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The Spatial Construction of Din Merchant Compounds in the Ming and Qing Dynasties from the Perspective of Defence

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ABSTRACT
This paper elaborates on the historical background of defensive space construction in Jin merchant compounds during the Ming and Qing dynasties, systematically analyzes how defense-oriented considerations shaped their site selection, courtyard layout, and defensive facilities, and explores the unique charm, historical value, and implicit wisdom embedded in these structures. It reveals not only the survival strategies and architectural craftsmanship of Jin merchants amid social turbulence but also the enduring significance of their defensive design for modern architecture and cultural heritage preservation.

KEYWORDS
Ming and Qing dynasties; Qing merchant compound; Defensive architecture; Spatial layout; Historical value

1 The background of the defensive space construction of Qing business compounds in the Ming and Qing Dynasties

The Ming (1368–1644) and Qing (1636–1912) dynasties were marked by profound social upheavals, political instability, and regional unrest, which directly drove Jin merchants to prioritize defense in their compound construction. To fully grasp the rationale behind their defensive designs, it is essential to contextualize the specific threats they faced and the scale of their wealth, which made them prime targets.

First, social and political turbulence posed constant risks. In the late Ming Dynasty, peasant uprisings—most notably led by Li Zicheng (1606–1645)—swept across northern China, dismantling local governance and leaving wealthy families vulnerable to looting. Jin merchants, who had amassed fortunes through long-distance trade in salt, tea, silk, and later 票号 (piaohao, or "exchange shops"), were particularly exposed. For instance, the Fan family of Jiexiu, which monopolized copper trade in northern China through partnerships with the imperial court, accumulated enormous wealth, becoming a prime target for rebels and bandits. Even after the Qing Dynasty stabilized its rule, anti-Qing resistance movements (such as the Revolt of the Three Feudatories, 1673 – 1681) and frontier conflicts (e. g., raids by Mongol tribes in the north) continued to destabilize commercial routes, endangering both merchant caravans and their families.

Second, rampant banditry and economic disparities exacerbated the need for defense. Jin merchants' trade networks spanned thousands of miles, from Shanxi to Mongolia, Russia, and even Southeast Asia. Their caravans—laden with silver, tea, silk, and other high-value goods—frequently traversed mountainous, poorly governed regions, where bandits lurked in valleys and forests. A single raid could wipe out years of profit; thus, protecting both mobile caravans and fixed family compounds became a matter of survival.

Third, family and wealth preservation was central to Jin merchant culture. These compounds were not merely residences but the spiritual and economic heart of extended families, housing dozens to hundreds of members, as well as vast stores of silver, documents, and heirlooms. With family members scattered across the country for trade, the compound served as a safe haven during crises. For example, the Qiao family compound in Qi County sheltered not only immediate relatives but also distant kin and loyal employees during regional conflicts, highlighting its role as a communal fortress.

In sum, the defensive space of Jin merchant compounds emerged from a confluence of political instability, economic vulnerability, and familial duty—a response to an era where security was a luxury that had to be built, brick by brick.

2 The spatial layout of the Jinshang Compound based on 'defensiveness'

The spatial design of Jin merchant compounds was a masterclass in integrating functionality with defense, where every element—from location to layout—was calibrated to deter, delay, and repel threats.

2.1 Selection of the site of the jinshang compound

The location of the Jin merchant compound was a sophisticated process, deeply intertwined with strategic defense considerations, where every geographical feature was meticulously evaluated to maximize security. These compounds

were rarely built in arbitrary locations; instead, their placement was a deliberate fusion of natural advantages and human ingenuity, aimed at creating a fortified yet functional living space. A prime example is the Qiao Family Compound, situated in Qiaojiabao Village of Dongguan Town, Qixian County. While the surrounding area is characterized by flat, open terrain that might seem vulnerable at first glance, the compound itself is perched on a relatively high plateau, a choice that confers significant defensive benefits. This elevated position provides an unobstructed field of vision, allowing guards to monitor vast stretches of land around the compound and detect any approaching individuals—whether suspicious travelers, bandits, or even larger threat groups—from a considerable distance. This early detection capability is crucial, as it offers ample time to prepare defenses, rally guards, and secure entry points before any potential attack unfolds. Additionally, the higher ground makes surprise assaults far more difficult: attackers would need to ascend the slope, exposing themselves to surveillance and potential counterattacks, which significantly reduces the element of surprise that often fuels successful raids.

Beyond elevation, proximity to water sources was another key factor in site selection. Many Jin merchant compounds were strategically located near rivers, streams, or wells, ensuring a reliable supply of water for daily needs such as drinking, cooking, and irrigation, as well as for maintaining livestock. However, this choice also served a defensive purpose: in the event of a siege, a consistent water source becomes a lifeline, enabling the compound's inhabitants to sustain themselves for extended periods, outlasting attackers who might hope to starve or dehydrate them into submission. Natural barriers further reinforced the compounds' defenses, with hills, cliffs, or dense vegetation often surrounding the sites to limit access points. For instance, a compound might be nestled between two hills, with only a narrow valley providing entry—this natural funnel forces any intruders into a predictable path, making them easier to monitor and repel. Similarly, a river or deep ravine to one side could act as a natural moat, eliminating the need for extensive artificial fortifications in that direction and allowing defenders to concentrate their efforts on the few accessible approaches. Together, these elements—elevated terrain for visibility, proximity to water for sustainability, and natural barriers for passive defense—created a foundation upon which the compound's more intricate defensive features, such as its walls, watchtowers, and internal layout, could build, resulting in a comprehensive security system that protected both the physical safety of the Jin merchant families and the vast wealth they had amassed through their trade ventures.

2.2 Layout of courtyards in Jinshang compounds

Jin merchants' compounds are renowned for their intricate multi-courtyard layouts, which form a layered spatial structure designed to prioritize defense while maintaining functional living spaces. This architectural approach transforms the compound into a series of interconnected yet strategically separated zones, each acting as a barrier to slow or deter intruders. The Wang Family Compound stands as a quintessential example: sprawling across a hillside, it comprises dozens of courtyards, each with its own purpose—some housing servants and stables, others reserved for family members, and the innermost ones safeguarding ancestral halls and treasure vaults. These courtyards are linked by narrow, winding passages that twist and turn, creating a labyrinthine path from the outermost gate to the core. Rather than forming straight lines, the walkways curve gently, forcing anyone moving through to adjust their direction repeatedly, which disrupts momentum and makes it harder to mount a coordinated attack. Even the doorways between courtyards are deliberately misaligned; a gate leading into one courtyard will never face directly toward the next, ensuring that an intruder cannot charge through multiple spaces in a straight rush. This design turns the compound itself into a defensive weapon, using space and geometry to control the movement of those inside and out.

This layered layout serves multiple defensive functions beyond mere obstruction. By dividing the compound into progressive zones, it creates a clear hierarchy of security: the outermost courtyards are the first line of defense, absorbing initial attacks and allowing guards to assess threats before they reach more vulnerable areas. As intruders navigate deeper, they encounter increasingly fortified barriers—taller walls, narrower passages, and more heavily guarded doors—each designed to slow their advance. This gradual resistance not only drains the enemy's physical strength but also saps their morale, as each courtyard feels like a small victory that leads only to another obstacle. For the compound's inhabitants, the layout offers critical advantages: it provides time to retreat to inner sanctums, secure valuables, or rally defenders. Servants and guards in outer courtyards can send warnings to those in the center via hidden signals, such as ringing bells or lighting lanterns in specific windows, ensuring that the entire compound remains alert. In essence, the multi-courtyard design turns the act of moving through the space into a defensive strategy, where every turn and threshold reinforces the compound's role as a fortress built to protect both lives and legacy.

2.3 Defences in space construction

Beyond layout, compounds featured purpose-built structures and devices to repel attacks, each with unique functions:

2.3.1 Tall and thick fences

The walls of the Jin Merchant Compound are a key part of its defence system, displaying unique architectural features and strong defensive functions. The height of the wall is generally over several metres, and the wall of the Cao Family Compound is even higher, making it difficult for outsiders to climb into the compound. The thickness of the wall is also considerable, up to several feet, which not only enhances the stability of the wall, but also can effectively resist a certain degree of attack. In terms of materials, the walls are mostly made of sturdy materials such as masonry and stone, with the mortar between the masonry being tightly bonded to further safeguard the strength of the walls. This sturdy material composition provides the compound with a solid protective barrier. The wall is equipped with lookout holes and firing holes, which greatly enhance its defensive effectiveness. Lookout holes are generally square or round in shape and small in size, which not only allow people inside the compound to clearly observe the situation outside the compound and detect potential dangers in time, but also prevent enemies from attacking the compound from the outside through the lookout holes. The shooting holes are designed to be more hidden, mostly long and narrow shape, which is convenient for the personnel in the courtyard in the event of an attack, through the shooting holes to launch an attack on the outside of the enemy to form an effective deterrent and strike, so as to comprehensively protect the security of the compound.

2.3.2 Watchtower and Corner Tower

Many Jinshang compounds have towers and corner towers at the corners or key locations. These buildings tower above the compound with a wide view. For example, the towers of the Chang family manor, the interior space is spacious, can accommodate a number of guards. The guards are able to observe the movements around the compound from the towers, and once the enemy is detected, the alarm can be issued quickly and defence. Corner tower is closely integrated with the wall, the formation of crossfire points, making the compound in all directions can be effective defence, greatly enhancing the overall defence capability of the compound.

2.3.3 Channel

The passages of the defence facilities in the spatial construction of the Jinshang compound are the core of the defence system that combines concealment, functionality and architectural wisdom. There are many types of passages, and the passageways and secret passages complement each other - the passageways are mostly set up in the gaps of the architectural complexes, while the secret passages are hidden behind the Buddha's niches, wardrobes, and other household items. The entrances and exits of the passages are designed to be hidden, often camouflaged with materials and decorations similar to those of their surroundings. Some entrances and exits would be made of the same masonry as the wall as a false wall, which would only be opened through subtle gaps or specific mechanisms; some would have movable stone slabs on the ground as the entrance to the culvert, which would be no different from the ordinary ground from the surface. In case of emergencies such as war and banditry, people in the compound could quickly evacuate to safety through these passages, avoiding exposing their targets in the open courtyard or streets and increasing their chances of escape. And the complex layout of the passages can make the enemy lose their way after entering the compound, increasing the difficulty of pursuit. And there may be traps, switchbacks and other obstacles set up in the passages to further delay the enemy's actions and buy more response time for the residents of the compound.

3 Forms of organist to complement the layout of space cadences

Physical defenses were reinforced by strict protocols and specialized safeguards, ensuring that the compound remained secure even in chaos. These institutional measures turned static walls and watchtowers into dynamic systems, where human vigilance and coordinated action amplified the effectiveness of architectural design. Every guard, every lock, and every hidden passage was part of a meticulously orchestrated defense network, tailored to the compound's layered spatial structure.

3.1 Duty posting of defence measures for the entire Jinshang compound

The Ming and Qing dynasties Jinshang compound's defense system operated on a foundation of rigorous duty rotations and precise role divisions, leaving no gap in security. The staffing structure was a marvel of efficiency: gatehouse guards, patrolling guards, and night watchmen each had distinct responsibilities, yet their roles overlapped to create a seamless shield. Gatehouse guards, often veteran fighters or trusted retainers, were the first line of defense. Stationed at the main gate—heavily reinforced with iron bands and wooden bolts as thick as a man's arm—they inspected every visitor's credentials, from merchants seeking business with the family to distant relatives arriving for festivals. A leather-

bound register, updated daily, recorded names, purposes, and departure times; any discrepancy would trigger immediate alerts. At night, the main gate was sealed with a massive crossbar that required four men to lift, and side gates were locked with intricate padlocks whose keys were held only by the head guard and the family patriarch.

Patrolling guards, meanwhile, formed a mobile defense force. Armed with spears, swords, and later matchlock rifles, they traversed the compound in teams of three, following routes that covered every courtyard, alleyway, and blind spot. Their patrols were timed to overlap: while one team checked the eastern walls, another monitored the western stables, ensuring no area was unguarded for more than 15 minutes. They communicated via coded calls—low whistles for routine checks, sharp shouts for suspicious activity—and carried lanterns with colored glass: red for danger, green for all clear. In winter, when snow muffled sounds, they wore felt-soled shoes to move silently, listening for the crunch of unauthorized footsteps.

Night watchmen, a role blending security and community care, were the compound's sentinels after dark. Clad in thick coats and carrying brass clappers, they marked the hours with rhythmic beats, their cries—"Ten o'clock, all safe!"—echoing through the courtyards. Beyond timekeeping, they inspected fire risks, ensuring braziers in bedrooms were extinguished and stoves in kitchens were banked. Their most critical task, however, was surveillance: pausing at each corner to peer into shadows, they checked that windows were latched and roof tiles unbroken. If a watchman spotted something amiss—a broken tile, a half-open door—he would bang his clapper three times, rousing nearby guards.

The shift system was equally disciplined. Guards worked in six-hour shifts, with handovers occurring at dawn, noon, dusk, and midnight. The outgoing team would detail every anomaly: a stray dog near the west wall, a loose brick in the north passage, a visitor who left unusually early. The incoming team would verify each report, inspecting the dog's footprints or testing the brick's stability, before signing their names in a leather-bound logbook. This ritual ensured accountability; a single unreported breach could cost a guard his job—or, in times of crisis, his life.

3.2 Space-specific defences

While the entire compound was fortified, certain spaces demanded extraordinary protection, none more so than the silver vaults—the lifeblood of Jin merchant wealth. These repositories of silver ingots, promissory notes, and precious goods were hidden with the cunning of a spy's cipher, their defenses tailored to their irreplaceable value.

In the Qiao family compound, the primary silver vault was a masterpiece of concealment. Tucked beneath the main hall's eastern wing, it was accessible only through a secret door disguised as a wooden cabinet in the accountant's office. The cabinet's back panel, when pressed at a specific spot, swung open to reveal a narrow stone staircase leading down to a subterranean chamber. The walls of this chamber, lined with thick stone slabs and reinforced with iron sheets, were impervious to axes or drills. Even the air inside was controlled: a small ventilation shaft, disguised as a drainage pipe, prevented suffocation while allowing guards above to monitor for sounds of digging.

The Wang family compound took a different approach, integrating its vault into the heart of family life. Located in a small courtyard adjacent to the elders' quarters, the vault was surrounded by the most trusted guards and family members. Its entrance, hidden behind a large wardrobe in the elders' bedroom, could only be opened by a combination of three actions: sliding a hidden latch, turning a wooden knob disguised as a carved flower, and reciting a password to the guard posted outside—a multi-layered security check that ensured no single person could access it alone. The vault's interior was equally ingenious: silver was stored in iron chests bolted to the floor, each with a lock that required two keys, held by the patriarch and the head accountant.

Other high-value spaces had their own defenses. The account rooms, where ledgers and contracts were stored, featured windows fitted with iron grilles and doors that locked from the inside with a system of levers—once engaged, they could only be opened by someone inside, preventing forced entry. The ancestral halls, housing family relics and sacred tablets, were guarded by elderly retainers who lived in adjacent rooms, their presence a deterrent to thieves and a safeguard against fire, as they checked oil lamps hourly. Even the kitchens, where large quantities of food were stored, had hidden compartments for emergency rations, sealed with stone lids that blended into the floor—critical for surviving sieges.

These space-specific defenses were not isolated; they interconnected with the compound's broader security system. A breach near the vault would trigger alarms that summoned patrolling guards within minutes, while secret passages from the vault to the watchtowers allowed defenders to retreat or counterattack. In this way, every corner of the compound—from the humblest kitchen to the most secure vault—was part of a living, breathing defense mechanism, where architecture and human discipline worked in perfect harmony to protect what mattered most.

4 The Implicit spatial defensive value of shanghai compounds

The defensive design of these compounds transcends their historical context, offering insights for modern architecture

and cultural tourism.

4.1 Value in building construction

The defensive value of Jin merchants' courtyards in building construction holds profound implications for modern architectural design and traditional heritage conservation, offering timeless wisdom that bridges historical pragmatism and contemporary needs. Central to this is their philosophy of "taking advantage of the situation to set up defences," which harmonizes human-made structures with natural surroundings. In site selection, Jin merchants prioritized locations nestled between mountains and water or perched on elevated, spacious terrain, leveraging rivers, cliffs, and hills as natural barriers to minimize the need for excessive artificial fortifications. This approach resonates with modern architecture's shift toward sustainable design: today's urban planners and architects can draw inspiration by integrating existing landscapes—such as using a community's adjacent lake as a natural buffer against intrusions or situating buildings on gentle slopes to enhance visibility—thus balancing security with ecological harmony. Similarly, the closed courtyard layouts, often shaped like the Chinese characters "口" (kou), "日" (ri), or "目" (mu), demonstrate a masterful blend of enclosure and functionality. The towering, thick perimeter walls form a robust defensive outline, while street-facing walls with sparse, high-set windows reduce external visibility—designs that protect interior privacy while deterring prying eyes and theft. This fusion of closure and security provides a blueprint for modern residential or commercial clusters, where creating safe yet welcoming spaces remains a critical challenge.

In courtyard planning, the layered spatial logic of Jin merchant compounds offers actionable insights for modern public space safety. Multiple gates create gradual buffer zones, allowing controlled access and filtering visitors step by step, much like how modern security checkpoints in airports or residential areas manage crowds. Moon gates and hanging flower gates, which separate main and side courtyards, serve dual roles as aesthetic transitions and defensive checkpoints—their narrow openings limit the number of people passing through at once, preventing sudden rushes. Meanwhile, the narrow, winding alleyways, originally designed to delay intruders, offer lessons for emergency evacuation routes in modern communities: their layout ensures orderly movement during crises, avoiding stampedes, while their twists and turns can be adapted into "safety corridors" in parks or neighborhoods, guiding people to exits without exposing them to potential threats. These spatial sequences, which prioritize strategic segmentation and controlled flow, prove that historical defensive strategies can be reimagined to address contemporary concerns—from urban crime prevention to disaster response—without sacrificing the beauty and livability of architectural spaces. In preserving these compounds, we not only safeguard cultural heritage but also retain a repository of practical wisdom that continues to enrich modern design.

4.2 Unique tourism value

The value of visiting the Jinshang Compound from a defence perspective lies in the transformation of historical security wisdom into an immersive experience. From stepping into the first heavy arched gate of the Jinshang compound, the wisdom of defence will unfold like a code: the towering masonry wall only allows one person to pass through, the 'fire extinguishing holes' above the lintel can splash water to stop the enemy, and the lookout holes on the two sides hide the eyes of the houseguards; through the twisting canals, there is a special groove in the holding drum stone of the pendant door, which can be used to quickly insert a horse into the groove, and the daughter wall under the eaves is combined with the shooting holes to construct a three-dimensional defence line; the shadow yard of the side yard has a three-dimensional defence line. Inserted into the groove, the eaves of the daughter wall and shooting holes combined, constructed a three-dimensional line of defence; partial courtyard shadow wall dark door leads to the underground vault secret passage, wall base drainage port turned into an escape channel. Ascending through the whole courtyard of the runway, the outer wall 'tiger's eye' holes both ventilation and lookout, the silver vault iron door need triple locks and specific organs can open, cellar walls up to two metres thick and set up poison gas defence. Passing through the private school account room, wooden windows can be added iron grille; theatre algal wells hidden in the mezzanine of the dark sentry position. Walking to the corner of the backyard, three-storey watchtower had control of the whole situation, tourists ring the bronze bell, the ancient city wall and urn site in full view, so that the whole compound into a three-dimensional ancient security books.

5 Conclusions

The defensive space construction of the Jin Merchant Compound in the Ming and Qing Dynasties is the crystallisation of wisdom under the interweaving of special historical background and commercial demand. The logic of creating this defensive space not only highlights the strategic wisdom of Jin merchants in coping with the turbulent times, but also has

a revelation significance to the modern architectural design of safety, and the scenario presentation of the defensive elements confers a unique value to the cultural and tourism experience. The defensive space construction of Jin Shang Compound is not only the material carrier of historical security culture, but also an important link for the continuation of traditional architectural wisdom in contemporary times.

About the Author

Ruixue Jin, a current master's student, specializes in space creation and community renewal.

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