐) – See Zhuangzhai.

Zhengwei (正位) – Cardinal positions (odd numbers) in the Nine-Square Grid (Yang).

Zhenwu (枕屋) – A rear annex added to a Tanghengwu layout to form an enclosure.

Zhongting (中厅) – Middle Hall; often synonymous with the Ancestor Hall (Volume 2) in Hakka Wufenglou.

Zhu (柱) – Pillar/Column.

Zhuangzhai (庄 寨) – A fortified manorial compound type integrating residence and defense (also Zhailu).

Zhuchu (柱础) – Stone column base foundation.

Zhujin (竹筋) – Bamboo strips inserted horizontally within rammed-earth walls as tensile ties.

Zhuque (朱雀) – See Vermilion Bird.

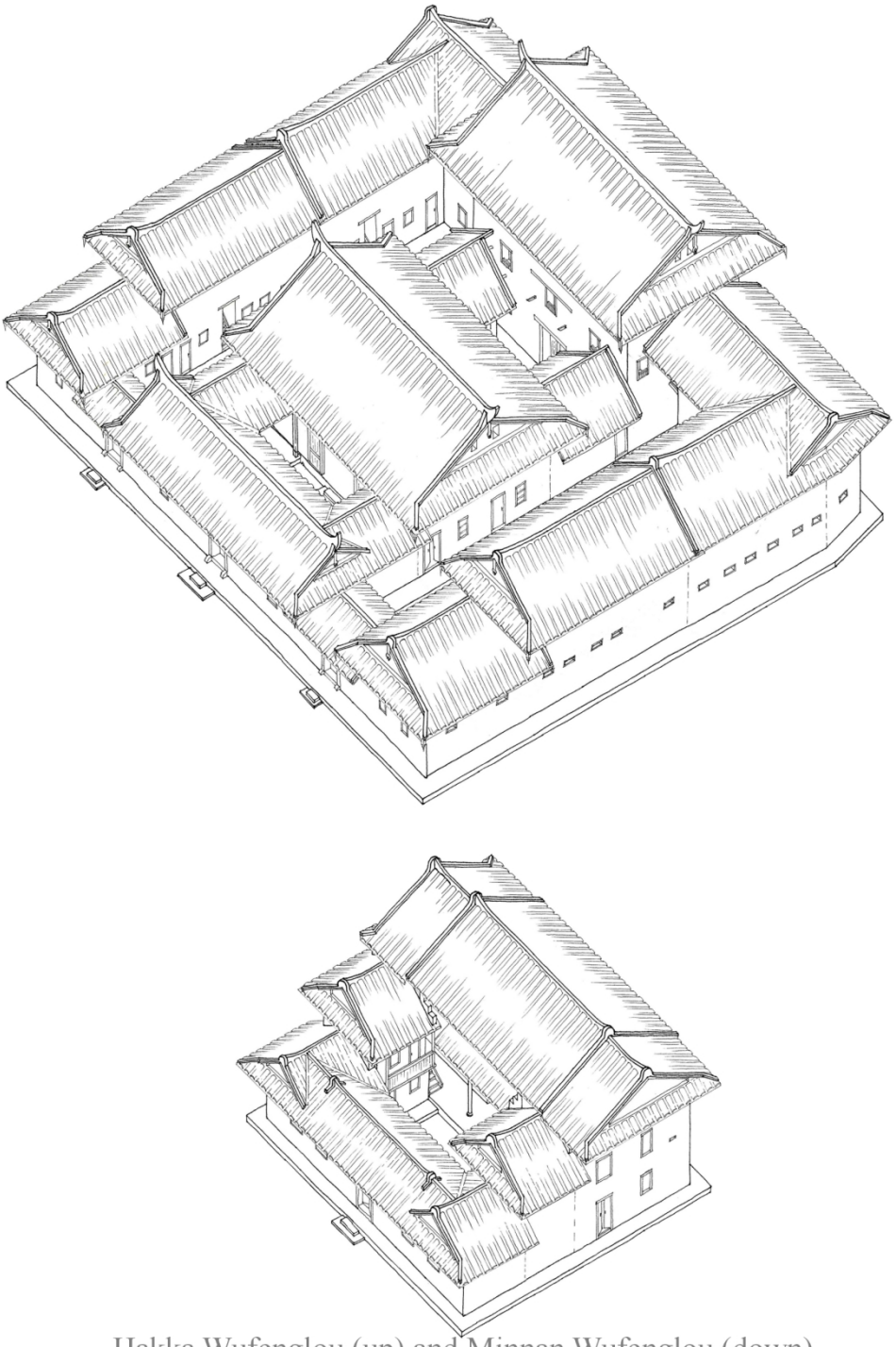
Zhulou (主楼) – The Main House (Volume 1) in Hakka Wufenglou; the tallest rearmost volume.

Zuo (坐) – "Sitting"; the rear orientation of a building (e.g., Zuo North).

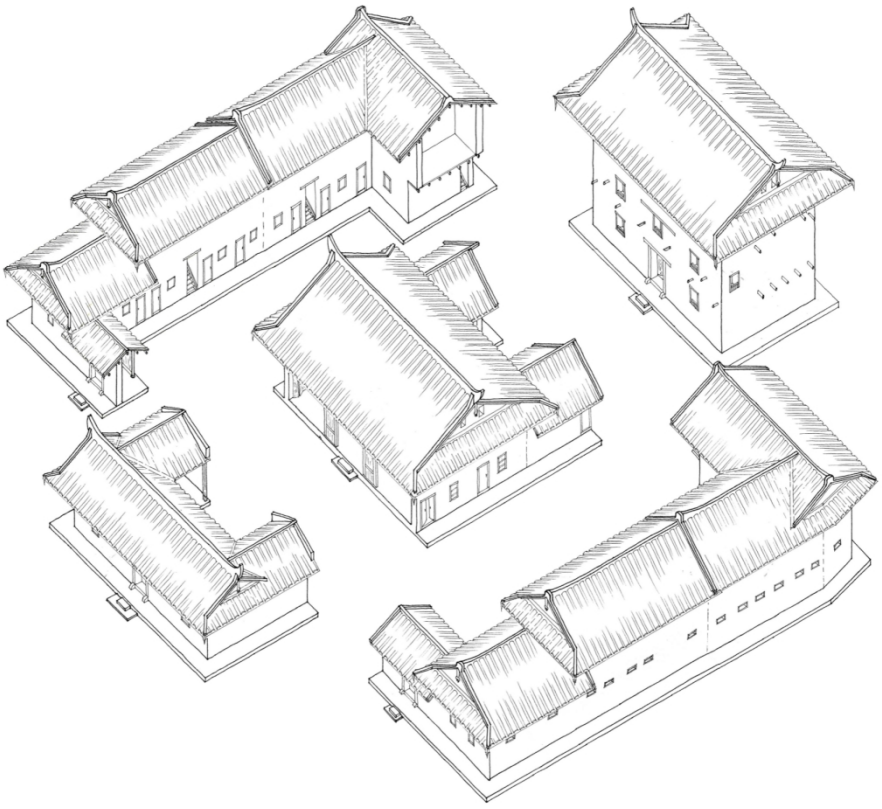
Zuo bei chao nan (坐北朝南) – Sitting North facing South; the ideal cosmological orientation.

Zuohengwu (左横屋) – Left Side House (Volume 4) in Hakka Wufenglou.

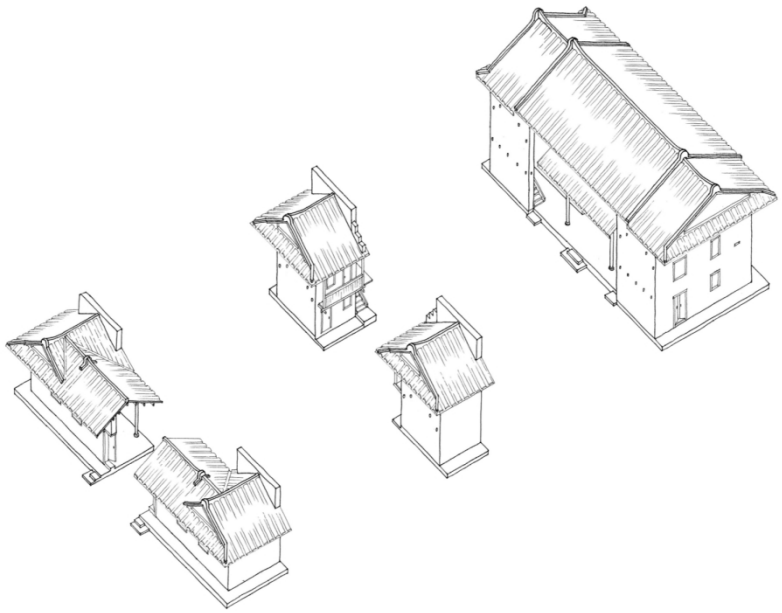
2. Self-Hand-Drawn Illustrations



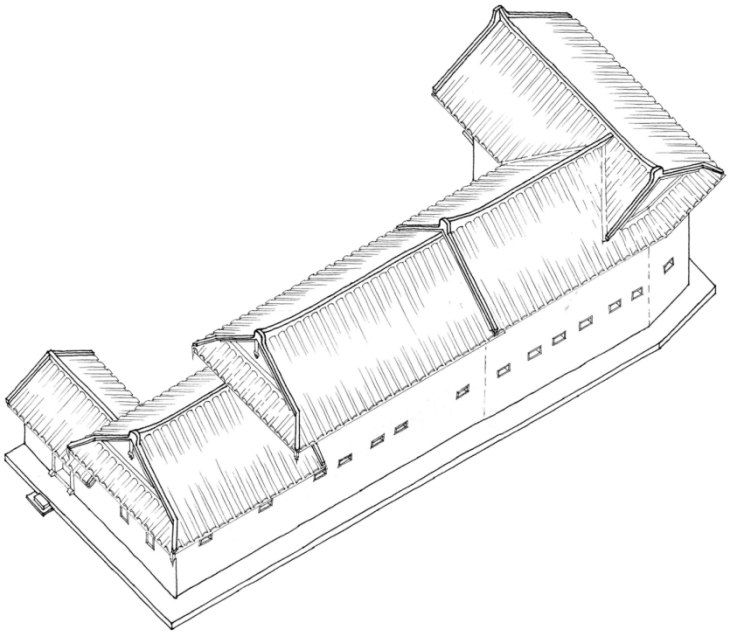
Hakka Wufenglou (up) and Minnan Wufenglou (down)



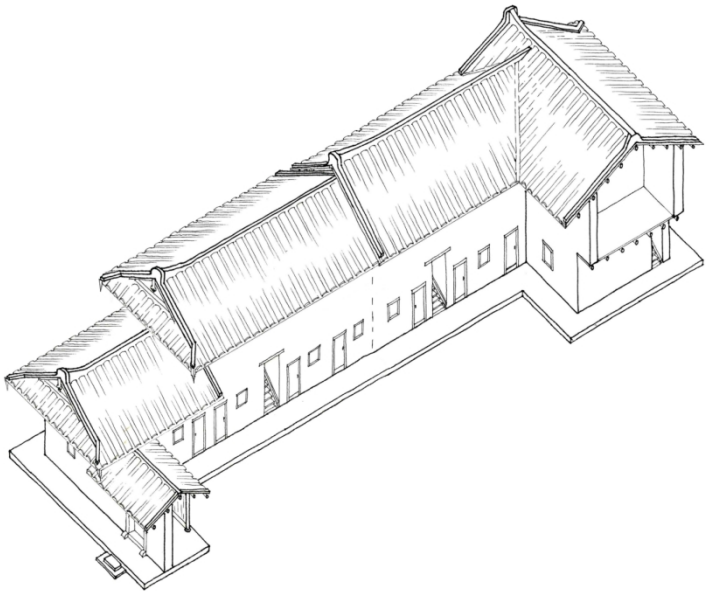
Hakka Wufenglou 5 Volumes' Exploded View



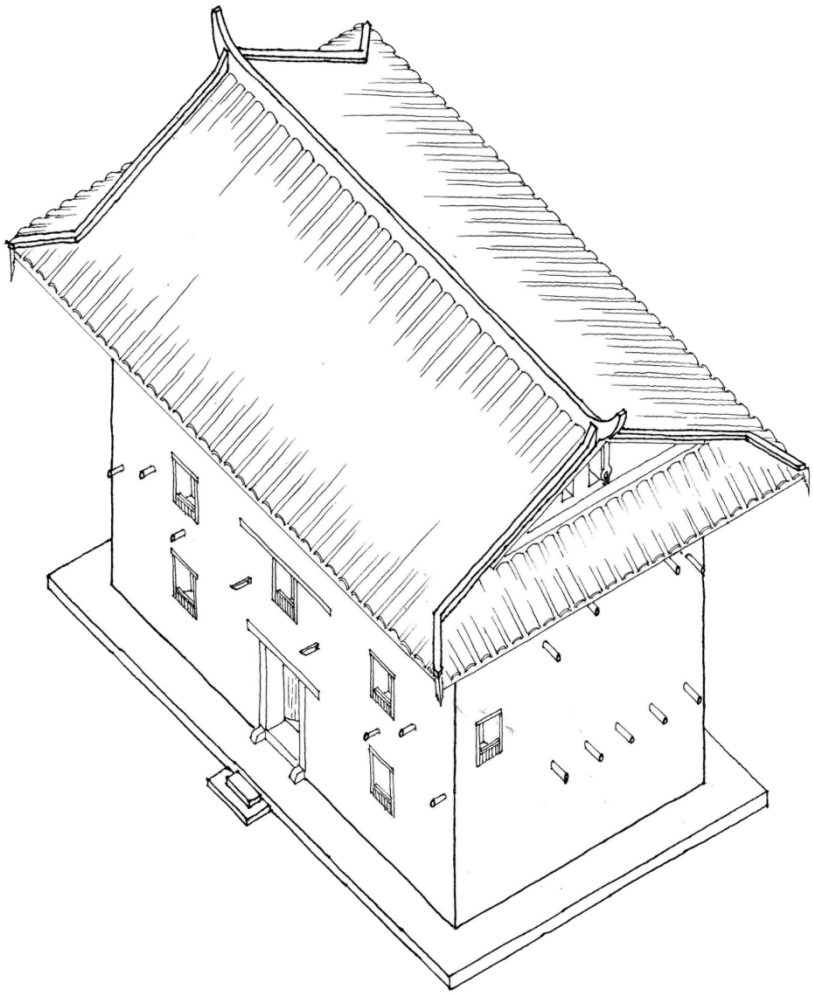
Minnan Wufenglou 5 Volumes' Exploded View



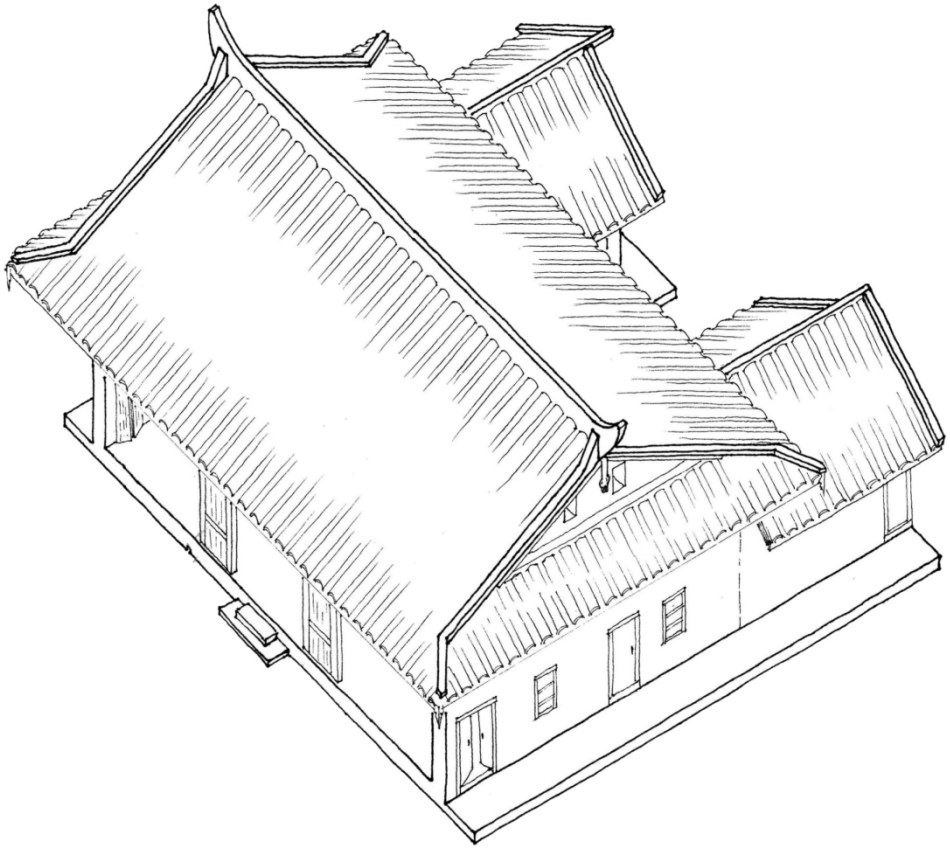
Hakka Wufenglou's Left Side Wing Volume



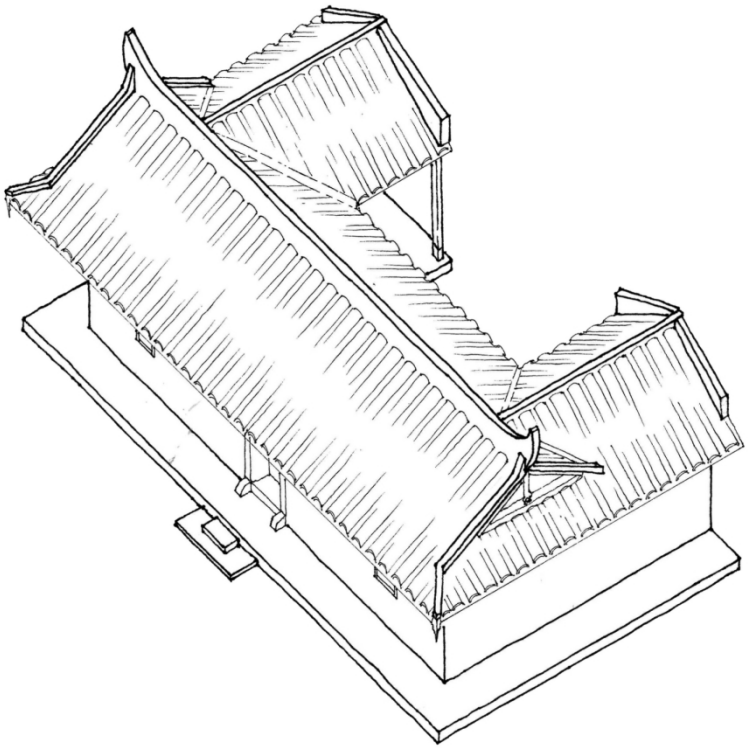
Hakka Wufenglou's Right Side Wing Volume



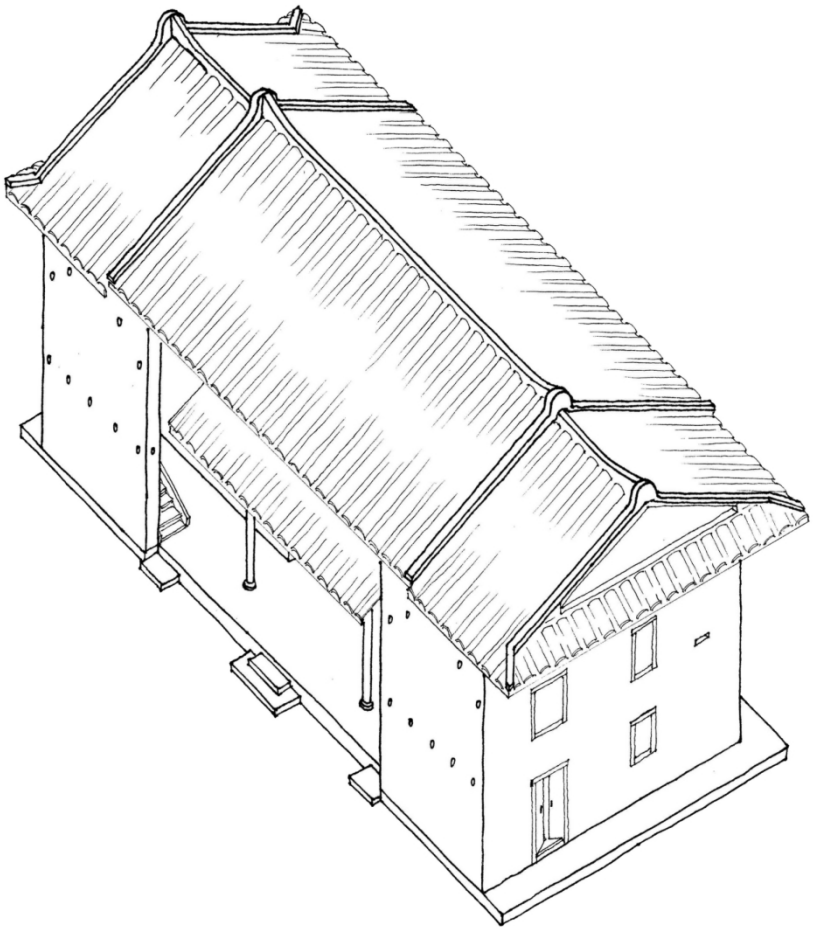
Hakka Wufenglou's Main House Volume



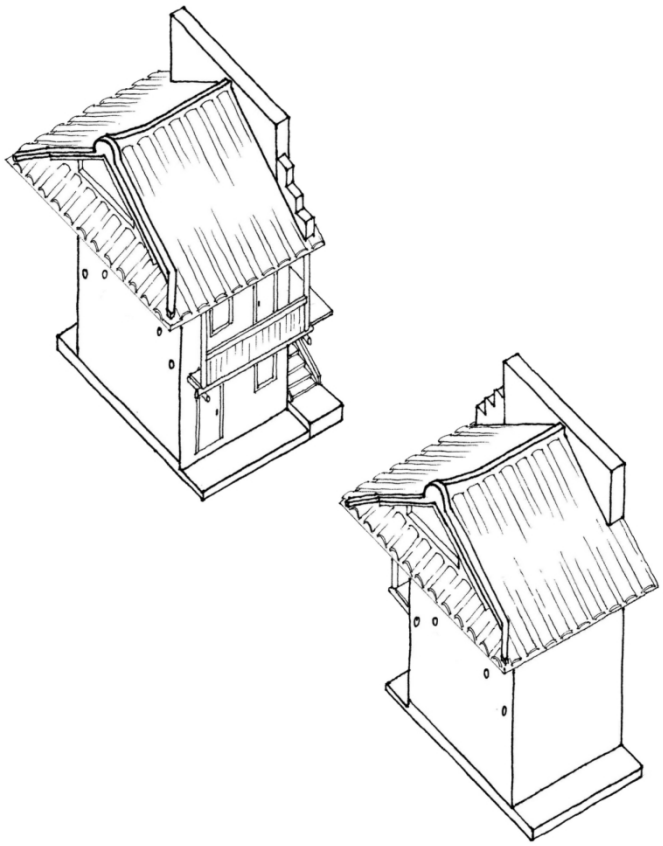
Hakka Wufenglou's Ancestor Hall Volume



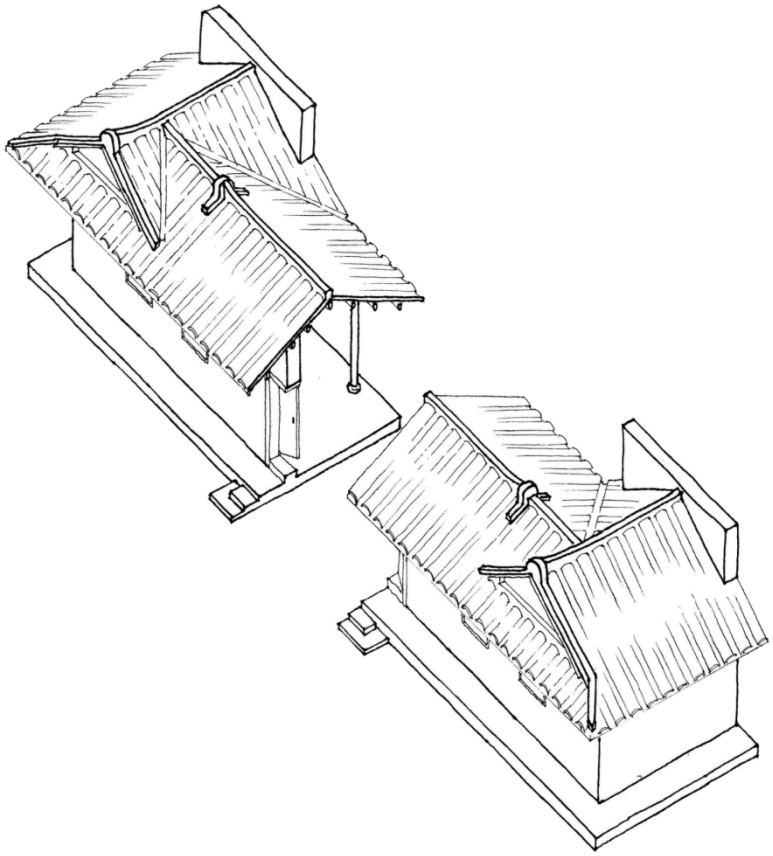
Hakka Wufenglou's Entrance Hall Volume



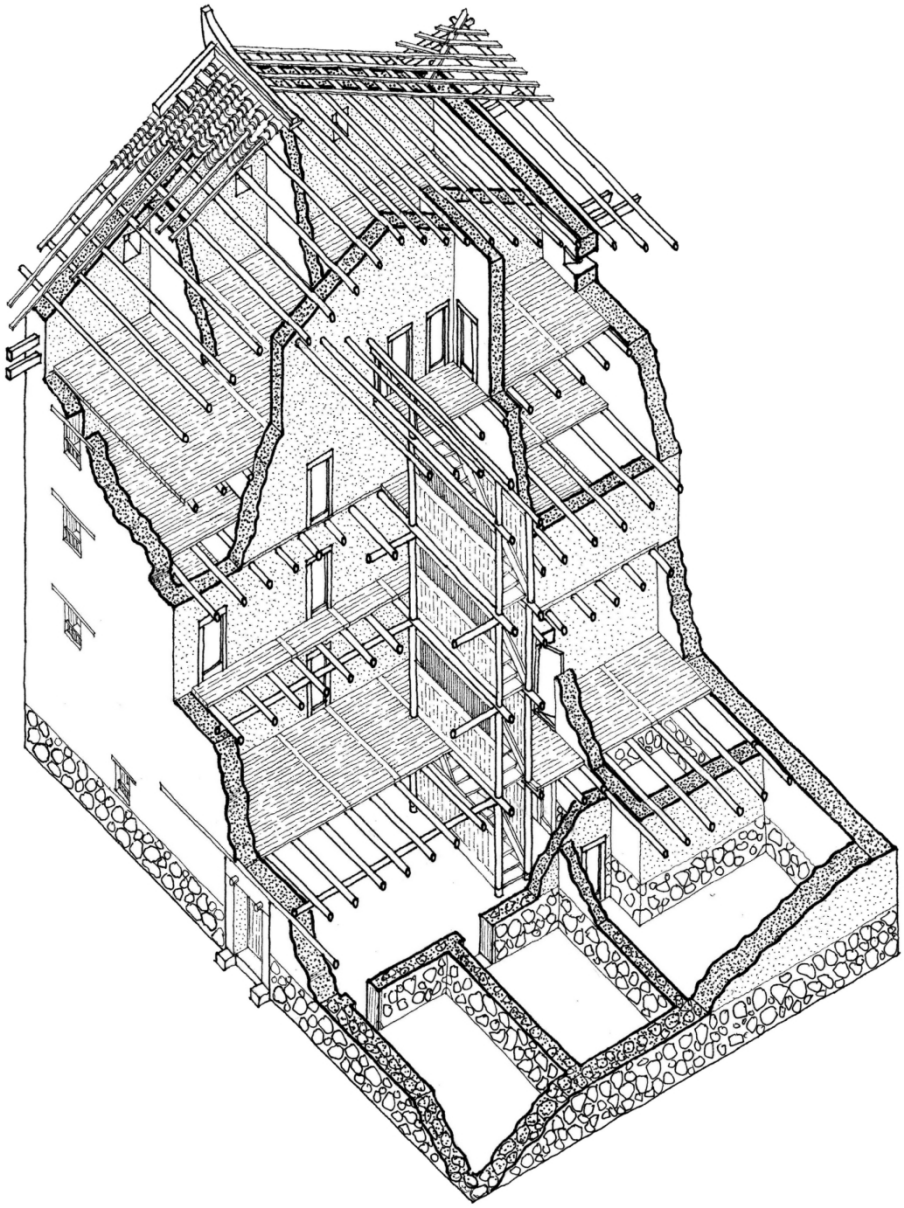
Minnan Wufenglou's Main House Volume



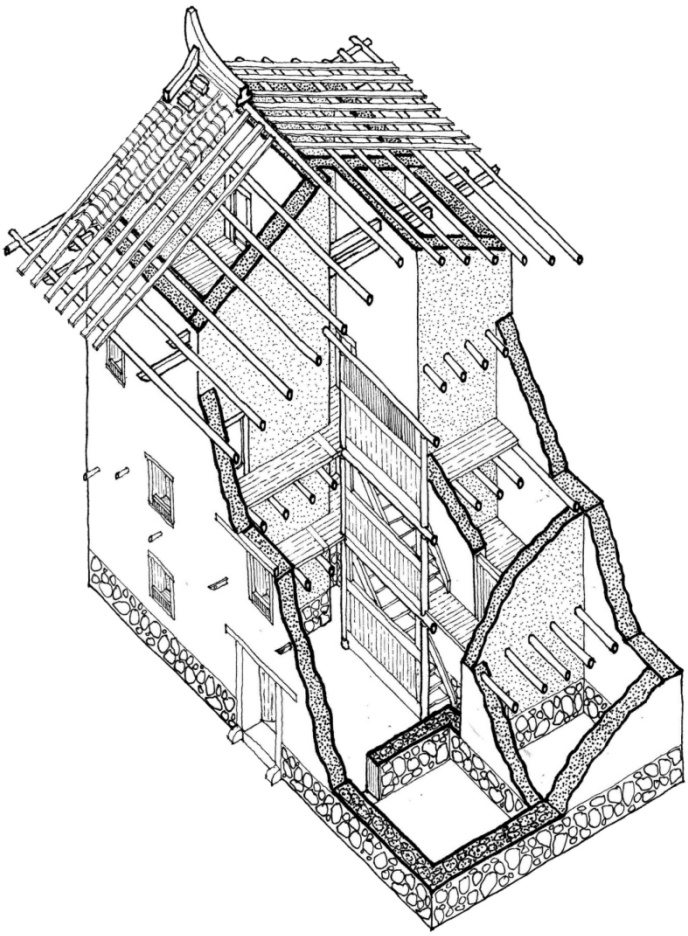
Minnan Wufenglou's Titingjian (Stair Pavilion Room) Volumes



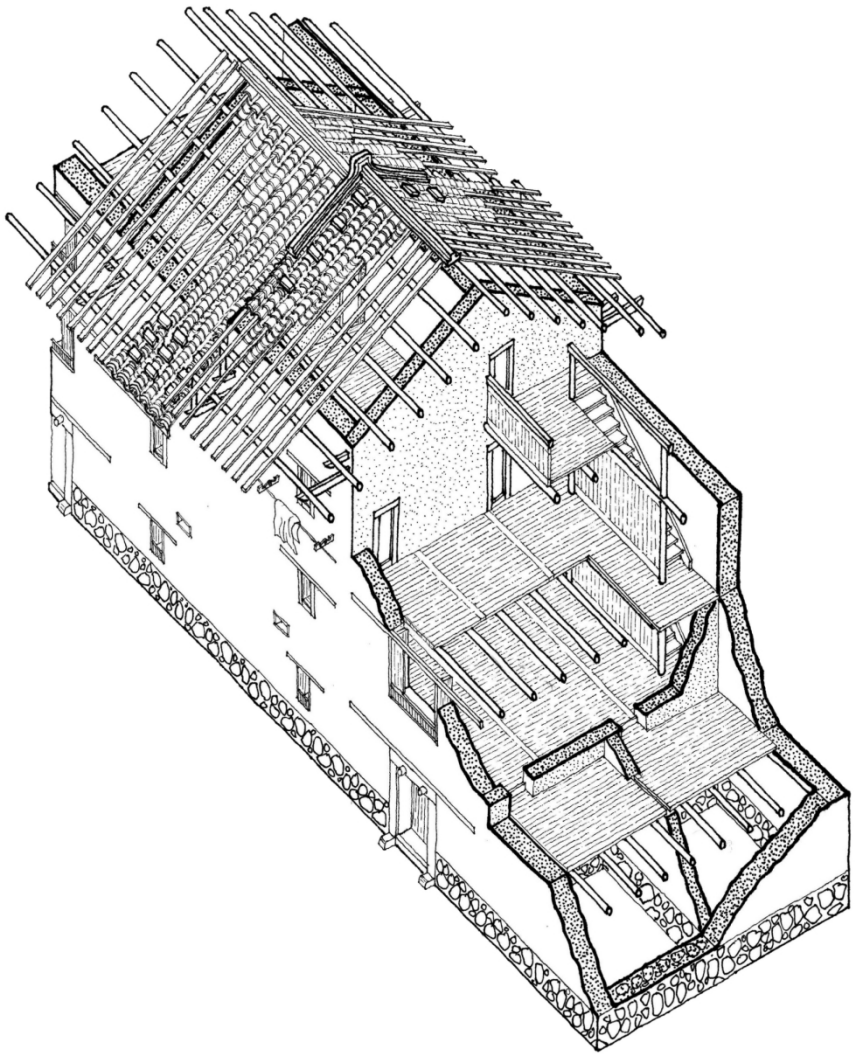
Minnan Wufenglou’s Corner Room Volumes



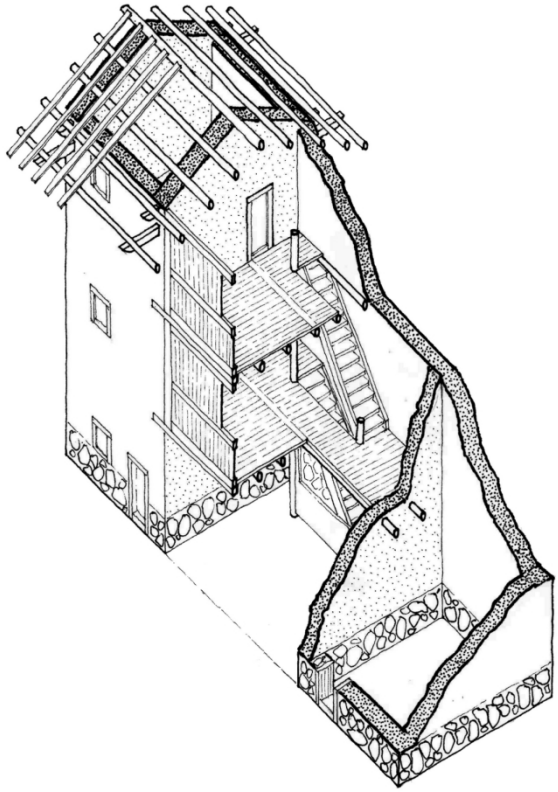
8Jian 1Ting Qijiao Housing Module in Hakka Wufenglou's Volume



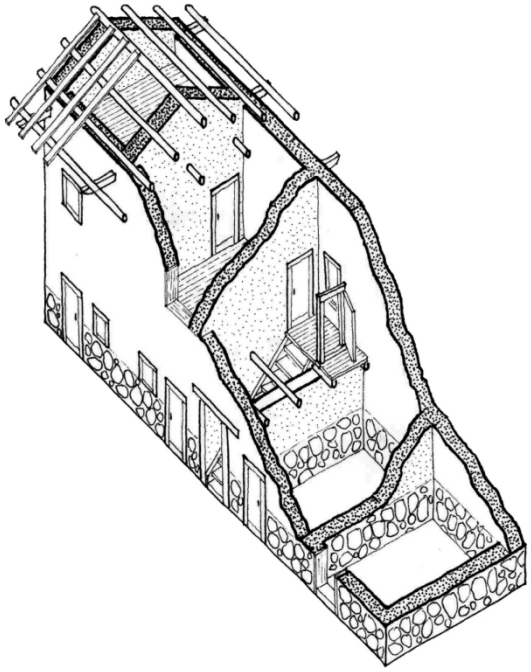
6Jian 1Ting Qijiao Housing Module in Hakka Wufenglou's Volume



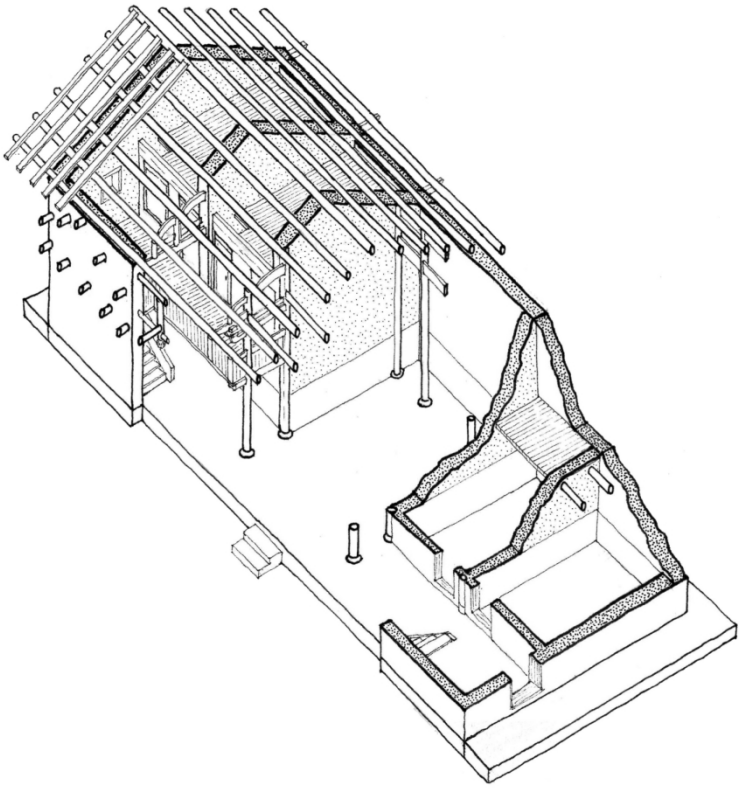
Connected 4Jian 1Ting Qijiao Housing Module in Hakka Wufenglou's Volume



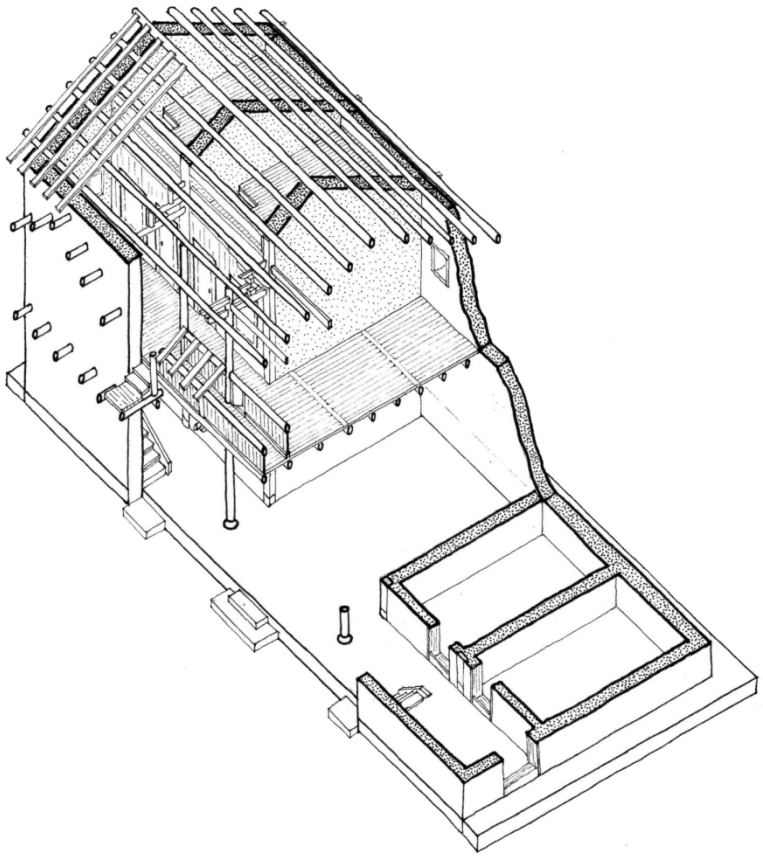
2Jian 1Ting Qijiao Housing Module in Hakka Wufenglou's Volume



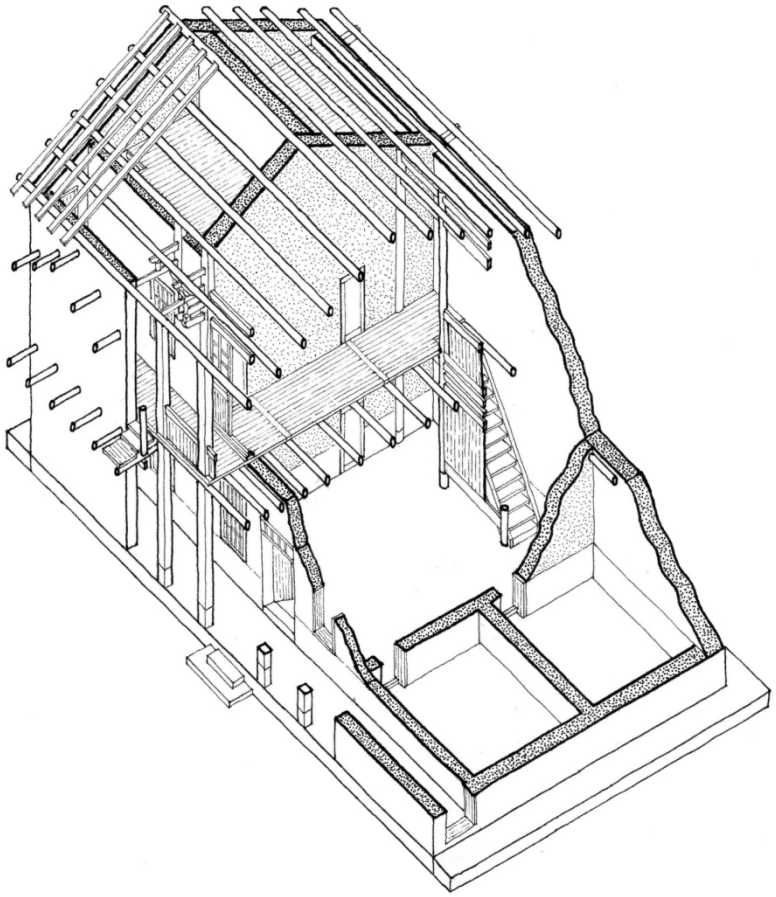
Connected 2Jian Qijiao Housing Module in Hakka Wufenglou's Volume



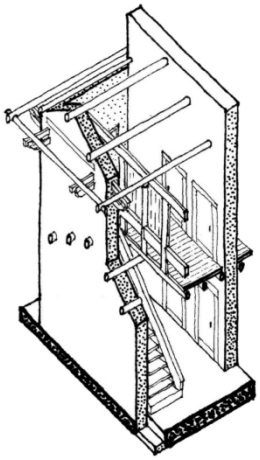
Minnan Wufenglou's Main House, Split Circulation Type



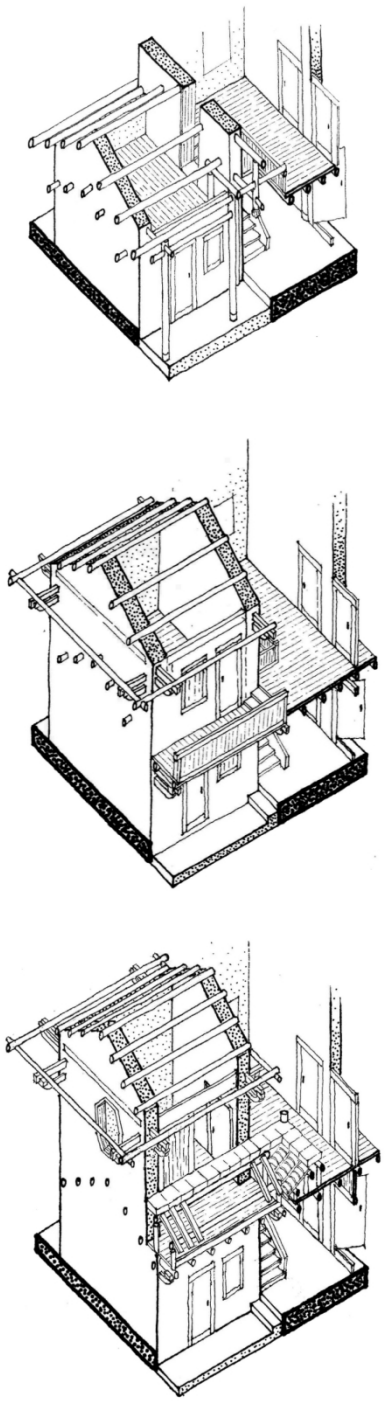
Minnan Wufenglou's Main House, Connected Circulation Type



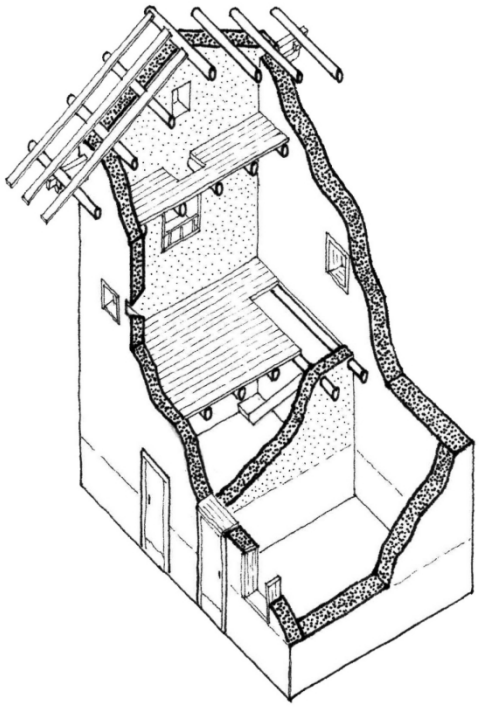
Minnan Wufenglou's Main House, Accumulated Circulation Type



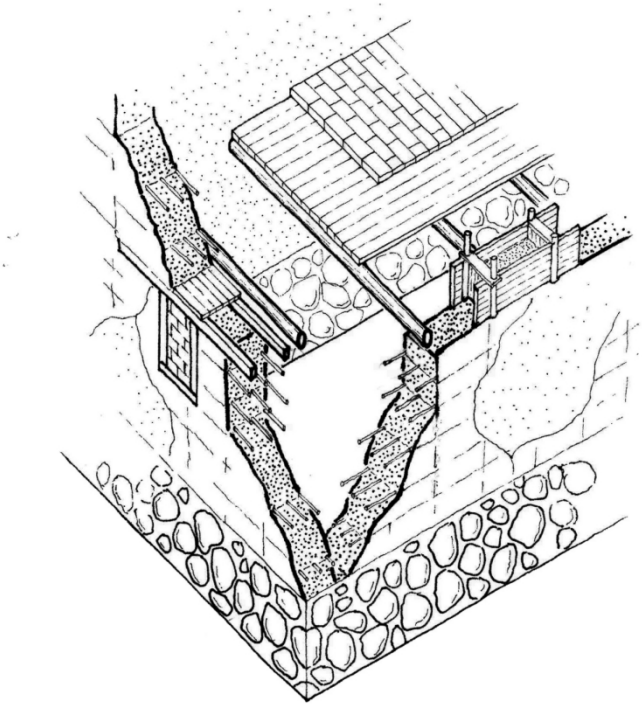
Minnan Wufenglou’s Titingqi (staircase) Volume



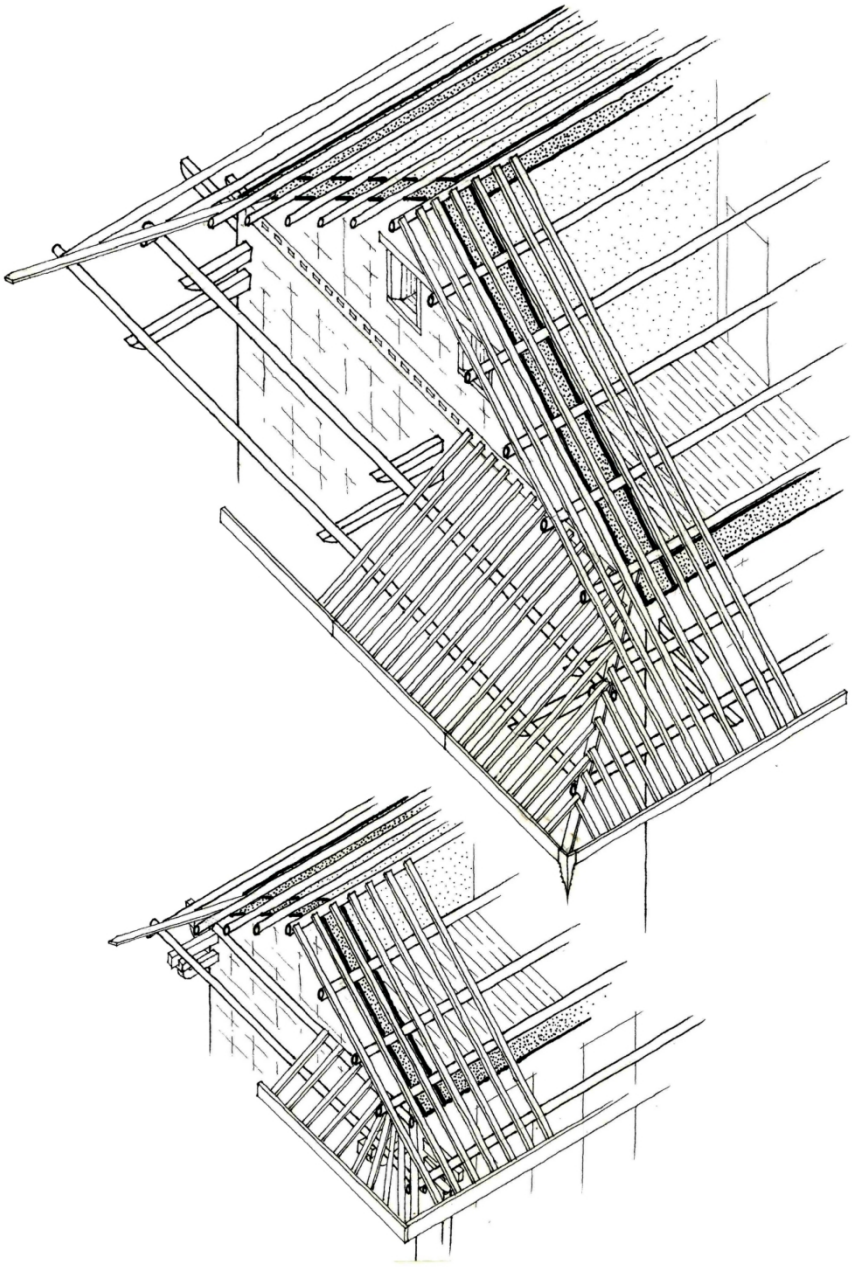
Minnan Wufenglou's Titingjian (Stair-Pavilion Room) Volume, 3 Types.



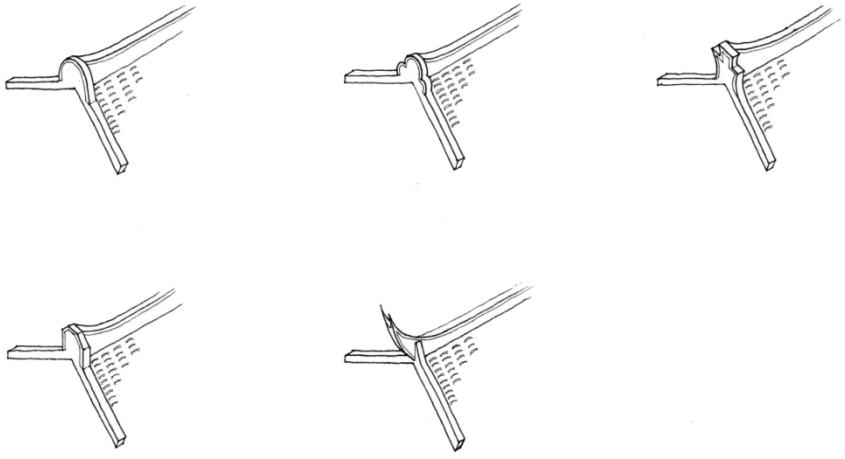
Minnan Wufenglou's Chonglou (Watchtower) Structure



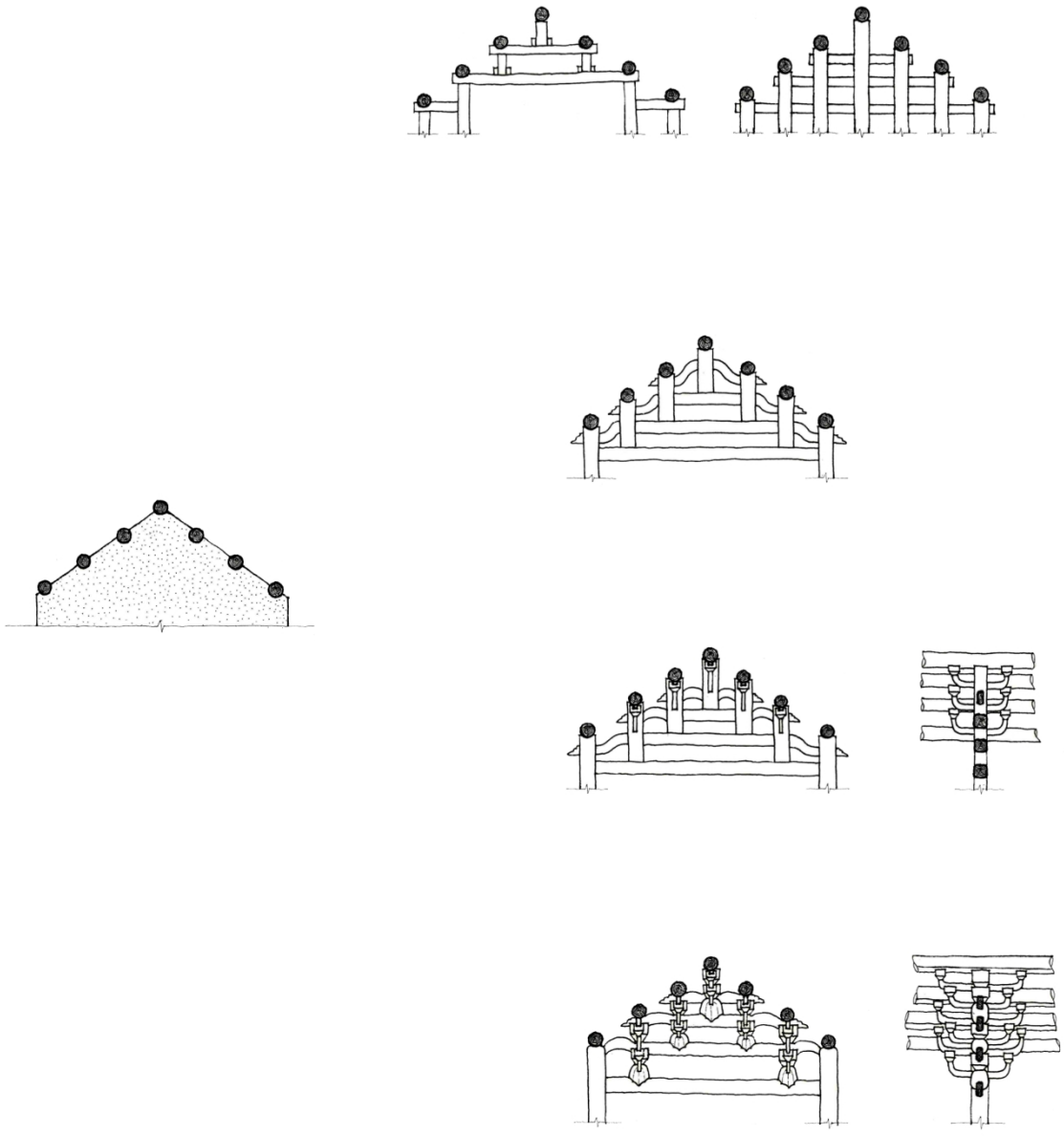
Wufenglou’s Rammed Earth Wall Structure



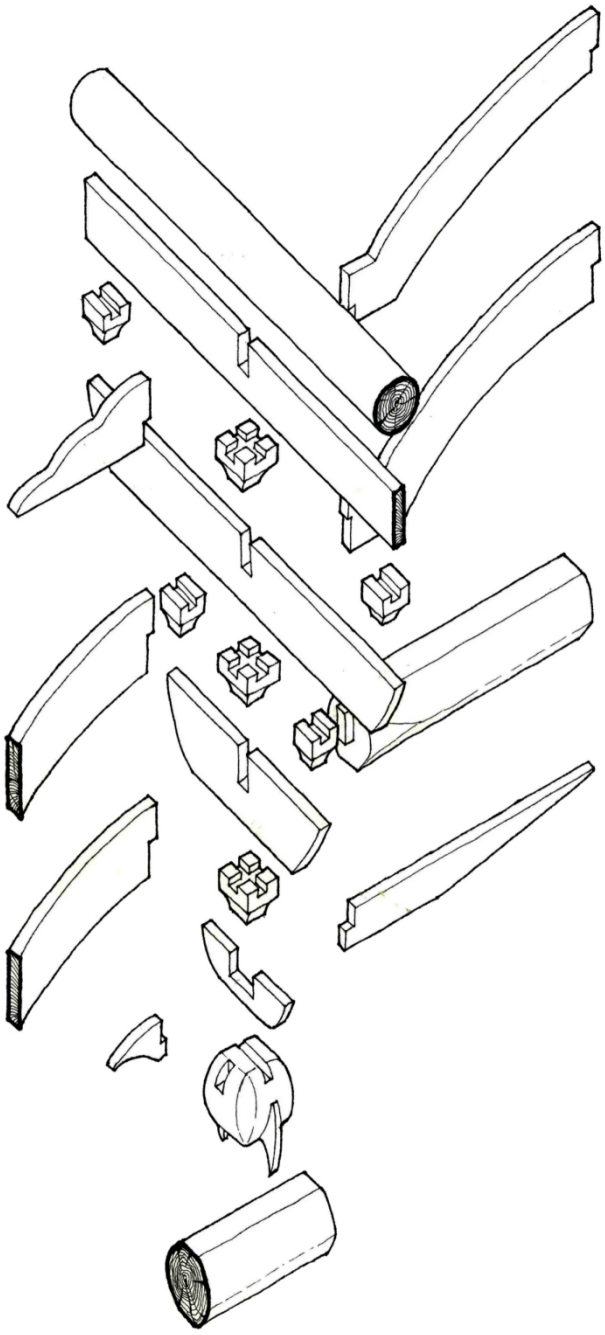
Hakka (up) and Minnan (down) Wufenglou's Gable Roof Structure



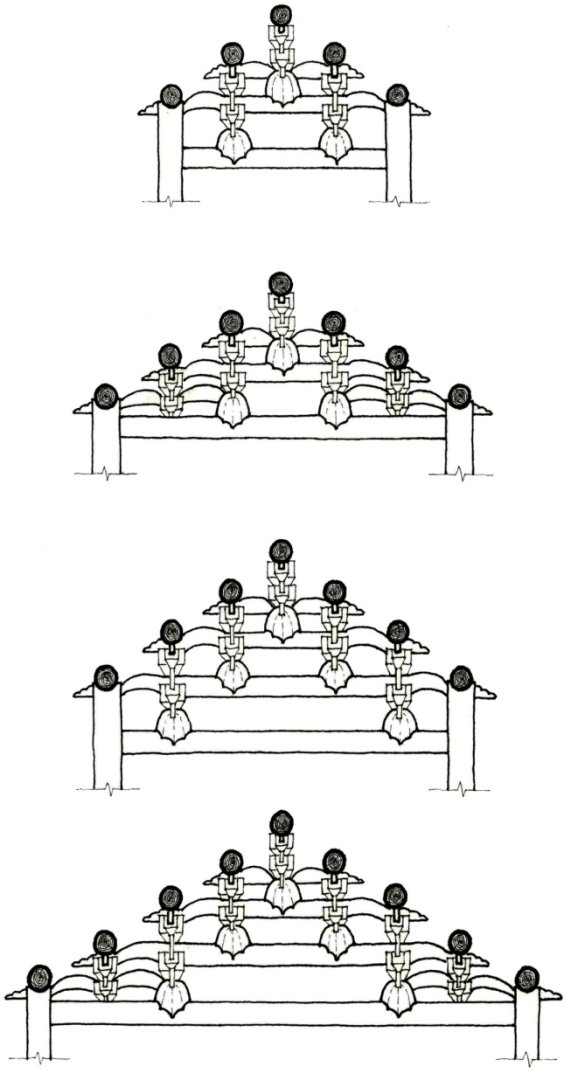
Wufenglou's Roof Ridges of Five Elements



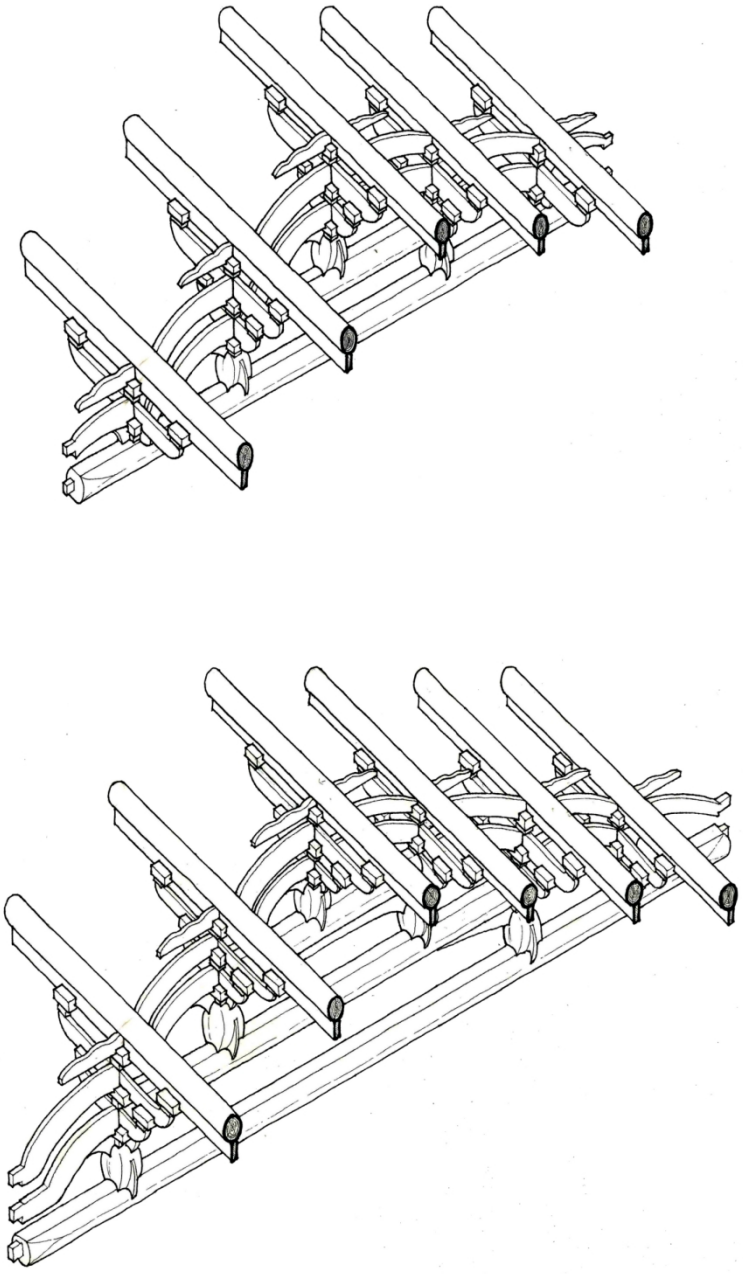
Wufenglou's Different Truss Types



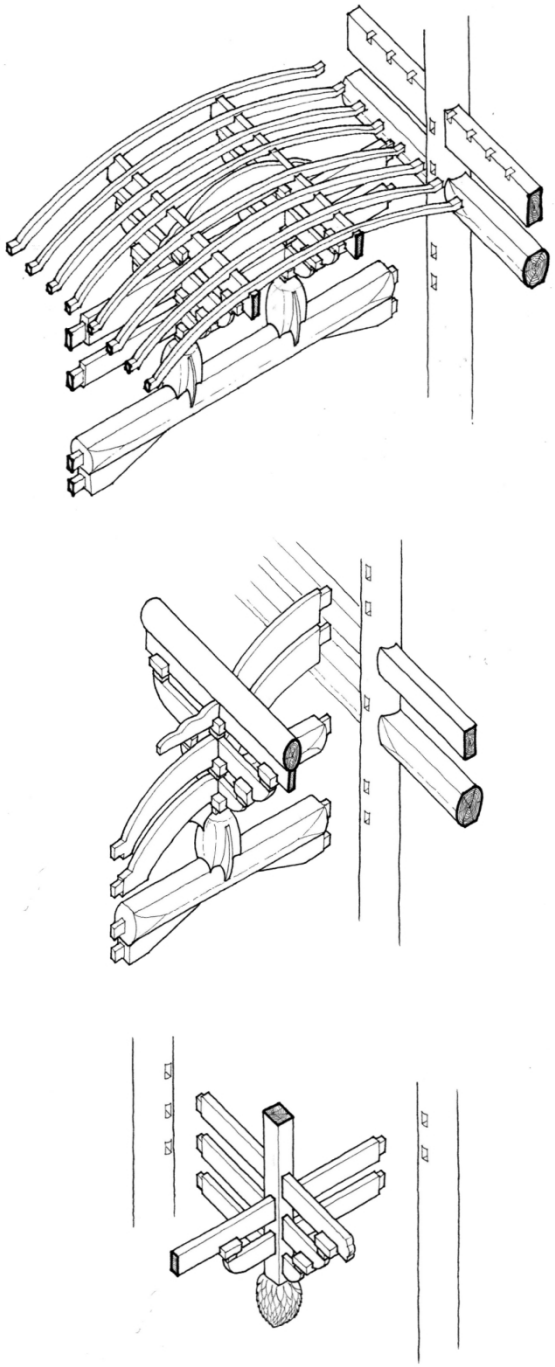
Wufenglou's "Diedou" Structure



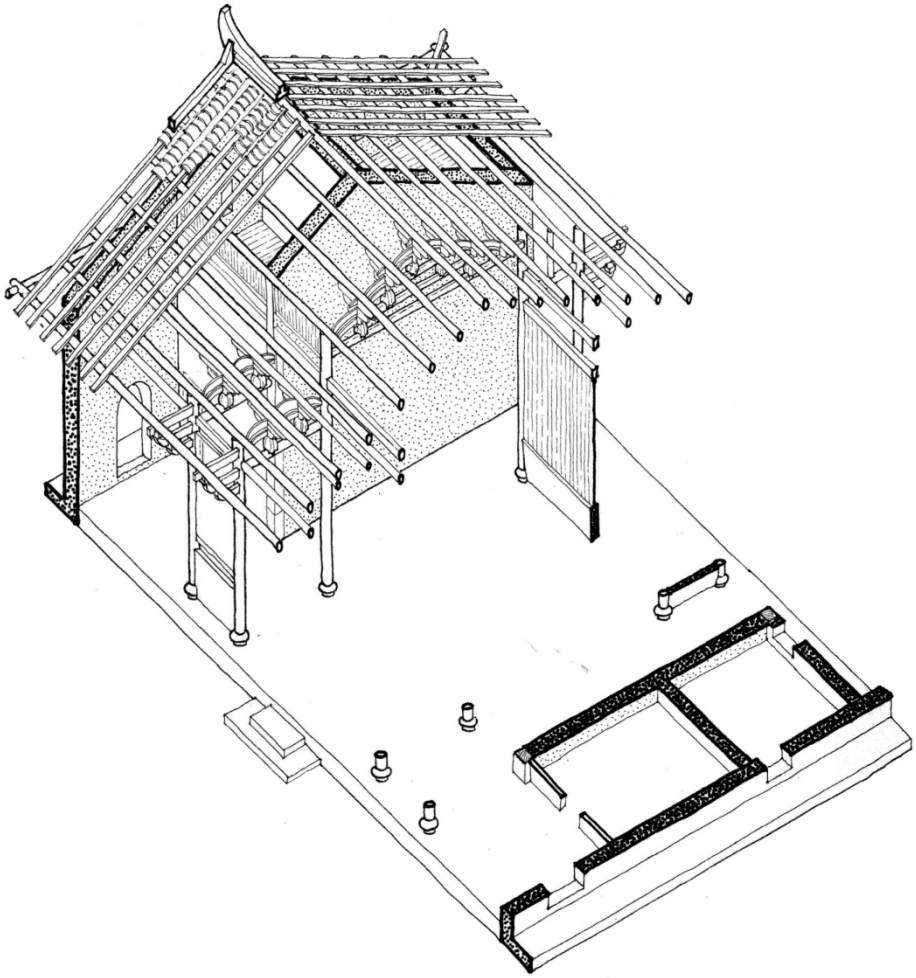
Wufenglou's "Yizhuzao" Spatial Expansion Methods by Changing Pillar's Posts



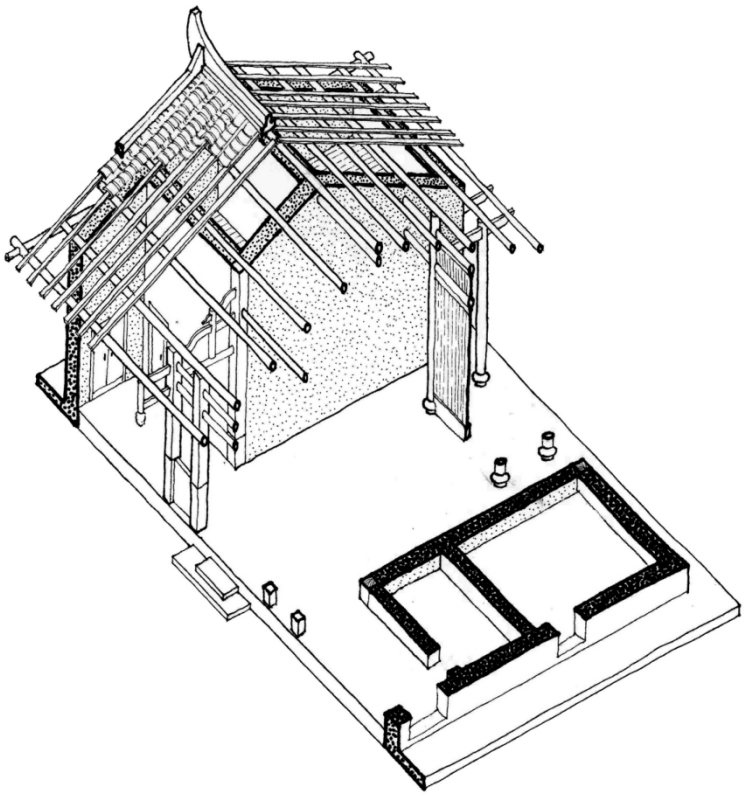
Wufenglou's "2Tong 3Gua" and "3Tong 5Gua" Structure with "Yizhuzao"



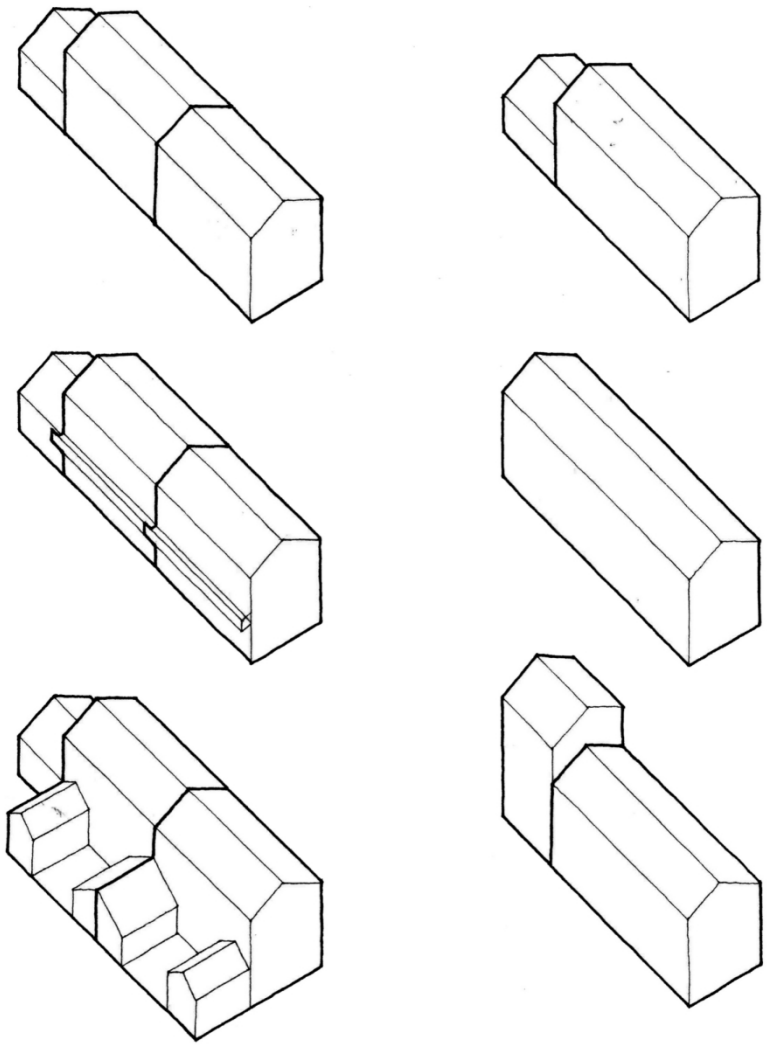
Wufenglou's Timber Structure Type 1, 2, 3



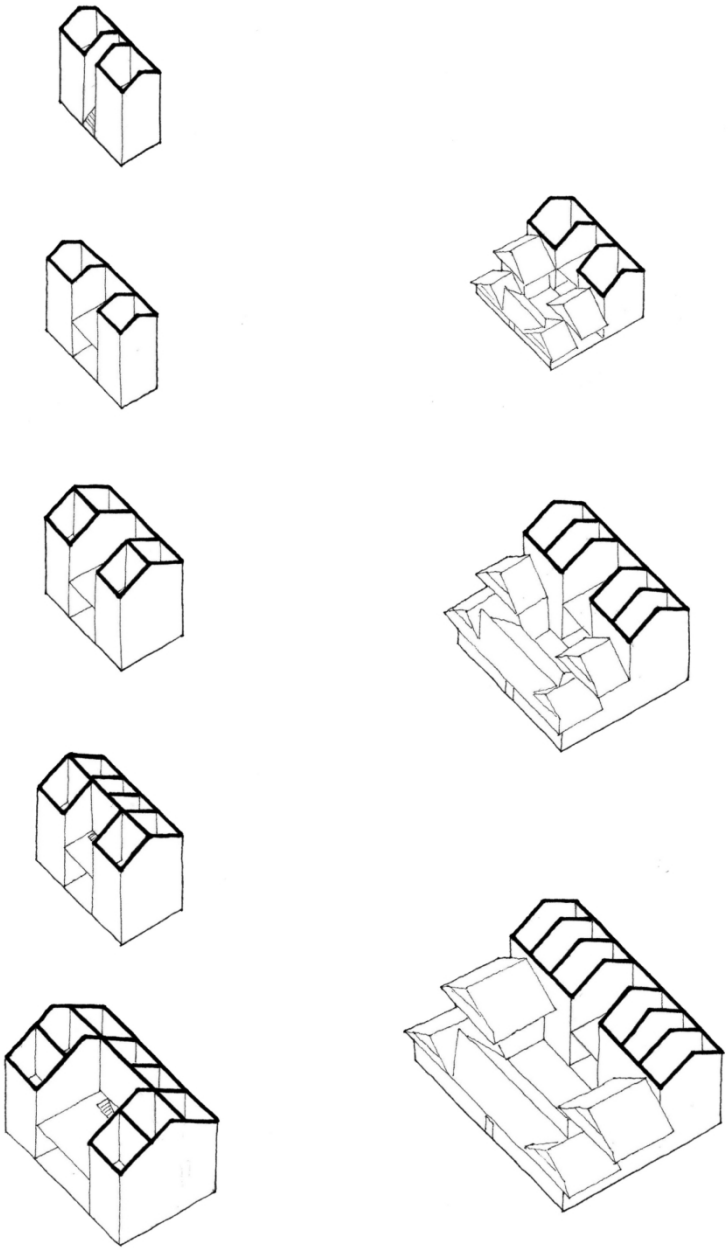
Wufenglou's "4 Point Gold Pillars" System



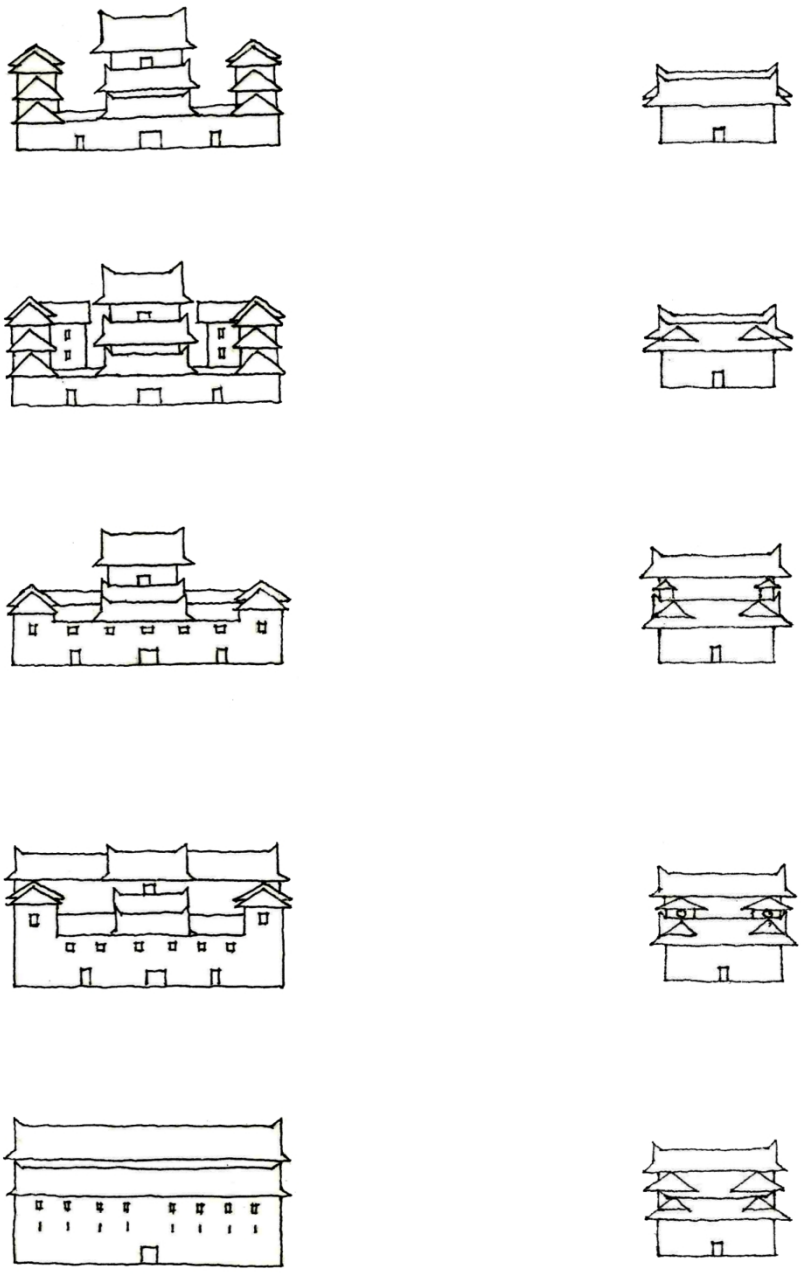
Wufenglou's "False 4 Point Gold Pillars" System



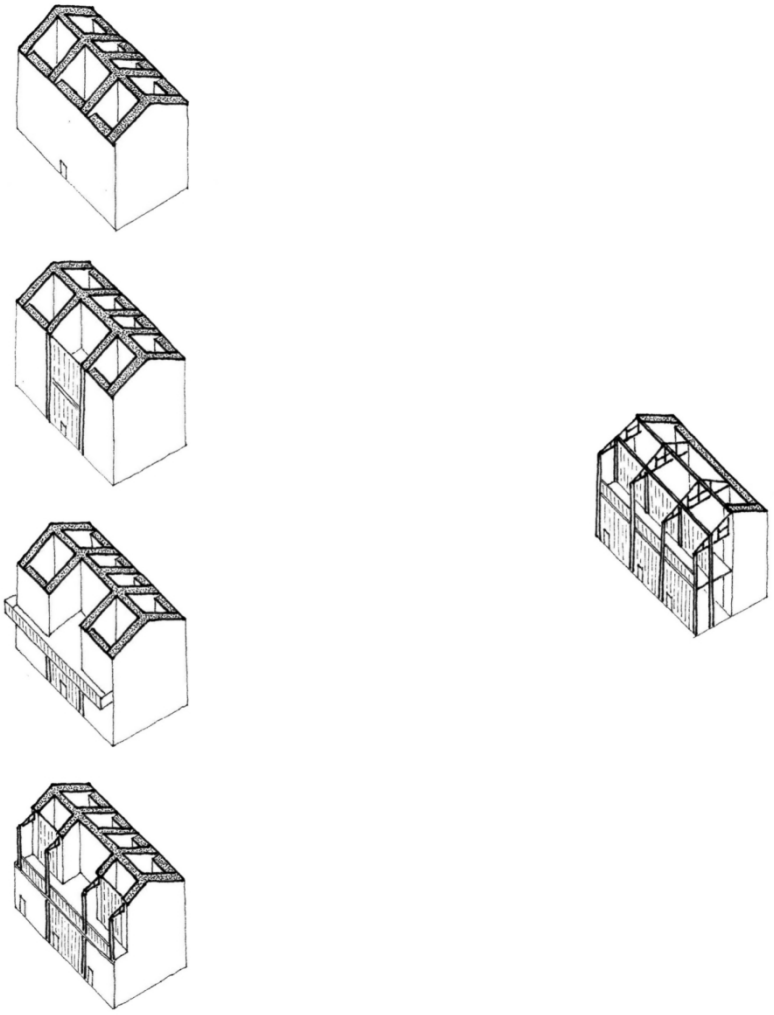
Wufenglou's Different Types of Side Wings



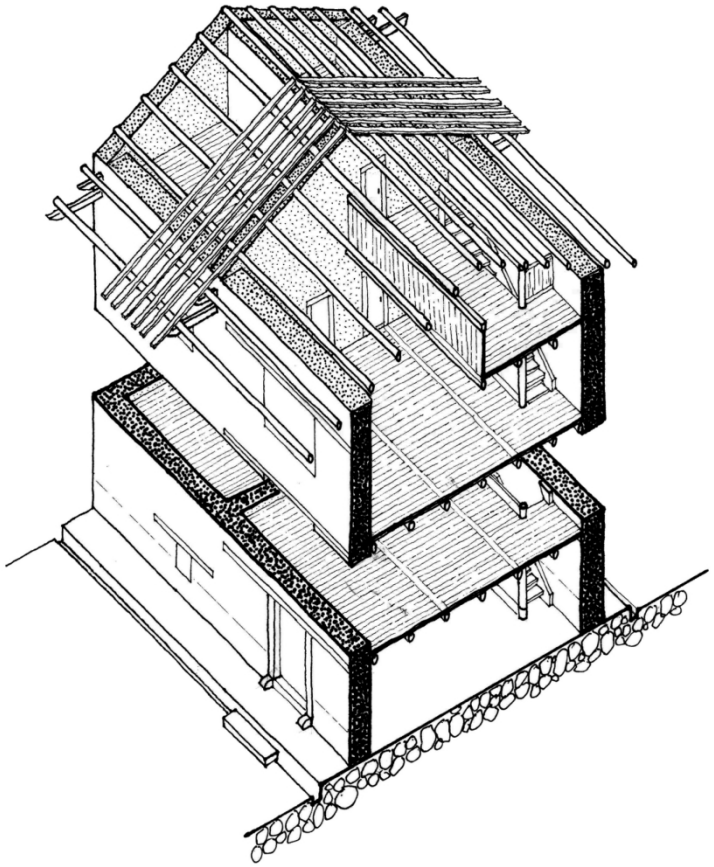
Hakka (left) and Minnan (right) Wufenglou's Housing Modules



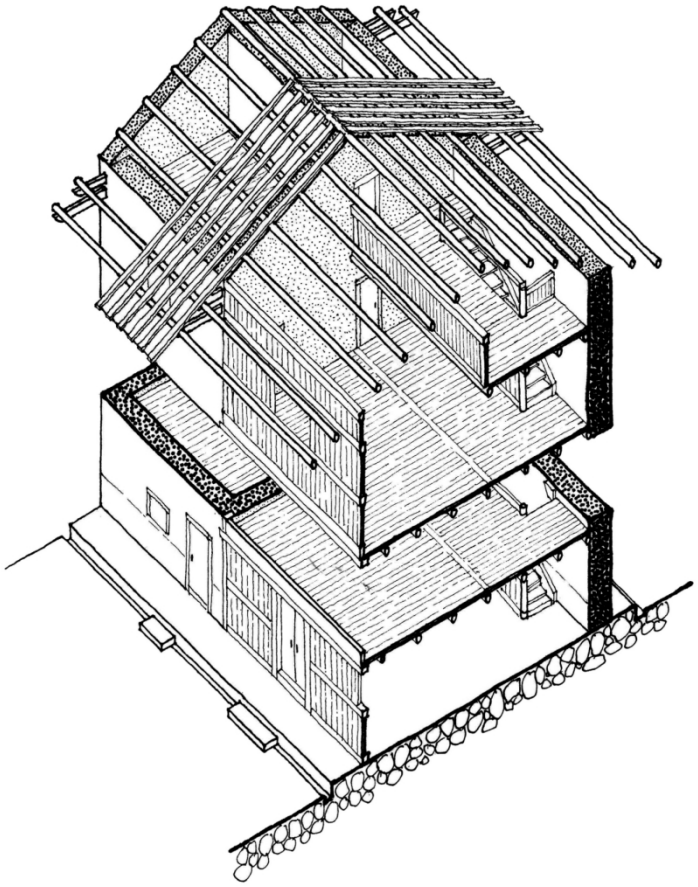
Hakka & Minnan Wufenglou's Variations in Facade



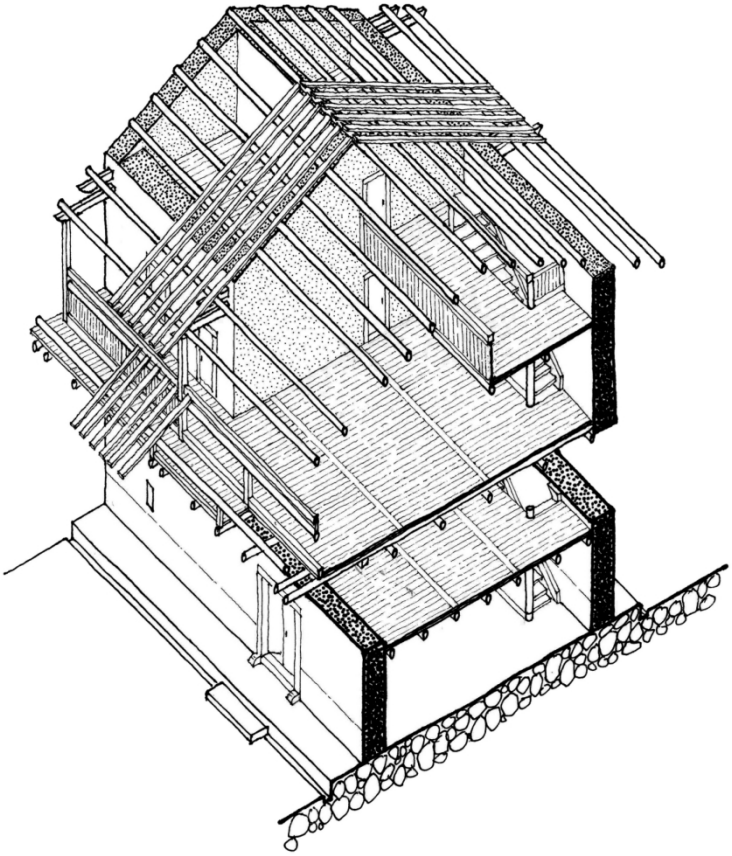
Wufenglou and Tulou's Differences in the Load Bearing System



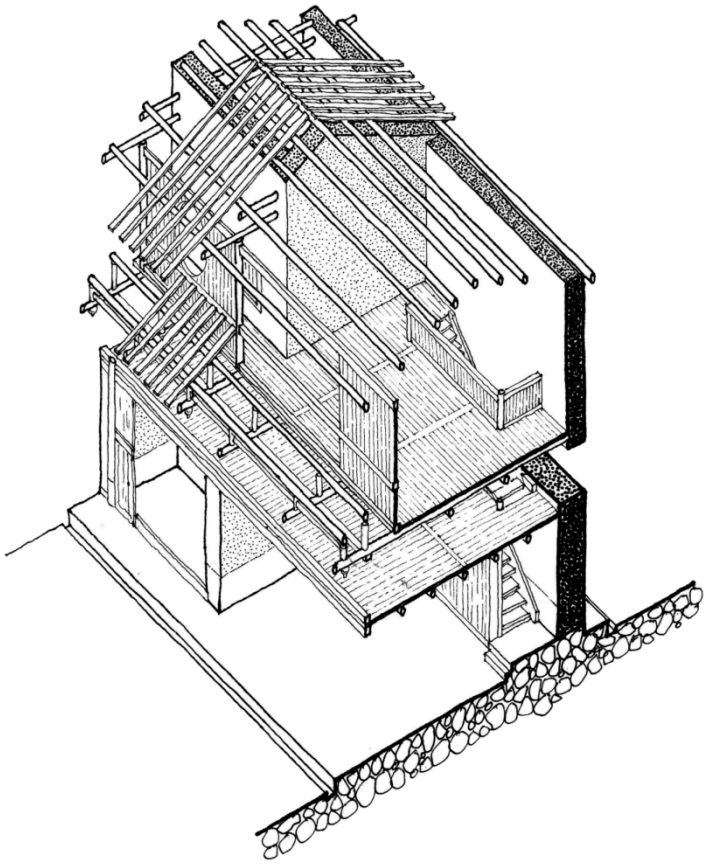
Hakka Wufenglou's Rammed Earth Load Bearing System Type 1



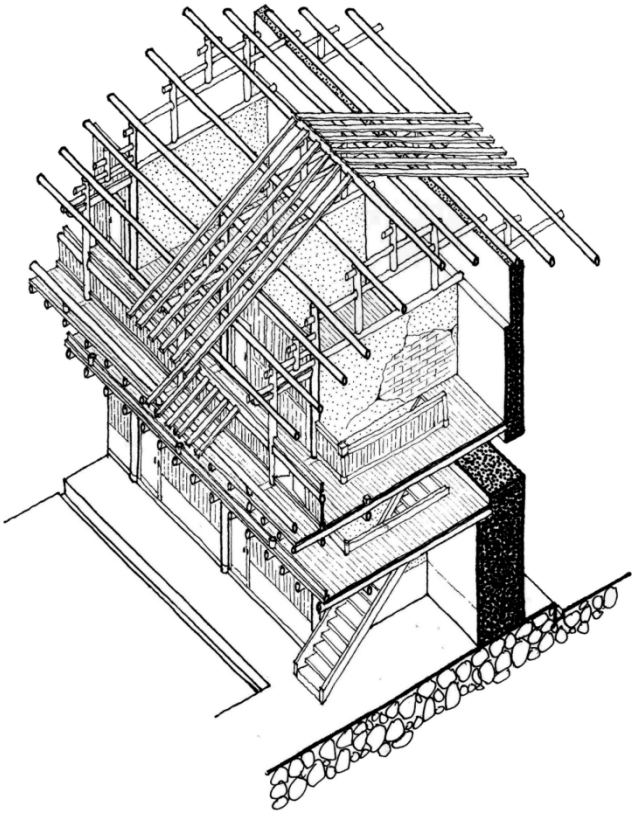
Hakka Wufenglou's Rammed Earth Load Bearing System Type 2



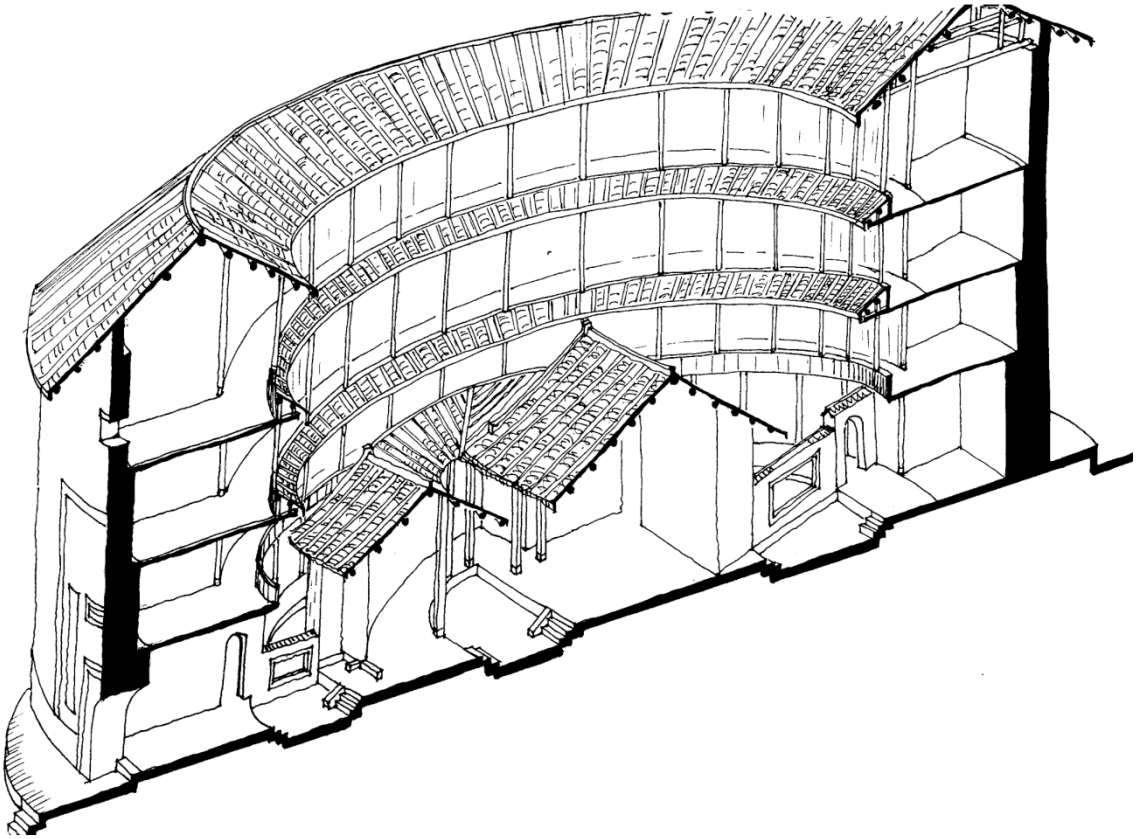
Hakka Wufenglou's Rammed Earth Load Bearing System Type 3



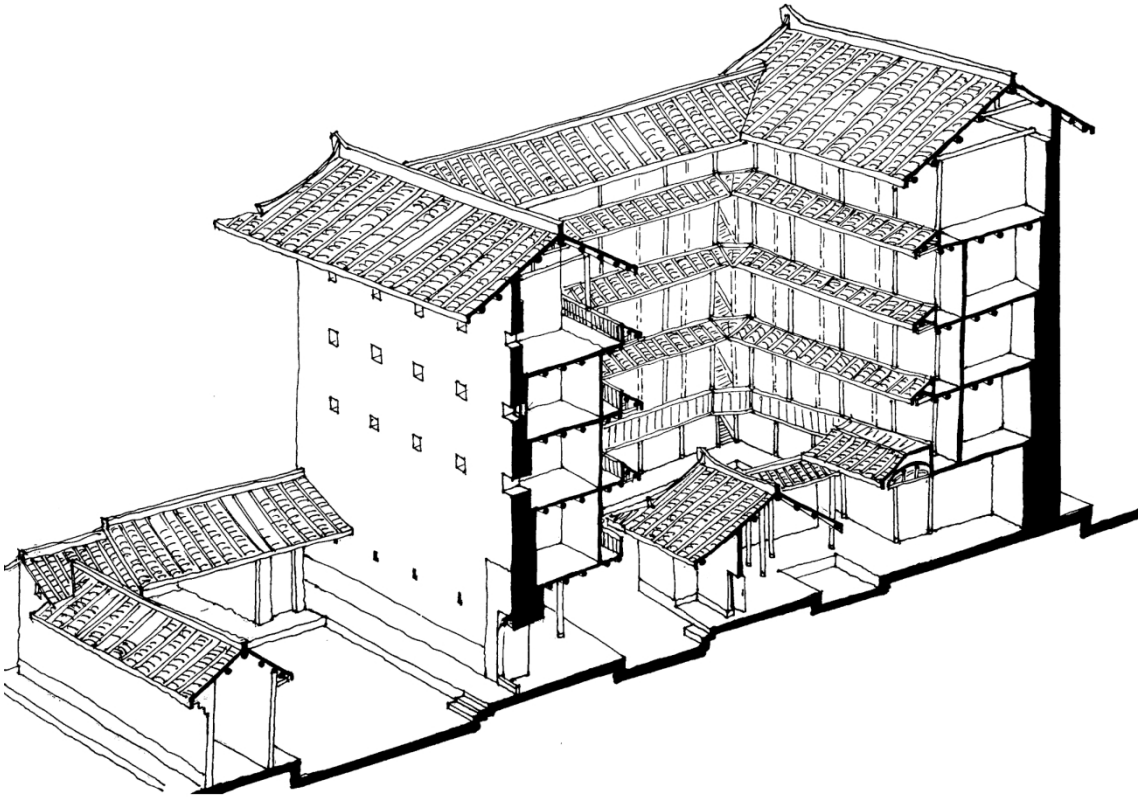
Hakka Wufenglou's Rammed Earth Load Bearing System Type 4



Hakka Tulou's Rammed Earth Load Bearing System Type 1

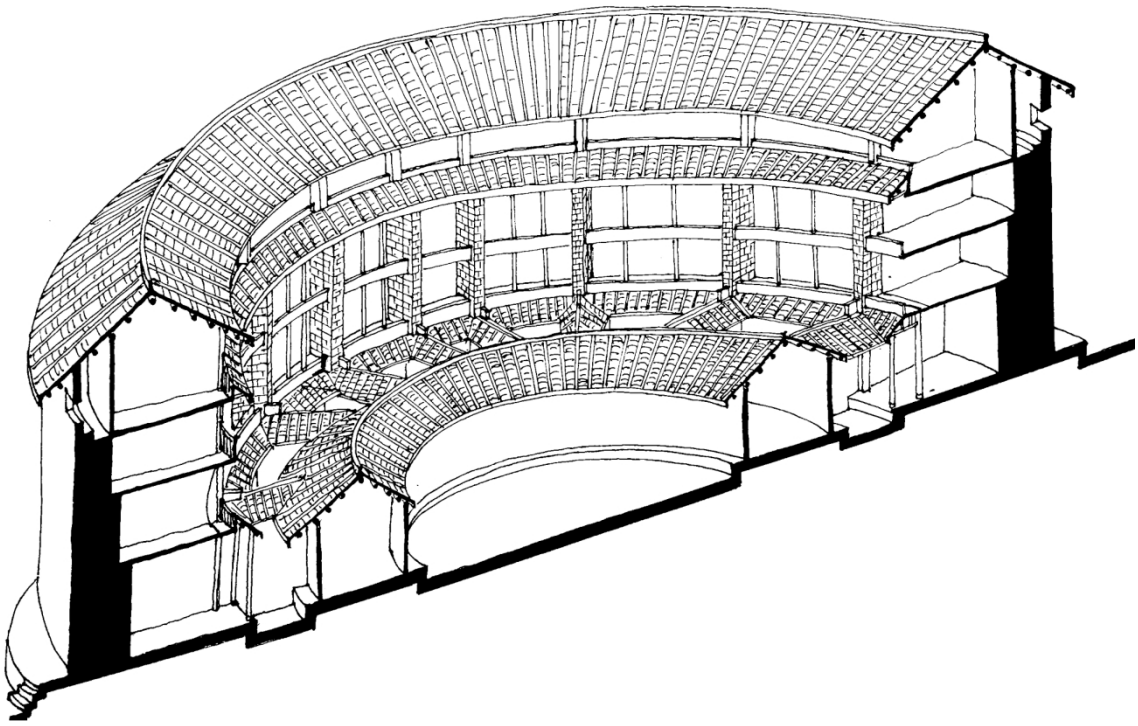


Hakka Tulou's Corridor Type Section 1

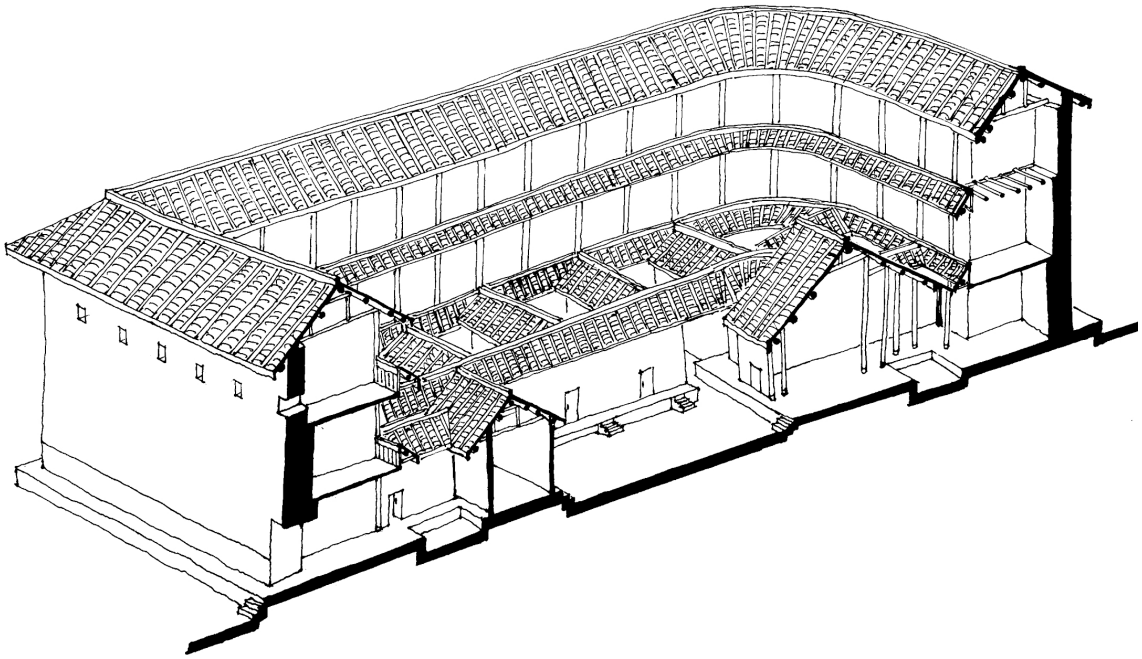


Hakka Tulou’s Corridor Type Section 2

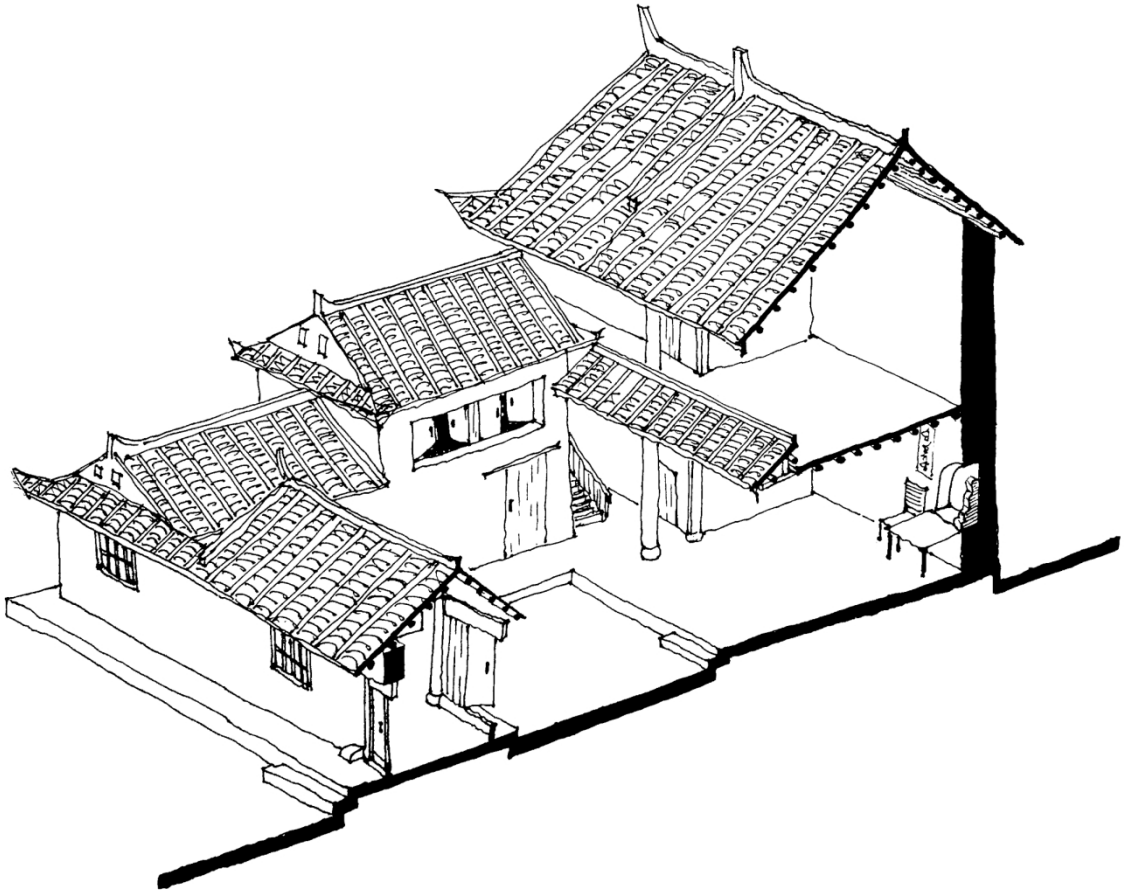
Hakka Wufenglou's Section



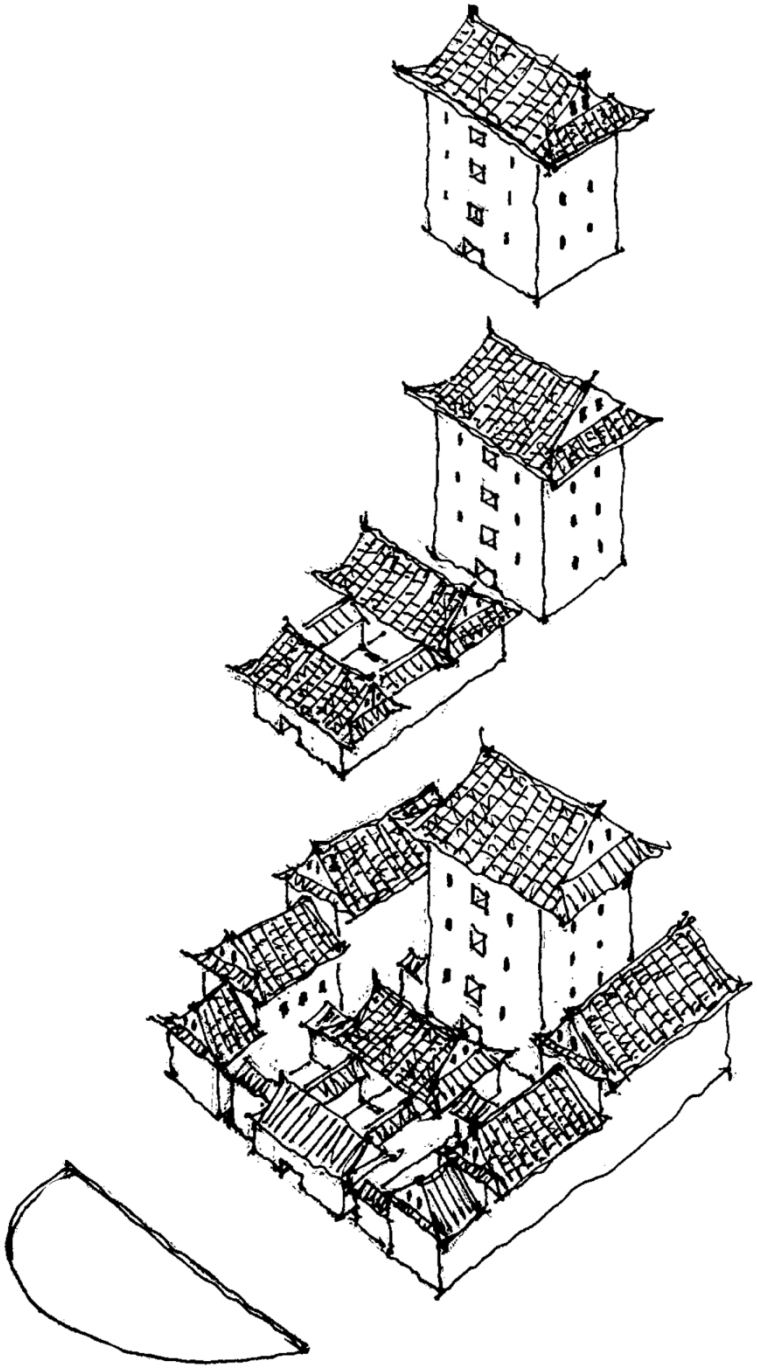
Minnan Tulou's Unit Type Section 1



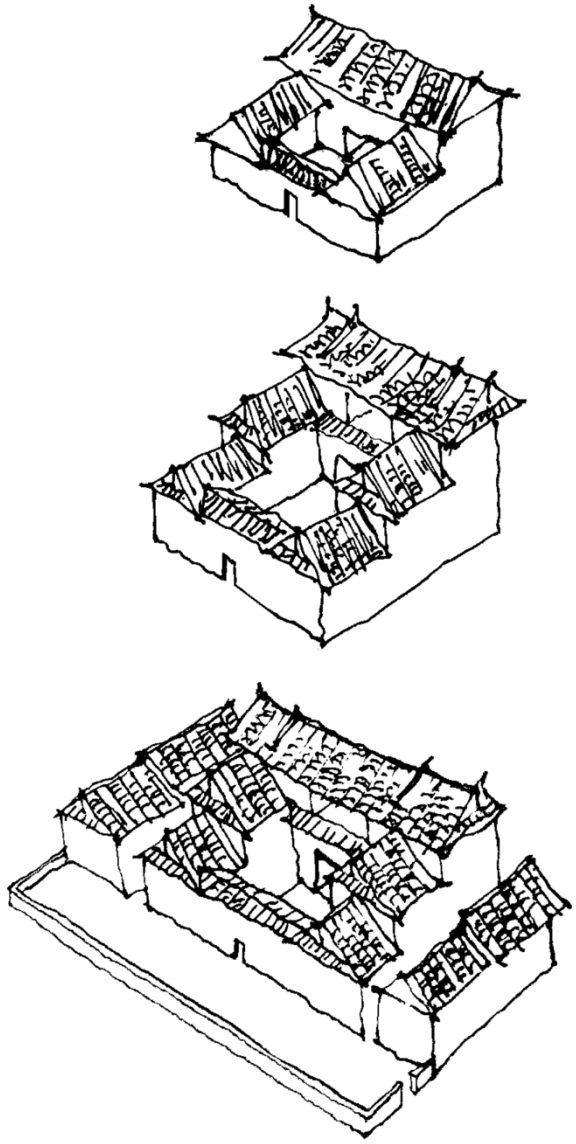
Minnan Tulou's Unit Type Section 2



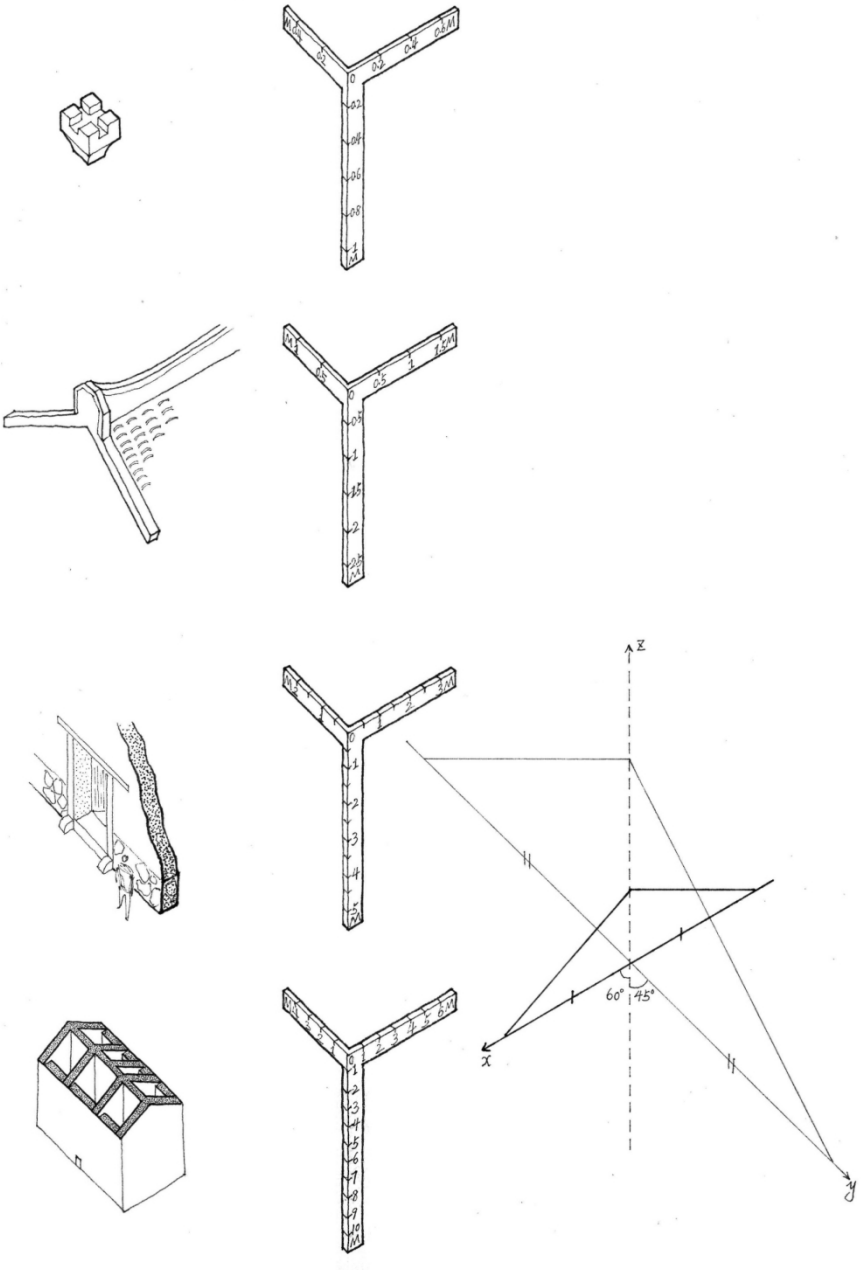
Minnan Wufenglou’s Section



Hakka Wufenglou's Conceptional Volume Combination

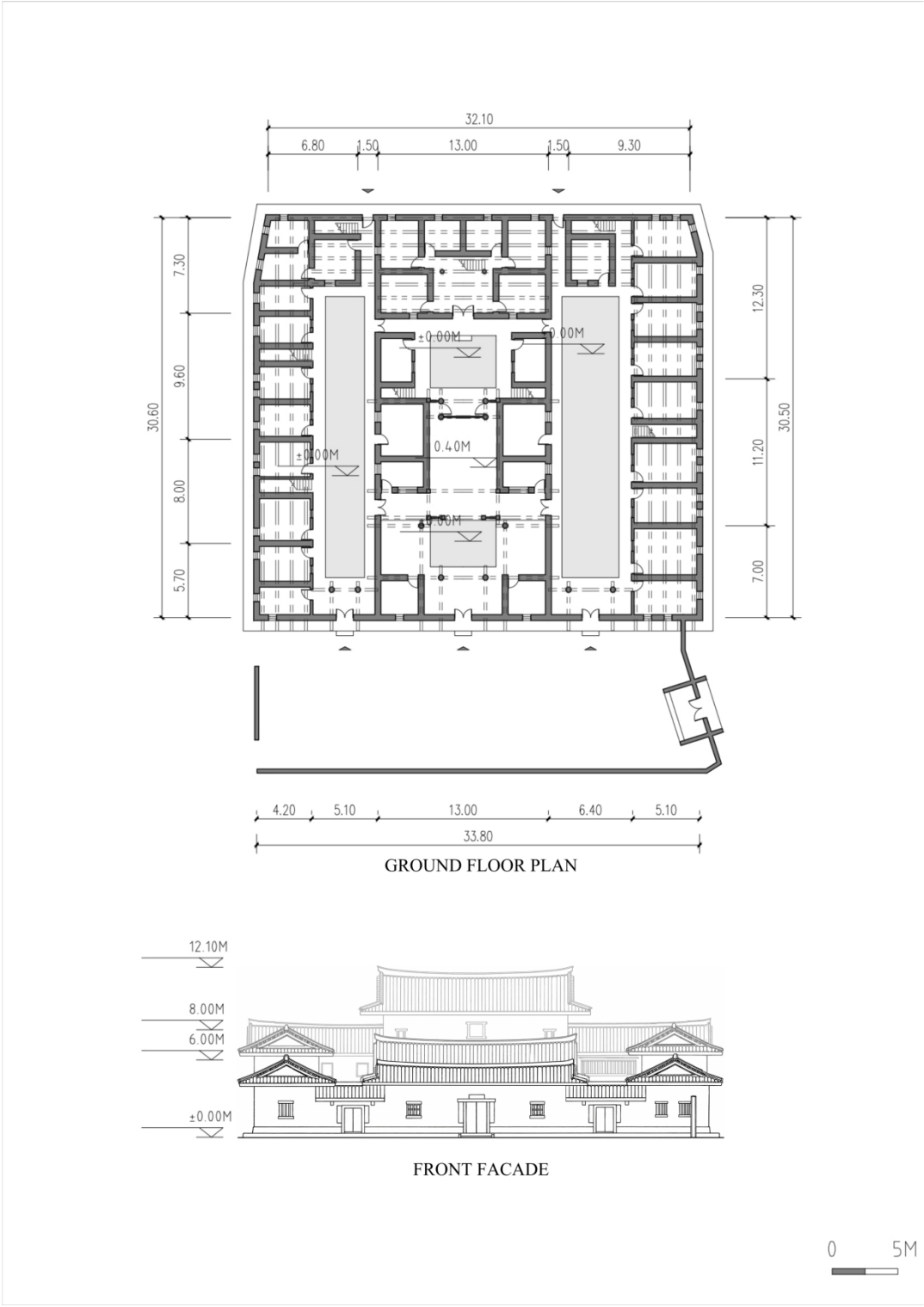


Minnan Wufenglou's Conceptional Volume Combination

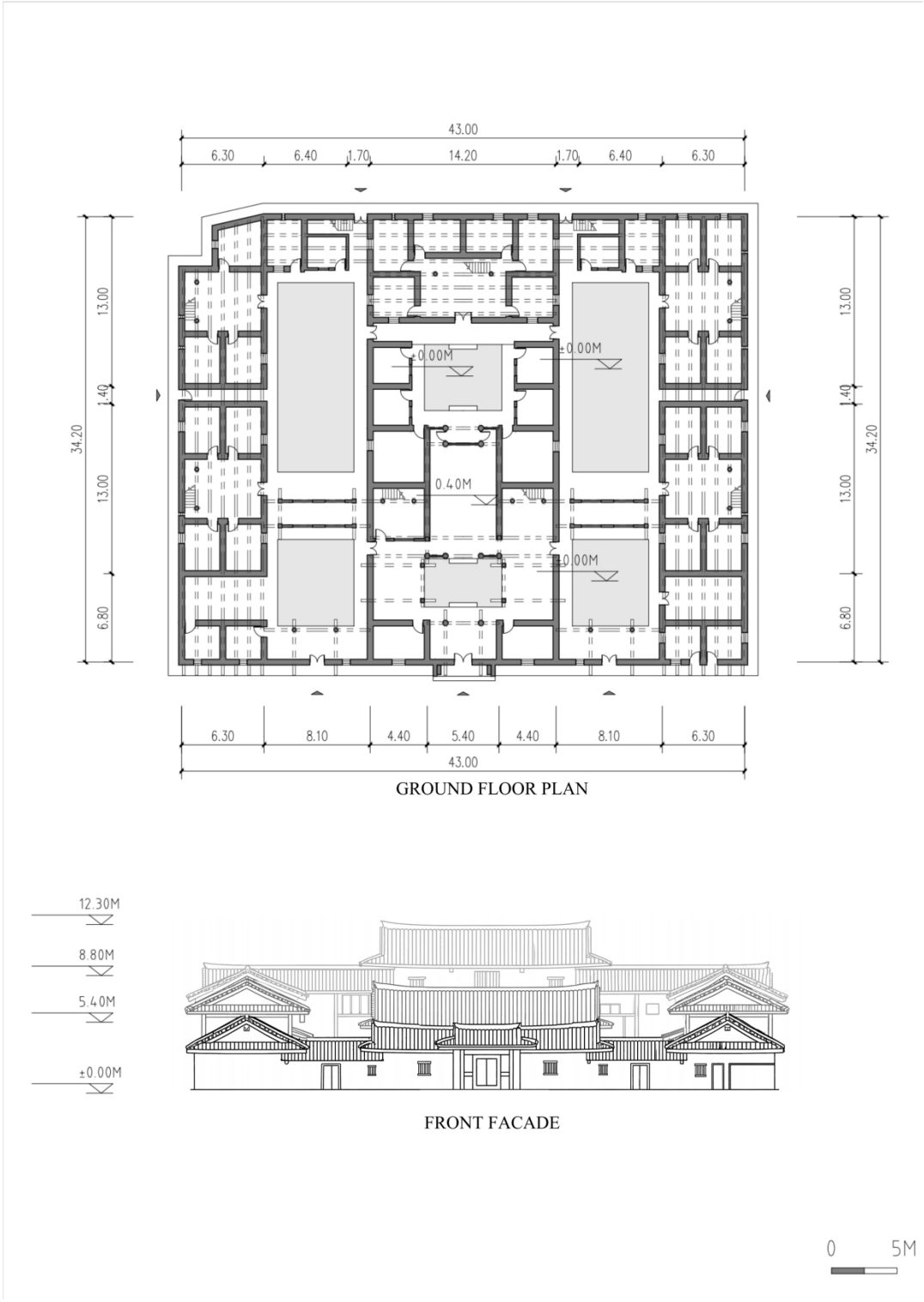


Scale Representatives of the Hand-Drawn Schemes

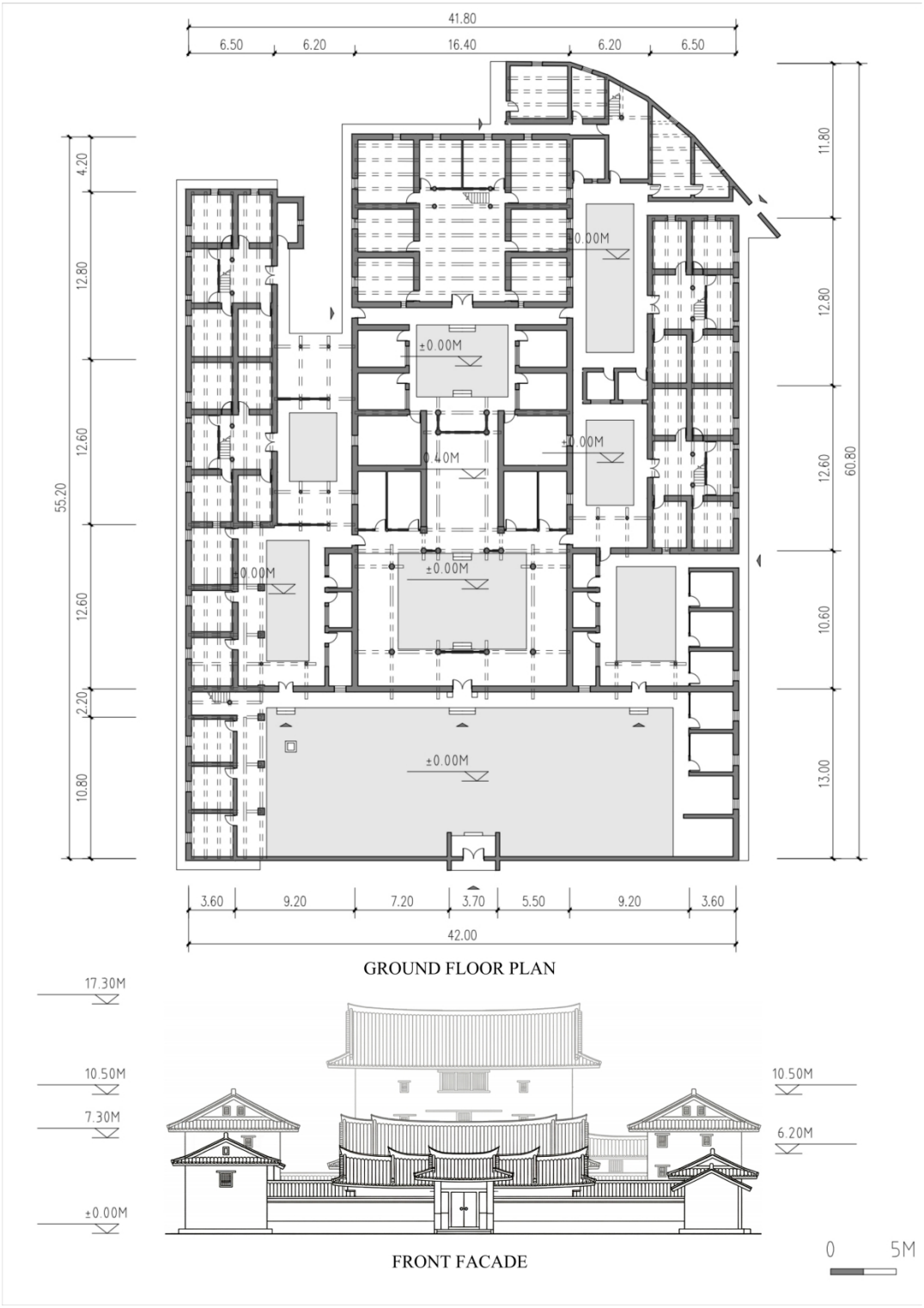
3. Self-Mappings



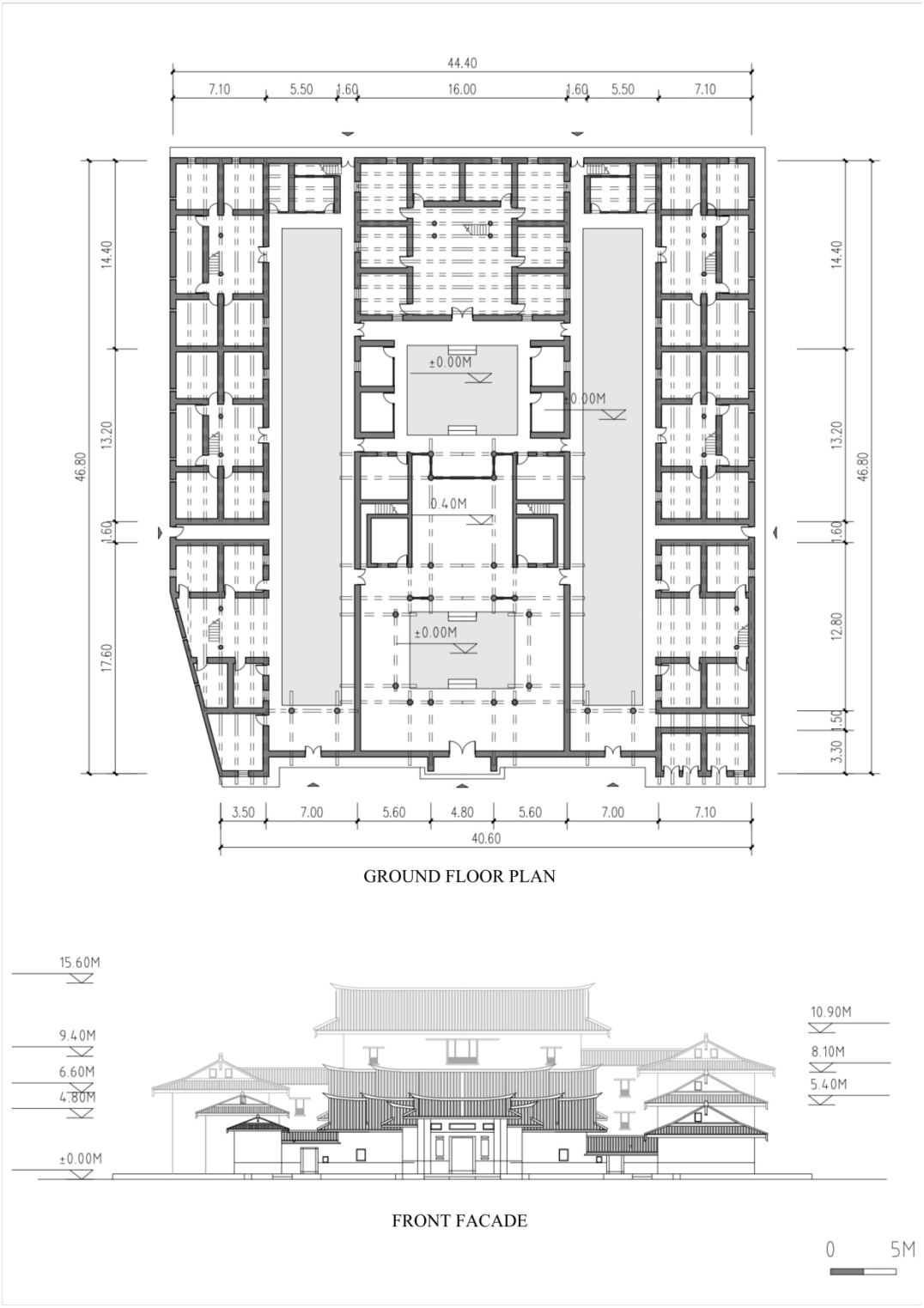
Mapping 1. Yaoyuanlou (Hakka Wufenglou). Ground Floor Plan & Front Facade



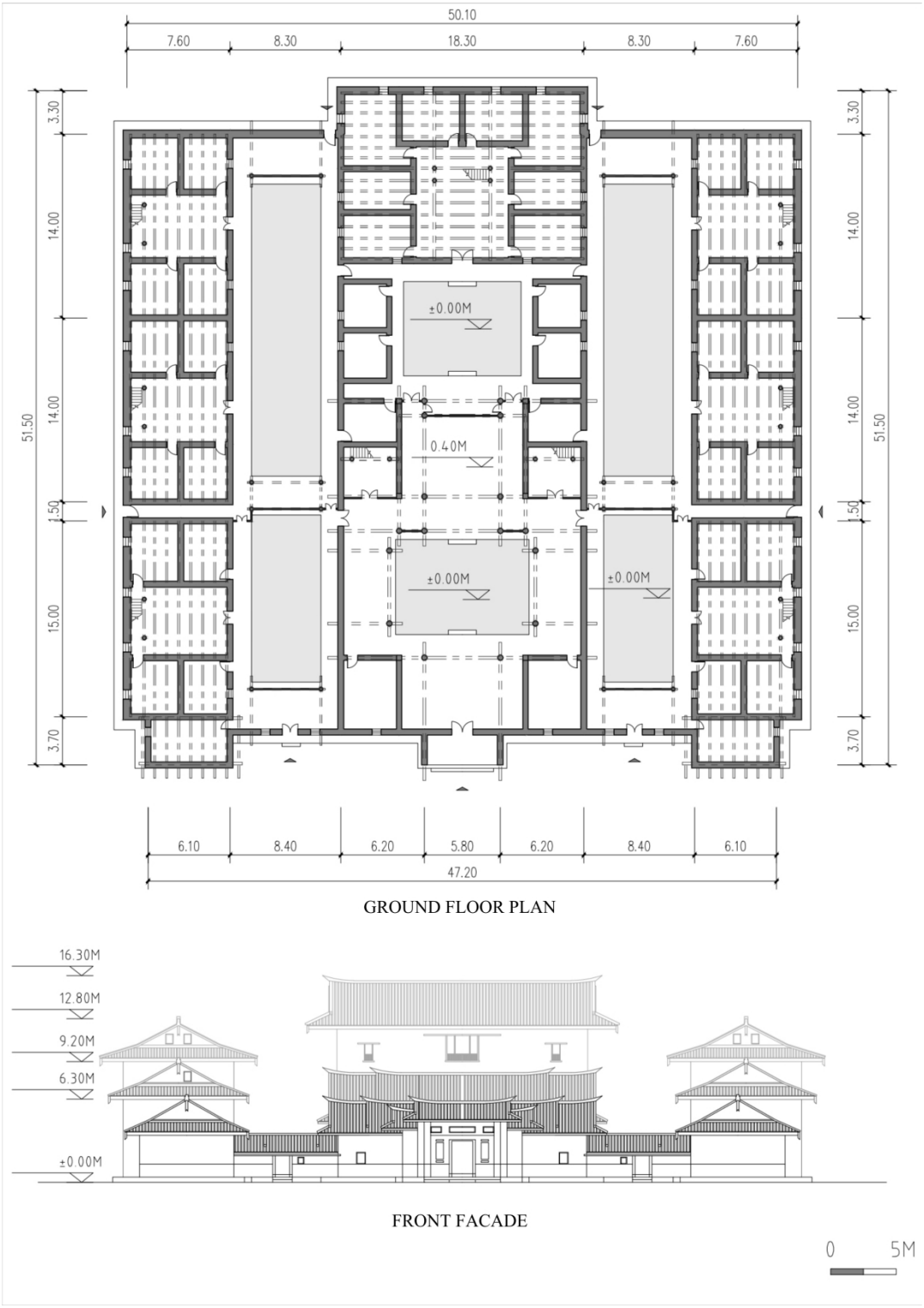
Mapping 2. Huaichuntang (Hakka Wufenglou).Ground Floor Plan & Front Facade



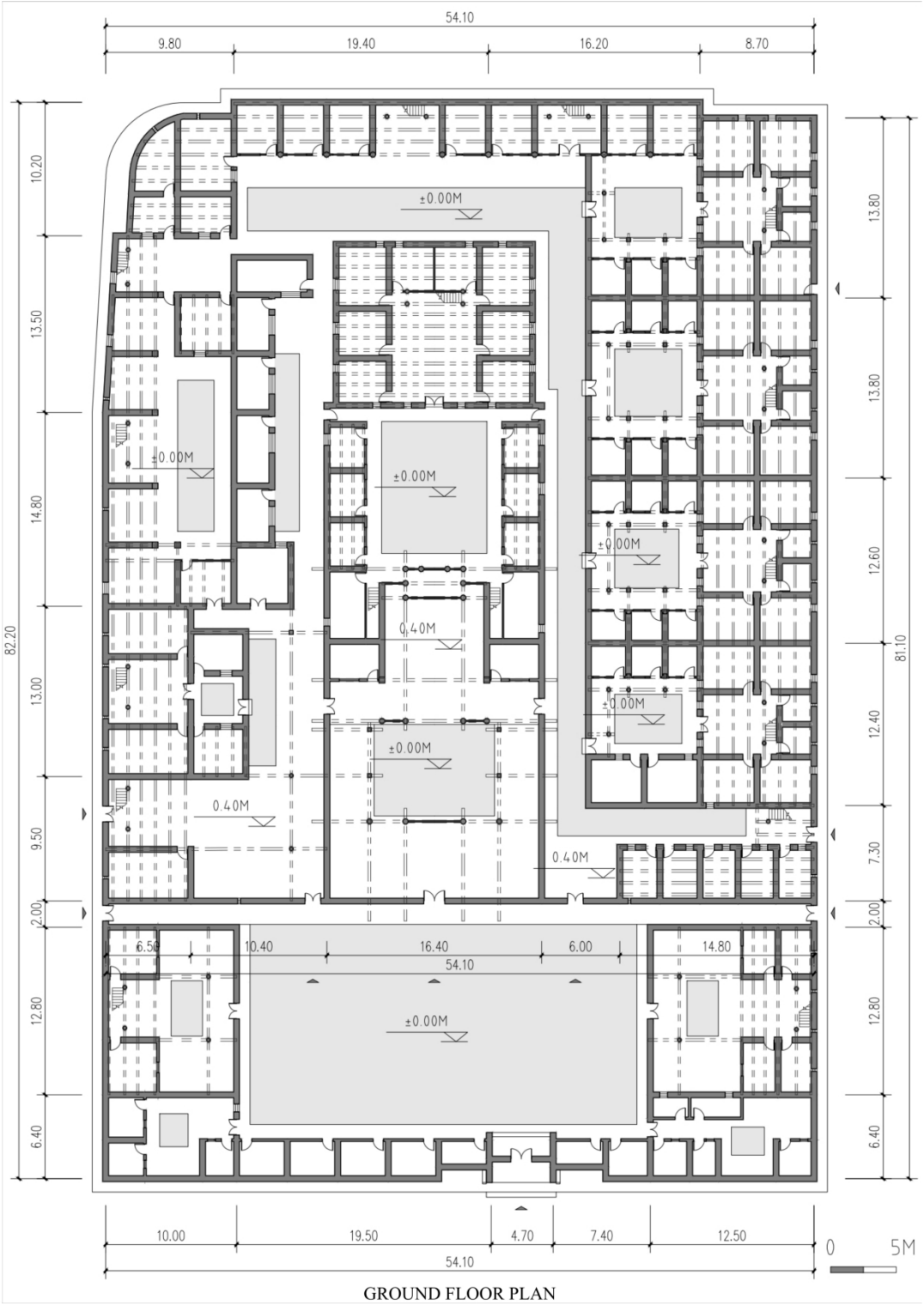
Mapping 3. Xuexianlou (Hakka Wufenglou). Ground Floor Plan & Front Facade



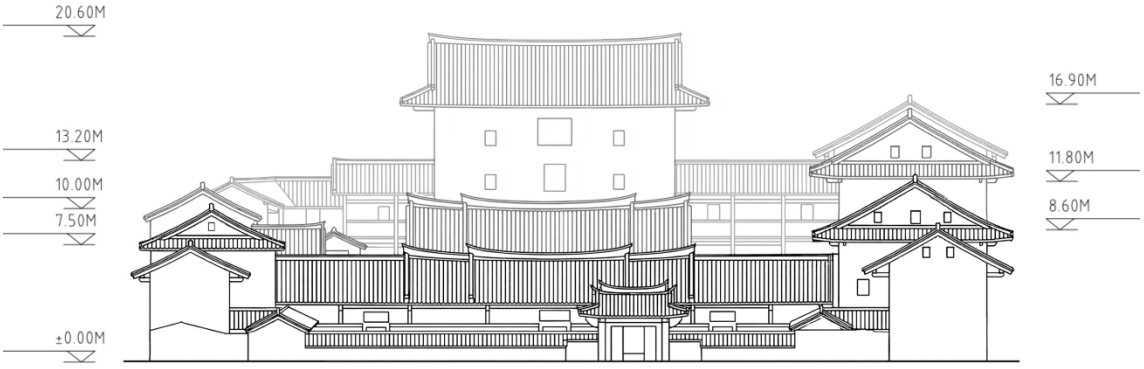
Mapping 4. Rulindi (Hakka Wufenglou). Ground Floor Plan & Front Facade



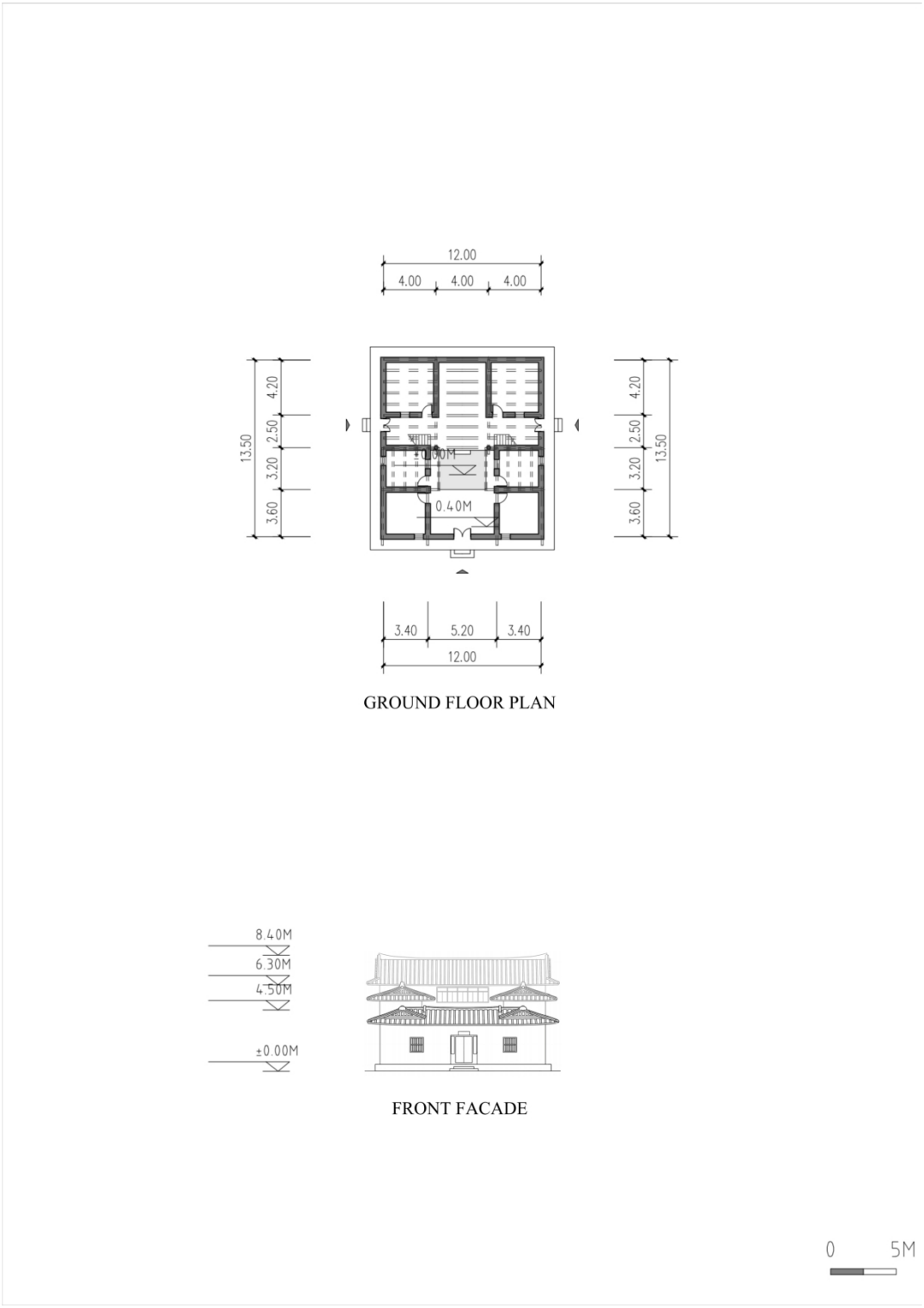
Mapping 5. Yulonglou (Hakka Wufenglou). Ground Floor Plan & Front Facade



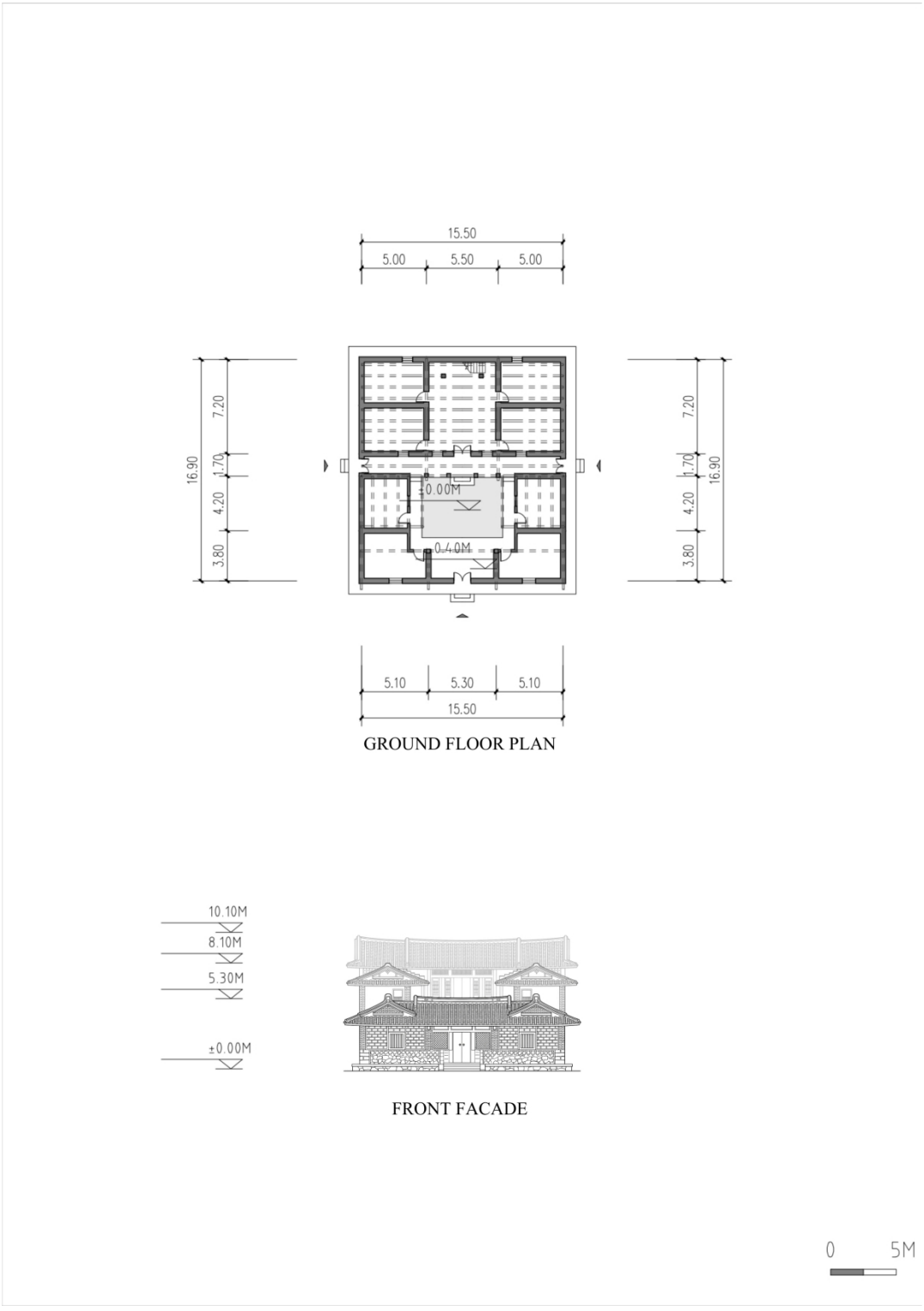
Mapping 6. Yonghaolou (Hakka Wufenglou). Ground Floor Plan



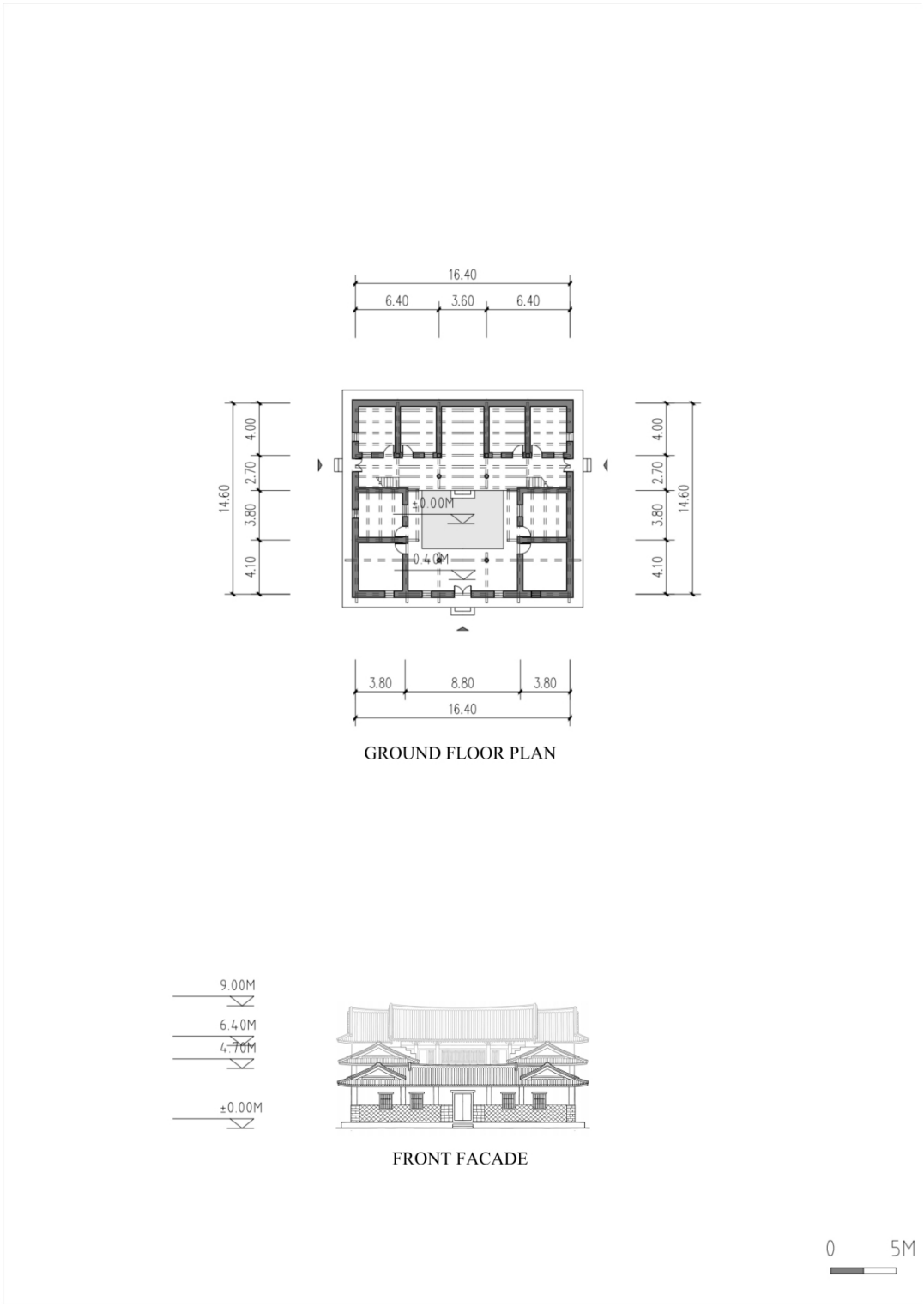
Mapping 7. Yonghaolou (Hakka Wufenglou). Front Facade



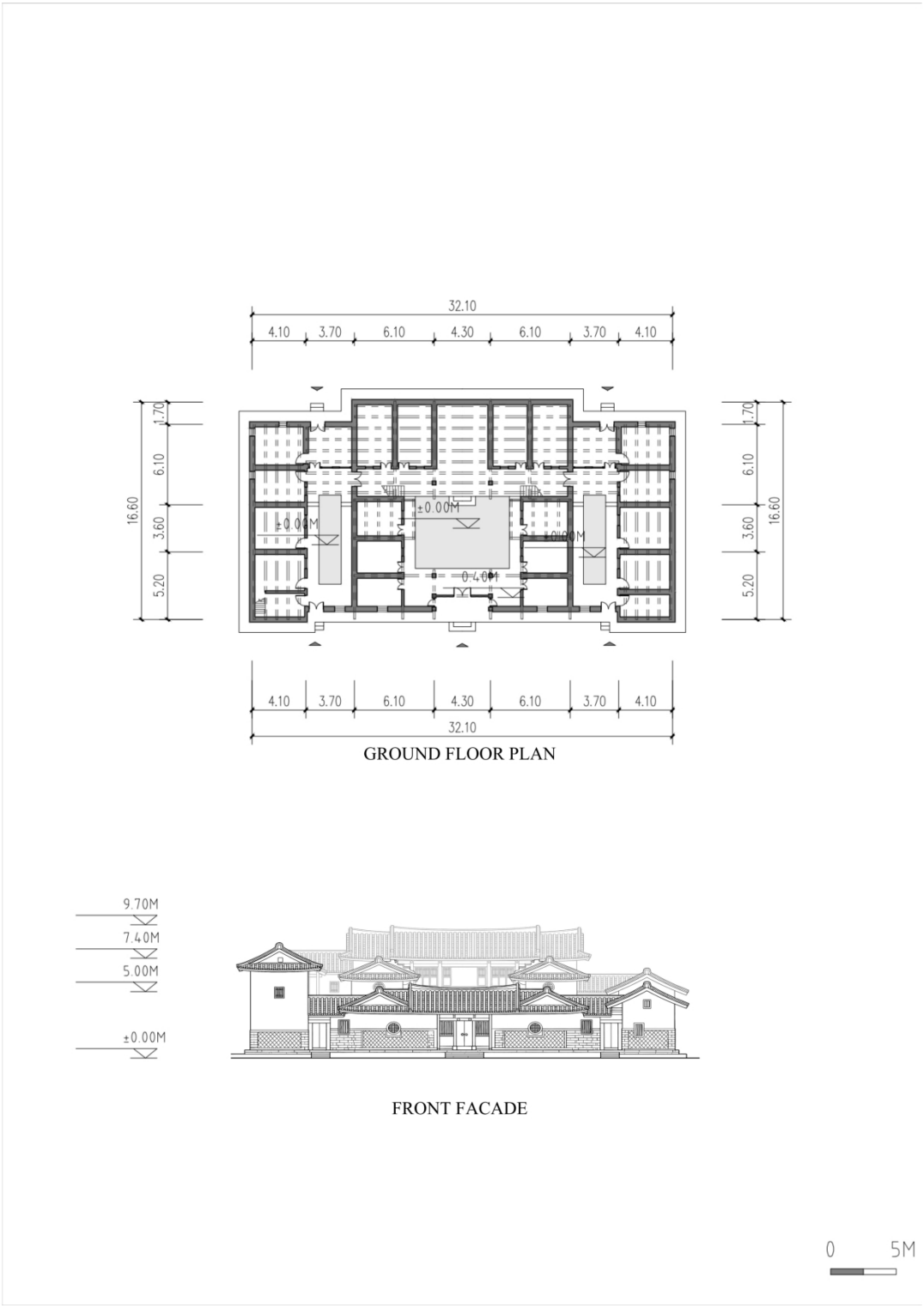
Mapping 8. Anonymous 3 Kaijian Minnan Wufenglou in Dadi. Ground Floor Plan & Front Facade



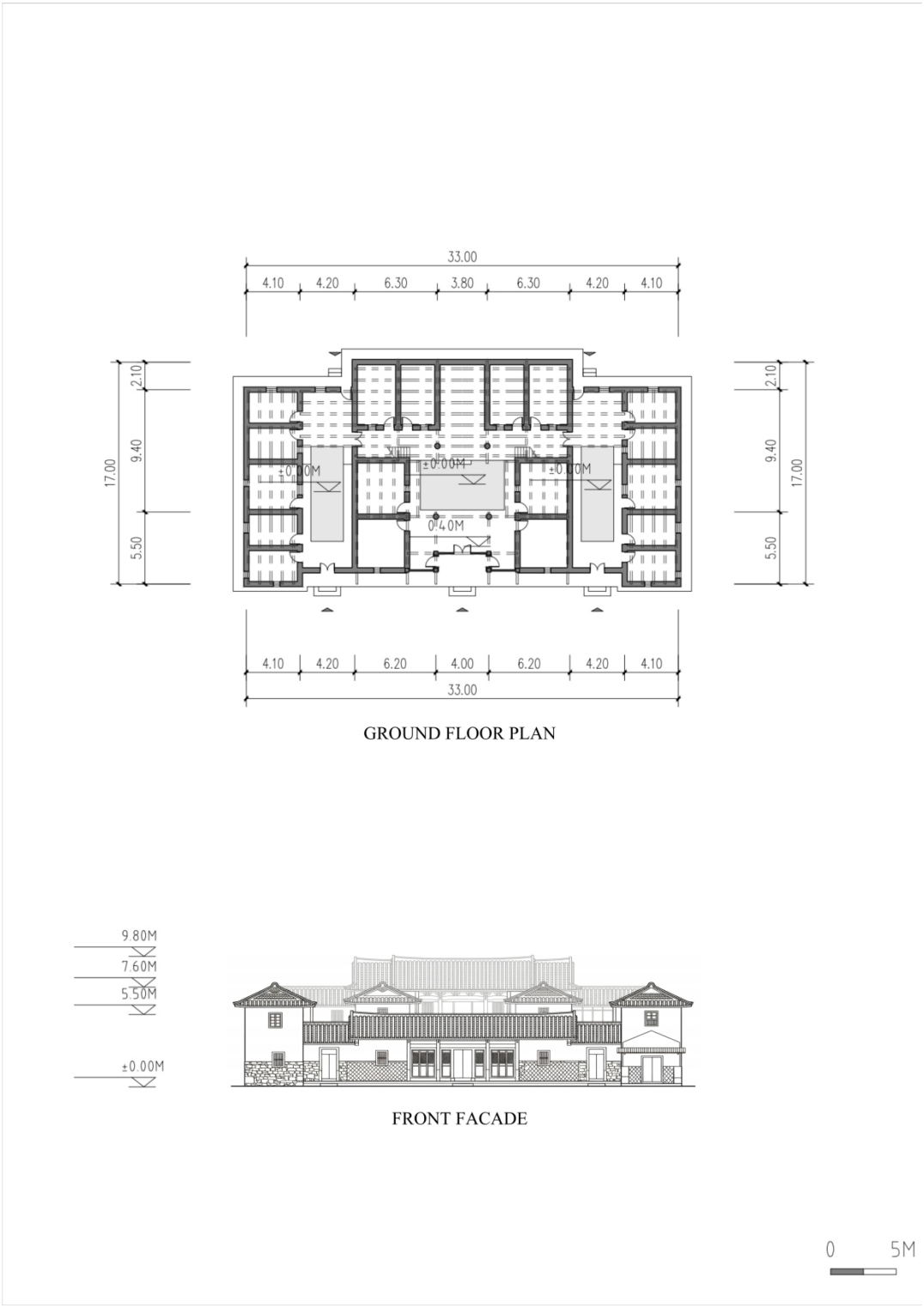
Mapping 9. Yifulou (Minnan Wufenglou). Ground Floor Plan & Front Facade



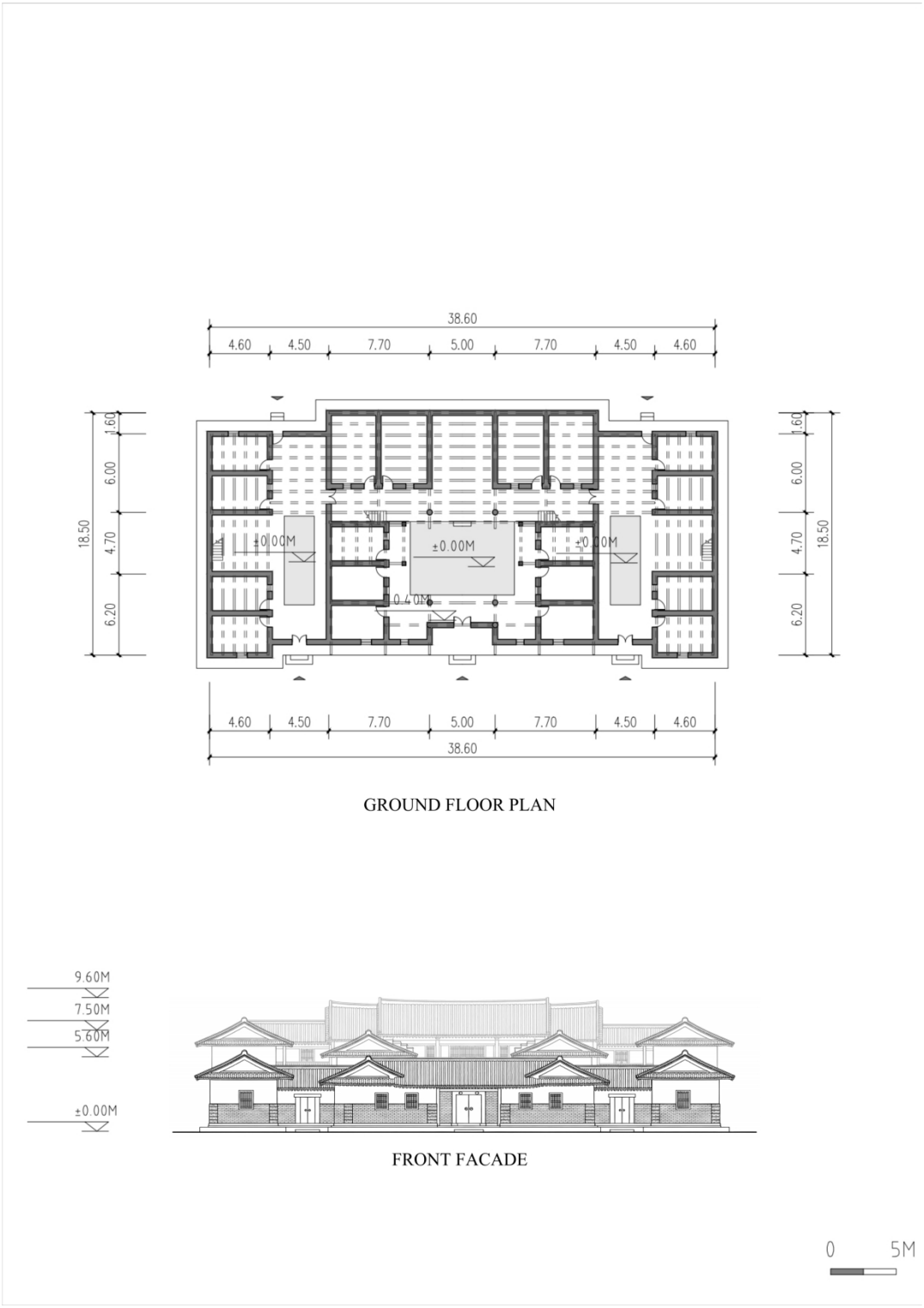
Mapping 10. Nanguilou (Minnan Wufenglou). Ground Floor Plan & Front Facade



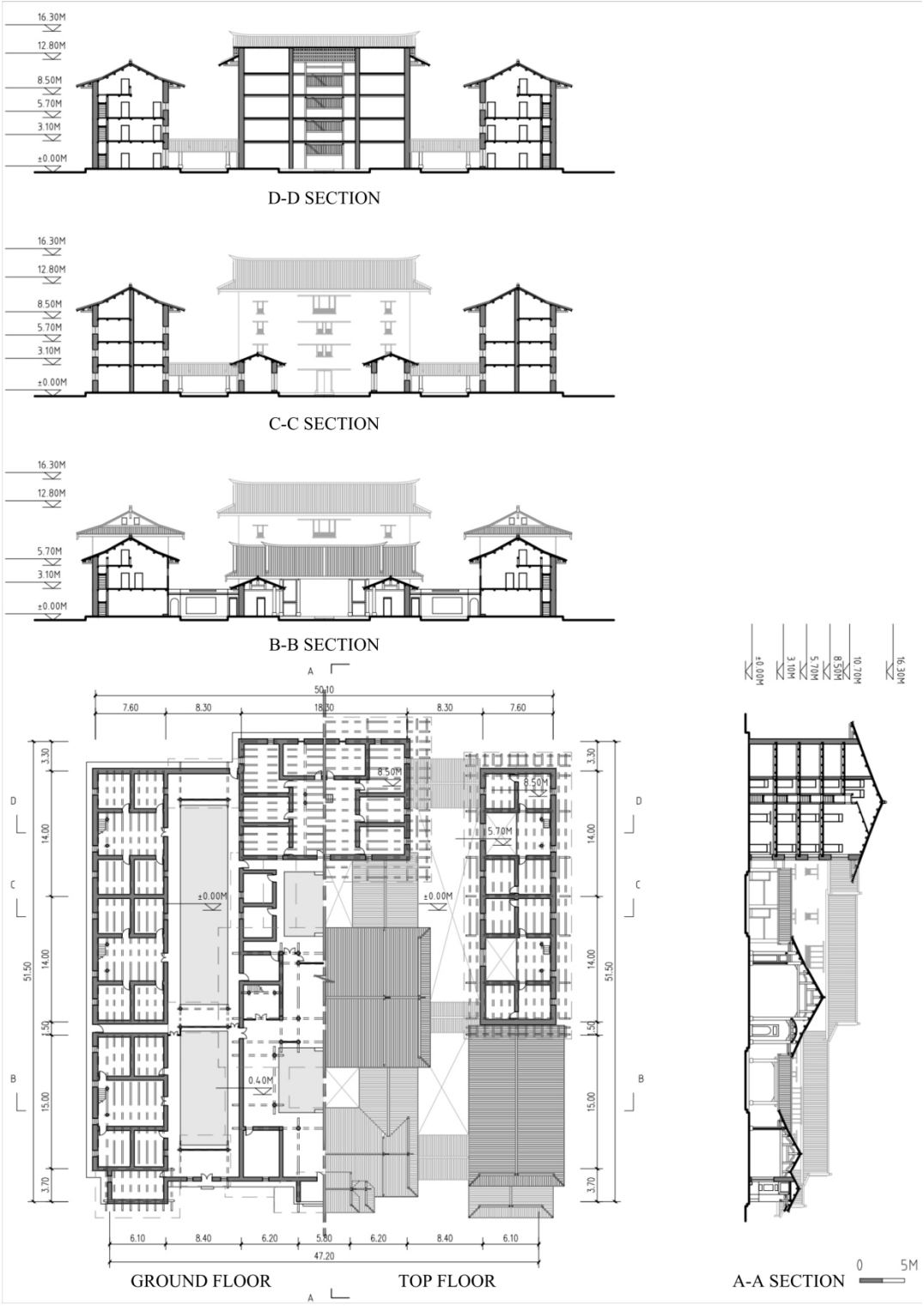
Mapping 11. Xiashanlou (Minnan Wufenglou). Ground Floor Plan & Front Facade



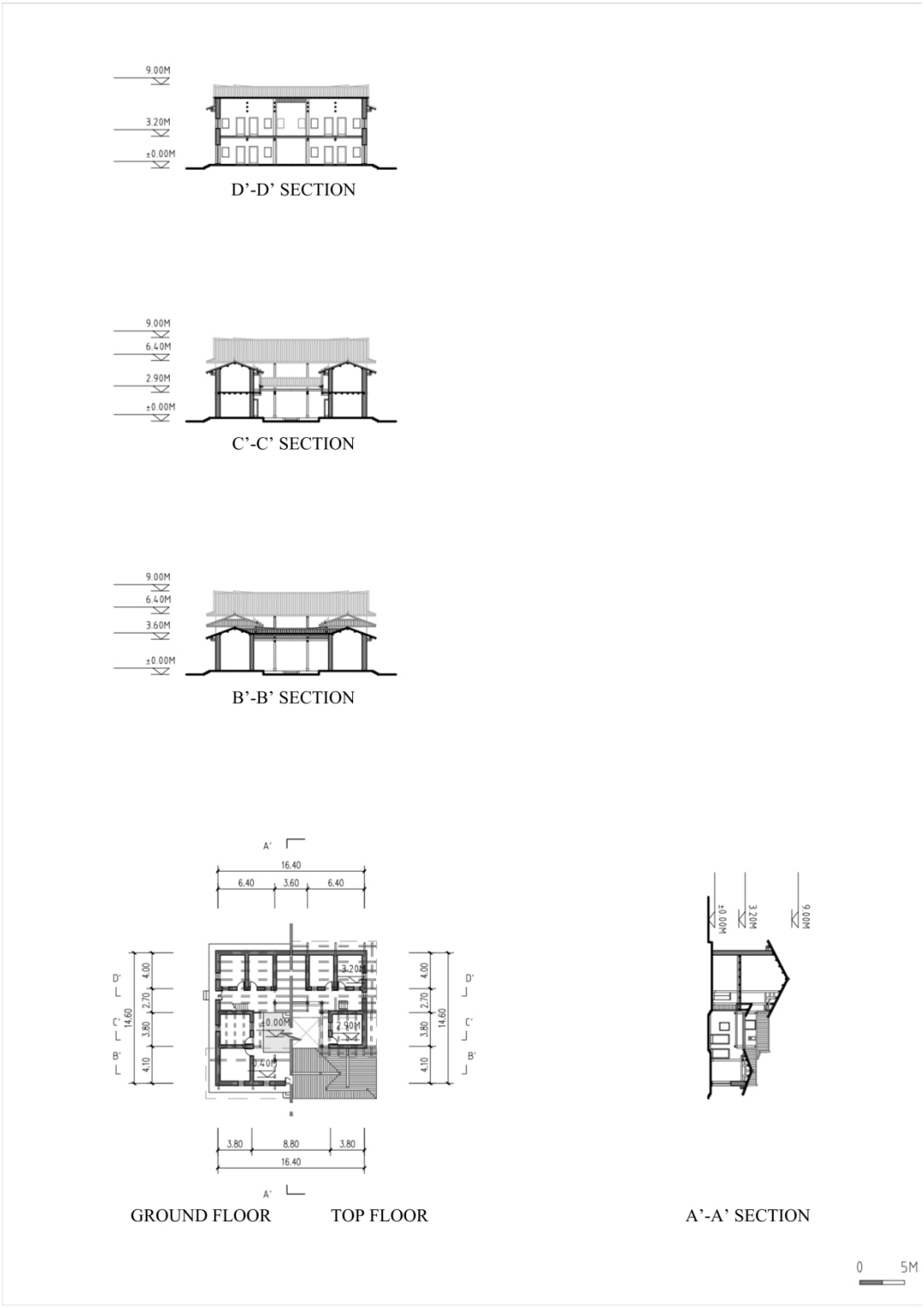
Mapping 12. Liuzhaowu (Minnan Wufenglou). Ground Floor Plan & Front Facade



Mapping 13. Fuanlou (Minnan Wufenglou). Ground Floor Plan & Front Facade



Mapping 14. Yulonglou (Hakka Wufenglou). Ground Floor Plan, Top Floor Plan, & Sections



Mapping 15. Nanguilou (Minnan Wufenglou) Ground Floor Plan, Top Floor Plan, & Sections

4. Study Cases Information

Architectural Information of Study cases in Hakka Region. Self Collected.

(Length in m, coordinates in WGS84)

HAKKA

No.	Name	Width	Depth	Zero Datum	Max Height	Max Stories	Longitude & Latitude	Village	Year
1	Huaichuntang	43.00	34.00	365.34	377.62	3	X: 116.924531 Y: 24.967766	Baiyeban	1856
2	anonymous	33.59	31.16	392.75	406.06	4	X: 116.781918 Y: 24.995206	Hubei	/
3	anonymous	30.40	28.69	248.63	261.26	3	X: 116.847634 Y: 24.973284	Xipo	/
4	Peijingtang	50.86	37.46	248.85	263.50	4	X: 116.847620 Y: 24.973597	Xipo	1736 - 1795
5	Rulindi	44.20	46.80	239.87	255.45	4	X: 116.850084 Y: 24.972520	Xipo	1760 - 1800s
6	anonymous	36.67	42.85	278.02	294.52	4	X: 116.923311 Y: 24.840015	Sheqian	/
7	Xuexianlou	41.80	55.10	290.82	308.15	4	X: 116.919465 Y: 24.825179	Queping	1692
8	Yanyilou	30.40	36.88	237.77	254.50	4	X: 116.920136 Y: 24.840952	Xinmin	/
9	Yaoyuanlou	33.77	30.50	248.52	260.63	3	X: 116.869767 Y: 24.977988	Mulin	1760
10	Yexinglou	45.20	57.20	242.44	260.89	4	X: 116.891098 Y: 24.917086	Kanshi	1750
11	Yonghaolou	54.10	82.20	237.35	257.91	5	X: 116.921348	Xinmin	1821 -

							Y: 24.841536		1850
12	Fushenglou	52.52	73.73	236.58	257.49	5	X: 116.919017 Y: 24.842977	Xinmin	1851 - 1874
13	Yulonglou	50.19	51.47	241.86	258.17	4	X: 116.912841 Y: 24.975896	Datangjiao	1834
14	Zongketang	34.71	28.81	327.73	339.58	3	X: 116.855489 Y: 24.971686	Shangyang	/
15	Taifenglou	39.46	49.74	359.92	375.92	4	X: 116.968443 Y: 24.943107	Kongfu	1796 - 1820
16	anonymous	14.90	39.81	238.94	254.17	4	X: 116.920074 Y: 24.839849	Xinmin	/
17	anonymous	16.63	42.60	237.75	254.35	4	X: 116.920078 Y: 24.840726	Xinmin	/
18	Jianzaitian	28.02	39.76	238.52	255.12	4	X: 116.919777 Y: 24.840088	Xinmin	1796 - 1820
19	Shundelou	25.46	40.79	177.29	193.44	4	X: 116.806917 Y: 24.797288	Qianfang	Qing Dynasty
20	Heyipingju	40.09	47.14	237.59	255.11	4	X: 116.920364 Y: 24.841370	Xinmin	1644 - 1661
21	Santangwu	39.32	33.50	349.93	361.94	3	X: 117.006172 Y: 24.841325	Longtan	Qing Dynasty
22	Tianxinglou	47.70	38.03	384.41	399.10	4	X: 116.963657 Y: 24.918733	Changliu	1889
23	Lianzhulou	26.62	44.29	360.74	377.03	4	X: 116.968811 Y: 24.943070	Kongfu	/
24	Xiuyixishan	27.40	35.04	363.06	378.70	4	X: 116.968840 Y: 24.943929	Kongfu	/

25	Huopotang	42.85	39.29	333.48	348.31	4	X: 116.850121 Y: 24.975218	Xipo	1700s
26	Yijinglou	44.25	82.74	319.55	338.33	5	X: 116.857574 Y: 24.969752	Shangyang	1851
27	Fuyulou	43.92	36.04	392.50	410.32	5	X: 116.974151 Y: 24.667971	Hongkeng	1880
28	anonymous	24.32	8.74	306.25	320.00	5	X: 116.920656 Y: 24.840843	Xinmin	/

Architectural Information of Study cases in Minnan Region. Self Collected.

(Length in m, coordinates in WGS84)

MINNAN

No.	Name	Width	Depth	Zero Datum	Max Height	Max Stories	Longitude & Latitude	Village	Year
1	Longshantang	16.42	13.24	781.17	787.97	2	X: 117.720478 Y: 25.349216	Wupei	1987
2	anonymous	17.30	15.77	485.80	493.84	2	X: 117.751101 Y: 25.359078	Gaohui	/
3	Jiarongju	17.24	14.69	486.18	494.41	2	X: 117.750905 Y: 25.359041	Gaohui	/
4	Fuanju	17.89	14.34	493.36	501.19	2	X: 117.806280 Y: 24.973171	Changta	/
5	Xinyuanju	18.38	15.67	537.07	546.15	2	X: 117.870049 Y: 24.918056	Luoyan	1990
6	Yushuju	15.52	14.30	910.46	917.58	2	X: 117.820505 Y: 25.063556	Sanyang	1970 s
7	anonymous	12.06	13.50	322.65	331.04	2	X: 117.686840 Y: 25.022540	Dadi	1983
8	anonymous	16.24	13.34	303.25	311.37	2	X: 117.687929 Y: 25.023819	Dadi	1972
9	Nanguilou	16.40	14.60	284.80	293.82	2	X: 117.695039 Y: 25.034621	Songkeng	1926
10	Yifulou	15.38	16.90	282.50	292.63	2	X: 117.690167 Y: 25.035888	Shangyuan	1936
11	anonymous	21.21	17.03	345.62	354.13	2	X: 117.373635 Y: 24.878736	Bangdu	1960 s
12	anonymous	18.41	18.07	340.94	349.40	2	X: 117.373919	Bangdu	1958

							Y: 24.880601		
13	Taianlou	25.71	20.64	311.70	320.96	2	X: 117.685784 Y: 25.032356	Daxingzu	1985
14	anonymous	11.62	11.58	542.35	549.44	2	X: 117.870096 Y: 24.918324	Luoyan	1980s
15	Fuanlou	38.60	18.50	345.86	355.43	2	X: 117.650066 Y: 25.040561	Zhaoshan	1942
16	anonymous	34.59	15.00	396.32	405.20	2	X: 117.385999 Y: 24.881092	Jiuqie	/
17	anonymous	26.23	17.16	783.41	791.53	2	X: 117.370096 Y: 24.939199	Futian	1968
18	Liuzhaowu	33.00	16.95	307.76	317.51	2	X: 117.632780 Y: 25.022196	Xianfeng	1936
19	Xiashanlou	32.10	16.60	352.12	361.78	2	X: 117.582388 Y: 24.950201	Qinling	1906
20	anonymous	33.97	12.99	959.22	966.40	2	X: 117.847222 Y: 25.080646	Wutu	1985
21	Yuzonglou	34.82	18.20	334.70	343.85	2	X: 117.697296 Y: 25.021994	Dadi	1910s
22	anonymous	21.39	14.05	535.69	544.41	2	X: 117.869870 Y: 24.917745	Luoyan	/
23	anonymous	15.66	14.40	484.85	491.30	1	X: 117.751331 Y: 25.359121	Gaohui	/
24	Xiyuantang	34.18	18.42	325.40	332.12	1	X: 117.688434 Y: 25.024738	Dadi	1867
25	Anrentang	34.97	19.56	1057.06	1064.25	1	X: 117.387640 Y: 24.963546	Dadi	1900s
26	anonymous	16.50	14.71	121.39	127.86	1	X: 117.853333 Y: 24.828832	Shangji	/

27	Wendeju	17.87	19.26	626.64	635.04	2	X: 117.939865 Y: 24.998651	Nanyan	1985
28	anonymous	17.31	13.69	334.83	343.52	2	X: 117.683670 Y: 25.028580	Dadi	/

5. Selected Hakka and Minnan Wufenglou from the Third National Cultural Relics Census. (Hakka and Minnan one description example for each)

Figure. Selected Listings from the Third Census Data

Hakka example: Yonghaolou

Yonghao Lou, also known as Wufu Lou, is located in Xinmin Village, Fushi Town, Yongding District, Longyan City. It was originally constructed during the Daoguang period of the Qing Dynasty (1821–1850) and took 18 years to complete. Covering an area of 10,672 square meters, it is a mansion-style square earthen dwelling with a rammed-earth and timber structure. It faces northeast with its back to the southwest and consists of an outer main gate, a front courtyard, an inner gate, an entrance hall, a central hall, a main building, and a rear building.

The main building is four stories high, with the housing module of “8 Jian 1 Ting Qijiao” (eight rooms and one hall on each floor), featuring a hip-gable roof with purlins resting on the gable walls. On both the left and right sides, there are four-story horizontal wings, each divided into four units. Beside the main gate and the front courtyard, there are two-story brick-and-wood structures used as civil and military study halls.

Minnan example: Xiashanlou

Xiashan Lou is located at No. 18, Qinyang Natural Village, Qinling Village, Huafeng Town, Hua'an County, Zhangzhou City, Fujian Province. It was originally constructed during the reign of the Qing Emperor Guangxu in 1906 and completed in 1910, funded by the overseas Chinese Huang Xianshan family who had returned from Indonesia. On August 11, 2020, it was designated as part of the third batch of historic buildings in Hua'an County.

Facing southwest with its back to the northeast, Xiashan Lou consists of a front hall, north and south side buildings, a rear building, and north and south wing houses. The total depth is 18.25 meters, the total width is 33.04 meters, with a building area of 780 square meters and a site area of 1,050 square meters.

The front hall features a front porch with five bays (5 Kaijian) in width and two bays in depth. The front porch is paved with a mixture of earth and sand, while the rest of the floor is laid with red bricks. The central bay has a traditional Minnan-style beam-lifting frame, while the secondary and corner bays have no small beam structures, using partition walls to directly support the purlins. The roof is built with seven purlins and flat rafters covered with tiles. The side buildings have red brick floors and wooden floorboards, with no small beam structures inside. The rear building also has five bays in width and two bays in depth, with a similar arrangement of red brick floors and wooden floorboards, and mixed-type beams in the central bay supporting the structure.

On either side of the main hall, there are cypress wood staircases with black-lacquered stair covers. The southern wing house is a single-story structure with five rooms and a double-slope roof supported by purlins, and the floor is paved with red bricks. The northern wing house is two stories high, with the first floor also paved in red brick and wooden floorboards above, featuring a similar double-slope roof. In front, there is a defensive turret with gun holes in the outer walls for defense. The courtyards between the north and south wing houses are paved with neatly cut stone slabs.

6. Selected Interview Transcripts

The data presented in this appendix was collected through a hybrid methodological approach involving digital correspondence and on-site fieldwork. The interviews were conducted via WeChat (text and voice messaging) and face-to-face semi-structured conversations recorded on-site during field surveys in 2024 and 2025. The transcripts below have been translated from Mandarin Chinese and edited for clarity and flow while maintaining the original meaning and tone of the interviewees. The interviewer is referred to as "Researcher."

Part I: Hakka Region

Interview 1: Mr. Wang Guiyuan

Role: Local Historian and Expert on Hakka Culture

Date: August 2024 – January 2025

Method: WeChat Correspondence and Audio Recording

Topic 1: Site Selection and Land Acquisition Narratives

Researcher: In my research on the establishment of these massive clan dwellings, I am interested in the land acquisition process. Can you retell the specific history regarding the site selection for Yulong Lou?

Mr. Wang: The story of Yulong Lou in Fuling is quite representative of the complexities involved in building these structures. The ancestor, Xuezhou Gong, originally lived in an old house. For decades, he observed the Feng Shui of a specific hillside, believing it was the perfect "dragon vein" for building a foundation that would ensure the prosperity of his descendants. However, there was a significant obstacle: a grave belonging to the Kan clan was already situated on that land.

Researcher: How did they resolve such a sensitive issue?

Mr. Wang: The strategy involved patience and building a relationship rather than force. The Wang family began treating the Kan family—specifically the grave owners' descendants—with great hospitality. During the tomb-sweeping festivals (Qingming), they would invite them for feasts. Furthermore, they offered financial assistance to the descendants, some of whom were struggling with opium addiction. Over time, the Kan descendants felt indebted and eventually voluntarily offered to relocate the tomb. The

Yulong Lou builders paid all expenses for the relocation and even hired a Feng Shui master to select a new, auspicious site for the Kan family grave.

Researcher: Was this a common practice?

Mr. Wang: It happened elsewhere. A similar case occurred with Huaichun Tang in Yuanzhong Village. The builder of that house was imitating the Yulong Lou model. He faced a similar issue with a grave belonging to a different lineage of the Wang surname. He employed the same method: building relations over time and covering all costs to relocate the grave to secure the ideal building site.

Topic 2: Architectural Hierarchy and Social Ethics

Researcher: You mentioned a relationship between masters and apprentices in the construction trade affecting building scale. Could you elaborate?

Mr. Wang: Yes, in the past, Hakka society placed immense value on loyalty and righteousness. An apprentice would generally not build a house larger than their master's, even if they became wealthy. For example, the builder of Huaichun Tang was originally an apprentice to the Yulong Lou family in the tobacco business. Later, when the Yulong Lou family's fortune declined, the apprentice bought their shares. However, out of respect, he hired his former master as a manager.

Researcher: Are there other examples of this restraint?

Mr. Wang: This is also seen in Fushi with Yonglong Lou and Yonglongchang Lou. Yonglong Lou was built first. The builder of Yonglongchang Lou promised not to exceed his master's scale. However, history is interesting; about 30 years later, his descendants built a "New Building" next to the "Old Building." When combined, the total scale exceeded the master’s complex, but the single original building remained respectful of the hierarchy.

Topic 3: Typology, Classification, and Layout

Researcher: Regarding the classification of these buildings, are Wufenglou considered a type of "Fanglou" (Square Building)?

Mr. Wang: Yes. In Yongding, we generally classify earth buildings into Round Buildings (Yuanlou) and Square Buildings (Fanglou). The Wufenglou belongs to the Fanglou category, but it represents the largest and highest grade within that category.

Researcher: I noticed Yijing Lou has a different structure; it doesn't have the open corridors we see elsewhere. Is it a variation?

Mr. Wang: Yijing Lou is indeed a variation of the Wufenglou model. It features high walls on all four sides. We must distinguish between the full Wufenglou and smaller versions. The hierarchy of size is: Wufenglou (highest) → San Tang Wu (Three Halls) → Liang Tang Wu (Two Halls) → Yi Tang Wu (One Hall/Four rooms). A "San Tang Wu" implies three halls in a sequence, but it cannot be called a Wufenglou because it lacks the "phoenix wings"—the side transverse buildings.

Researcher: Regarding the layout of rooms, specifically the terminology "X rooms, one hall"—must the number of rooms always be an even number?

Mr. Wang: Yes, it must absolutely be an even number. Traditional Chinese architecture places great emphasis on the beauty of symmetry. Common layouts include two rooms with one hall, four rooms with one hall, six rooms with one hall, or eight rooms with one hall. Among these, "four rooms, one hall" and "six rooms, one hall" are the most frequently seen. Even in cases where a partition wall is missing in the blueprints, if there are two doors and two windows, it counts as two rooms.

Topic 4: Construction Sequence and Logic

Researcher: When building a massive Wufenglou, which of the five parts is built first?

Mr. Wang: The construction sequence generally starts with the Main Building (Zhenglou), followed by the Middle Hall (Zhongting), then the Front Hall (Qiantang), and finally the Left and Right Transverse Buildings (Hengwu).

Researcher: Why is the Main Building built first?

Mr. Wang: Practicality. Once the Main Building is completed, the family has a place to live immediately. For example, with the Double Gate Tower in Fuling, the Main Building was finished twenty or thirty years before the Middle Hall and Transverse buildings were added. Everything depends on economic strength; a wealthy family might build all parts simultaneously, but the logical order remains Main Building first.

Topic 5: Functionality and Defense

Researcher: If only the Main Building is built initially, where are the kitchen and storage located?

Mr. Wang: They usually choose one side in front of the Main Building to build a temporary one- or two-story kitchen. As for grain storage, the grain bins (He Cang) are usually placed inside the Main Building. They can be located on the first, second, or third floor. The first floor is convenient for transport but prone to mold; upper floors are drier but harder to access.

Researcher: I observed coffins on the top floors of some buildings.

Mr. Wang: Yes, the top floor often stores coffins. If there are enough rooms elsewhere, the top floor is generally not inhabited. However, if the family does not have enough space, people certainly will live on the top floor. Adults are accustomed to it and are not afraid of the coffins.

Researcher: What about the small windows under the eaves? Were they for defense?

Mr. Wang: Those are called "Dark Attic Windows" (An Peng Zi). They serve two main functions: lighting for the attic space (used for storage) and maintenance access for repairing roof tiles. They were not designed as fortifications. The architectural defense of Wufenglou is actually weak compared to Round Buildings because of the many doors and low walls. Defense relied on the local militia (Mintuan) and clan organization rather than the building itself.

Interview 2: Mr. Hu Huaji

Role: Expert, Fujian Tulou Museum

Date: June 2024

Method: WeChat Correspondence

Topic 1: Fuyu Lou Origins and Kinship Networks

Researcher: I have a question regarding Fuyu Lou. Is there any solid written record confirming the story that Fuyu Lou was built by a "nephew" from Fushi, which explains why this unique Wufenglou appears in the Hongkeng area?

Mr. Hu: I have definitely read about this in a book, though it was a small, thin volume published before 2000. The book mainly records the history of Zhengchenglou and Fuyu Lou, as well as the intermarriage relationships between the three involved families: the Lin, Su, and Jiang families.

Researcher: How does this kinship connection explain the architectural style?

Mr. Hu: The book mentions the three brothers who built Fuyu Lou. Their mother's surname was Jiang, and she was from Fushi, likely from the Litukeng area. This connection is crucial. The Hakka people

place great importance on filial piety and the origins of their bloodline. Because the mother was from the Jiang family in Fushi—where Wufenglou architecture is prevalent—her sons likely built this style to honor her or were influenced by her background. If not for this strong maternal connection, it would be unusual for them to build a Wufenglou in a region dominated by other styles. It was a way for the sons to show glory and respect to their mother's clan.

Topic 2: Construction Materials and Wealth

Researcher: Is there anything unique about the materials used in Fuyu Lou compared to its neighbors?

Mr. Hu: Yes, there is a distinct difference. Fuyu Lou uses a significant amount of cobblestones (river stones). Unlike ordinary earthen buildings where the stone base is low and the rest is rammed earth, the stone walls in Fuyu Lou are built very high.

Researcher: Why is that significant?

Mr. Hu: Because the local mountains have earth, but they do not have these river stones. Those stones had to be transported from the stream, making the engineering project enormous and costly. The craftsmen even polished and adhered the stones, which is a labor-intensive process. This was a deliberate display of wealth and effort. Unlike the communal round Tulou, this Wufenglou functions more like a private estate for the three brothers, showing they were not just wealthy, but also culturally refined.

Interview 3: Mr. Huang Fenglin

Role: Section Head, Yongding Cultural Heritage Protection Center

Date: June 2024 – February 2025

Method: WeChat Correspondence

Topic 1: Classification of Mansion-Style Dwellings

Researcher: I am organizing data for Yongding. When "Mansion-Style Dwellings" (Fudi Shi) were classified during the "Third National Archaeological Census" (San Pu), which category were they placed in? Specifically, I am interested in transitional forms like Xipo Huopo Tang and Shangyang Youyu Lou.

Mr. Huang: According to the census data, Xipo Huopo Tang was built by Lin Yijun during the Qianlong era (1736–1796). It occupies about 4,000 square meters and is classified as a mansion-style dwelling with

a "Two Entries, Three Drops" layout, including left and right transverse houses. The three main buildings are arranged in a "One" (一) shape.

Researcher: And Shangyang Youyu Lou?

Mr. Huang: Shangyang Youyu Lou is located on the south bank of the Yongding River and was built in the Yongzheng era. It is also classified as a mansion-style dwelling, but it is composed of two "Two Entries, Three Drops" courtyard-style earthen buildings separated by an earthen wall. The height increases from front to back, showing distinct architectural layers.

Topic 2: Structural Variations and Conservation

Researcher: Can the type "Mansion Style with Widened Rear Hall," such as Xiuyi Xishan in Kongfu or Fuyu Lou, be classified as a specific sub-category?

Mr. Huang: Yes, this is indeed a recognized variation of the mansion style, specifically the "Widened Rear Hall" type.

Researcher: During my survey of Yijing Lou, I modeled it with a drone. I discovered that Yijing Lou shares the same construction logic as the mansion-style dwellings: except for the defensive ring added at the front, the core is a "Three Hall" axis with rammed earth walls bearing the load. Do you agree?

Mr. Huang: Yes, I agree with that assessment.

Researcher: Regarding innovations in conservation, is the use of 3D laser scanning and photogrammetry considered the currently advanced method?

Mr. Huang: Yes, the technology you are describing—using these methods to create a virtual replica—is technically called a "Digital Twin" (Shuzi Luansheng).

Part II: Minnan Region

Interview 4: Mr. Lin Yimou

Role: Local Resident/Expert on Hua'an Architecture

Date: June 2024 – July 2024

Method: WeChat Correspondence

Topic 1: The Origin of the Name "Wufenglou"

Researcher: Do you recall where the specific term "Wufenglou" (Five-Phoenix Building) first appeared regarding Hua'an architecture? Was it used to distinguish these from the Hakka Wufenglou?

Mr. Lin: You must understand that Hua'an has nothing to do with the Hakka people; Hua'an is a Minnan (Southern Fujian) area. I actually proposed the term "Wufenglou" for this region around 1999. In 1983, I conducted self-funded surveys of Tulou in Zhangping, Yongding, and Nanjing. I realized that the architecture in Hua'an needed a proper name. Because the eaves fly and curve like bird wings—resembling a phoenix—I decided to name them "Wufenglou". Before this academic naming, the locals simply called them "Da Wu Jian" (Big Five Rooms).

Topic 2: Structure and the "One and a Half Floors" Concept

Researcher: Is the defining feature of a Wufenglou the "two-story staggered" design?

Mr. Lin: The Hua'an Wufenglou features load-bearing rammed earth walls with a wooden auxiliary structure, following a "low in the front, high in the back" design. Regarding the side rooms, they are not exactly two stories; it is actually "one and a half floors". The central Main Hall (Heavenly Hall) is high, while the side rooms flanking it are one and a half stories. This upper mezzanine is essentially used for storage—for bedding, boxes, or coffins. It is not considered a full second floor for living.

Researcher: What is the function of the specific room located at the staggered level?

Mr. Lin: That is the "Ladder Pavilion" (Ti Ting Jian). It is generally assigned to the eldest grandson. It serves as a leisure room or a secret conversation room. When the head of the household is entertaining close friends, they use this space for private tea and talk. It is a distinct feature compared to the standard single-story "Big Five Rooms".

Topic 3: Defense and "Gun Towers"

Researcher: I noticed some structures have towers. Are these purely for defense?

Mr. Lin: These are often referred to as "Gun Towers" (Qiang Lou). They serve a "Shield" function. By placing them separately, they divert the target so that attackers focus on the tower, reducing pressure on the main residential building. The top floor is strictly for defense (lookout/shooting), but the lower floors (first and second) can be inhabited. If the main family house becomes overcrowded, family members will often live in the lower floors of the Gun Tower.

Interview 5: Mr. Huang Jiangyong

Role: Director, Hua'an Cultural Heritage Protection Center

Date: December 2024 – February 2025

Method: WeChat Correspondence

Topic 1: Myths and Legends

Researcher: Director Huang, does the Dadi Village area have a specific legend regarding the "Five Fairies" that explains the origin of the name "Wufenglou"?

Mr. Huang: Yes, there is a legend that adds a layer of mystery. Legend has it that the Jade Emperor had five daughters—Gold, Silver, Jade, Colorful, and Emerald Phoenix—who violated the laws of heaven by descending to the mortal world to help the people. The Jade Emperor suppressed the five sisters under "Wuji Mountain," and to commemorate them, the people built these "Five Phoenix Buildings". Historically, scholars suggest the name "Wufeng" might have originated during the Han Dynasty, symbolizing the five cardinal directions and elements. Some also call it the "Northern Official Mansion of the Southern Mountains" due to its resemblance to northern quadrangle courtyards.

Topic 2: Construction Rituals and Room Functionality

Researcher: When building a Wufenglou, do they need to hire a Feng Shui master?

Mr. Huang: Yes, they must invite a Feng Shui master to survey the site and determine the orientation before they can break ground. Normally, the entire complex is built together. However, if financial resources are insufficient, they will build the Main Hall (the Top Drop) first, then the Water Corridors, and the "Protection Shields" last.

Researcher: Could you explain the functions of the rooms based on the floor plan?

Mr. Huang: On the first floor, rooms numbered 1 and 2 are primarily bedrooms for the elderly. Room number 4 is basically always the kitchen. On the second floor, the rooms on the left are generally bedrooms for the sons, while the rooms on the right are for the daughters. The room on the left side (number 3) is designated for the eldest grandson. The Main Hall is used as a venue for receiving guests or public activities.

Researcher: What are the "Protection Shields" (Hucuo) used for?

Mr. Huang: The Protection Shields are mostly one story. They are typically used for guests or hired workers to live in, or as storage rooms; they generally do not have a fixed, permanent function like the main building.

Interview 6: Mr. Jiang Junbing

Role: Local Resident / Expert, Hua'an Cultural Heritage Protection Center

Date: December 2024

Method: On-site Audio Recording

Topic 1: Room Allocation and Zoning

Researcher: In the traditional Wufenglou, how are rooms distributed among sons? Is there a specific pattern?

Mr. Jiang: Yes, the rule is "Left is Major" (Left is bigger/more important). The allocation generally follows the order of seniority: the eldest son takes the left, the second son takes the right. In a scenario with four sons, the odd numbers (1, 3) and even numbers (2, 4) are grouped, but the first son always holds the primary left position.

Topic 2: Hierarchy of Space

Researcher: Regarding the specific function of rooms—are the front rooms kitchens?

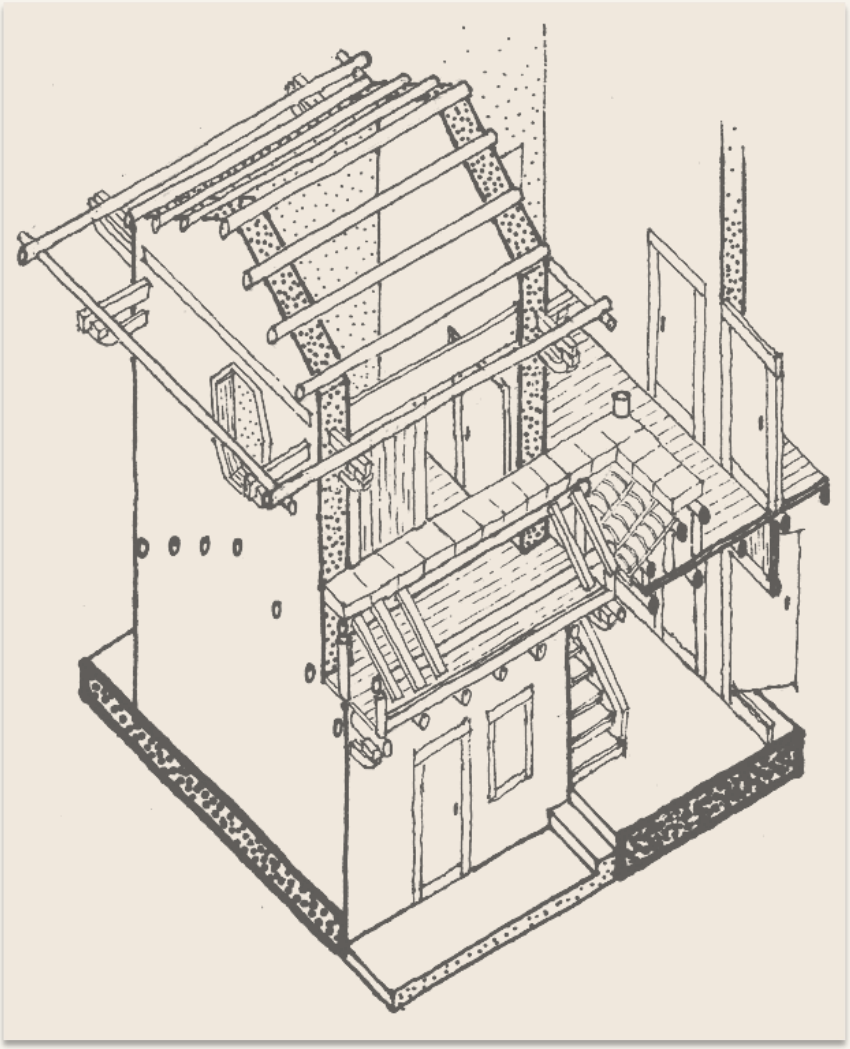
Mr. Jiang: Yes, the rooms in the lower/front tier (Luojie) are used as kitchens. The rooms in the rear are entirely used as bedrooms. This applies to the upper floors as well.

Researcher: Why is the kitchen always on the ground floor?

Mr. Jiang: The kitchen is never on the second floor due to safety—specifically the wooden floors—and convenience. The second floor above the kitchen might be used as a guest room or for storage, but it isn't used much for daily living.

Researcher: Where does the master of the house live?

Mr. Jiang: The master of the house typically lives in the rear. The rear is considered "heavy" (important) and the front is "light." Guests would not sleep in the main rear bedrooms. As for ancestral tablets, some are on the first floor and some on the second; it varies by family.



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Ms. Dong Cuixia (Fujian Tulou Museum), who introduced me to the works Fujian Tulou

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