



Sounds and Positions: Visual Interpretation of Ming Forbidden City in Court Ritual Practice

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Abstract

This paper presents an interdisciplinary study of Ming dynasty court rituals, historical architecture, and the visualization of space-time relationships within ritual contexts. While scholars have long recognized that Chinese architecture was shaped by *li zhi* (the traditional system of rites and institutions) and have shown growing interest in the space-time dynamics generated by the performance of rituals, few have analyzed these dynamics within a specific ritual, leaving the nuanced and complex nature of imperial ritual space insufficiently explored. Focusing on the court ritual in the Ming Forbidden City, the study examines how sound—such as drums, bells, and whips—structured a non-ordinary temporal framework. Building on this space-time foundation, it employs visual reconstructions and diagrams to map the interplay between specific spatial positions and temporal stages within the ritual process. This approach reveals how time, space and participants were distributed, nested, and correlated in layered and interconnected ways. The analysis further demonstrates that the center of the imperial city was not absolute or permanently fixed; rather, different halls and gates could temporarily function as spatial centers depending on the specific ritual stages. On this basis, a deeper analytical model is proposed to uncover the transformation, reconfiguration and diversity of Ming Forbidden City, explaining how ritual constituted spatial realities by reconfiguring architectural space.

Keywords: drums; gates; process; reconfiguration; space-time

1. Introduction

In the “Doors” chapter of *Elements of Architecture*, Rem Koolhaas (2018, p.68) reflects on the transformation of Tian’anmen (Gate of Heavenly Peace): once rarely visited by the emperor,

it became, in the twentieth century, a site where state rituals shifted from the innermost courts of the Forbidden City to its outer edge, bringing the ritual life of the palace markedly closer to the city. In Koolhaas's account, the dense layers of taboo long accumulated at the palace gates began to dissolve; the open square in front of Tian'anmen, without enclosing walls, corner, or rank markers, became a civic space where the presence of the people was made visible, with openness itself serving as a metaphor of freedom. It is a striking image: a vast imperial complex, defined for centuries by thresholds of increasing exclusivity from south to north, suddenly bending its ceremonial axis outward. For Koolhaas, this "relocation" of state ritual marks a modern transformation in the nature of imperial authority, but was the ritual space or imperial authority ever truly fixed and absolute during the imperial era?

Like Koolhaas impression of the Forbidden City, many current studies also focus on its fixed spatial hierarchy, highlighting the grand procession through the central axis, where each threshold reinforces the authority of the one beyond. Two approaches are commonly used. The first traces back to Pre-Qin *li* classics,¹ seeking to connect the existing built environment with the idealized principles of *li*, in order to show even without a one-to-one correspondence, the ancient rites still manifest in transformed or adapted forms. The second approach relies on "yizhu"² documents, which uses modern language or drawings—such as plans with integrated routes—to re-present the ritual process. However, for design studies, these two approaches not only lack depth but also risk misinterpretation, as they tend to treat ritual spaces as static and totalized. This paper argues that attention should instead be given to how the built environment functioned as the site of specific rituals. Rather than adhering to a singular, unified space, focus should be placed on the fragmentation and reconfiguration of static environments within the ritual's temporal context.

This study focuses on the Ming dynasty court ritual (*chaoyi*)³ in the Forbidden City and unfolds in three parts. First, paintings and official documents are used as the primary sources⁴, tracing the sequence of ritual procedures to observe how spatial positions changed and shifted

¹ The Pre-Qin *li* classics refer to the foundational Confucian texts from the period before the unification of China by the Qin Dynasty (221 BC). These works concern social order, moral norms, institutional regulations, and codes of conduct.

² *yizhu* 仪注: an official document that guides the conduct of a ritual, detailing key aspects such as time, place, participants, and procedural steps.

³ The court rituals discussed in this paper are: 1) regular ritual: *chang chao* 常朝, a daily morning meeting where officials paid homage to the emperor and reported on state affairs 2) congratulatory ritual: *chaohe* 朝贺, a congratulatory ritual performed by officials on major occasions, such as the New Year or the emperor's birthday, to express loyalty and respect 3) bi-monthly ritual: *shuowang chao* 朔望朝, the "shuowang chao" in the Ming Dynasty refers to the ritual held on the first and fifteenth day of each month.

⁴ Visual materials, primarily Ming and Qing dynasty paintings—such as the *dailou tu*—which provide critical documentation and artistic interpretations; official documents, including institutional histories such as the *Da Ming Huidian* (Collected Statutes of the Great Ming) and the *Da Ming Jili* (Collected Rituals of the Great Ming), as well as the *Ming Shilu* (Ming Veritable Records) and the *Ming Shi* (History of Ming).

over time. Second, diagrammatic analysis is employed to reconstruct the rituals' space-time relations, revealing how spatial order was disassembled and recombined over time. And third, by incorporating comparisons with other court rituals, the analysis reveals both their institutional content and the ritual meanings behind them.

2. Disorder to order: imperial ritual through sound

The *dailou tu*⁵ is a type of Ming dynasty hanging scroll painting that portrays important officials awaiting imperial ritual in the early hours of the morning. The first scene of the *dailou tu* of the Taipei Version A (Fig. 1-A) illustrates Ming dynasty officials entering the imperial city. The Left and Right Chang'an Gates (also known as the East and West Chang'an Gates) serve as symbolic thresholds, marking the boundary of "entry", with crossing this line signifying admittance into the imperial domain. However, the ambiguous positioning of figures in these paintings subtly imply that this threshold is not as rigid or clearly defined as its physical forms might imply. The second scene in *dailou tu* (Fig. 1-B), depicting six elephants orderly and well-aligned in front of the Wumen Gate (known as the Main Gate of the Imperial City), illustrates a specific ritual: "For regular rituals six elephants are used and arranged in front of the Wumen Gate" (Shen et al., 1988, juan 228).⁶ This seemingly encapsulates the essential elements for establishing spatial order — position and number. However, in *Wu Za Zu*, Xie (ca. 2021) "Wubu I" highlights an absent from the image: the connection between the lined-up elephants and the sound they produce. He writes,

[The elephants] stand on either side of the Wumen Gate during each ritual. Before the proceedings begin, they roam and graze freely; but when the bell tolls and the sound of the whip is heard,⁷ they stand solemnly in readiness (juan 9).

⁵ *dailou tu* 待漏图: the term "dai" means "await", and "lou" refers to a traditional Chinese water clock. The *dailou tu* versions includes: A: *Portrait of an official in front of the Beijing Forbidden City* 王宫图 (known as the Zhu Bang edition 朱邦本), 170 x 110.8 cm, image provided by the British Museum; B: *Beijing Imperial City Map* 北京宫城图 (known as the National Museum edition 国博本), 163 x 97 cm, image provided by National Museum of China; C: *Ming Dynasty Imperial Garden Map* 明代宫苑图 (known as the Nanjing Museum edition 南博本), 183.8 x 155 cm, image provided by the Nanjing Museum; D: *Portrait of Xu Gao* 徐杲像 or *Illustration of the Peking Palace* 北京宫殿图 (known as the Taipei Version A 台甲本), 192.4 x 155cm, image provide by the National Palace Museum ; and E: *Illustration of the Great Ming Palace* 大明宫殿图 (known as the Taipei Version B 台乙本), 207 x 173.4cm, image provided by the National Palace Museum.

⁶ Original text: "凡常朝，用象六隻，列于午门前。" The Ming Dynasty had two types of regular rituals: the regular ritual at the imperial gate (*chang chao yumen*) and the regular ritual at the imperial palace (*chang chao yudian*). However, the one at the imperial palace were only held in the early Ming period. In this article, *chang chao* specifically refers to the "*chang chao yumen*" See more in the section "The Ritual Elephants that Astonished the Envoys" (Zhu, 2022).

⁷ The whip strikes the ground, serves as a ceremonial signal indicating that an event or action is about to begin and prompting immediate silence from the audience.

每朝则立午门之左右，驾未出时纵游斲草，及钟鸣鞭响，则肃然翼待。

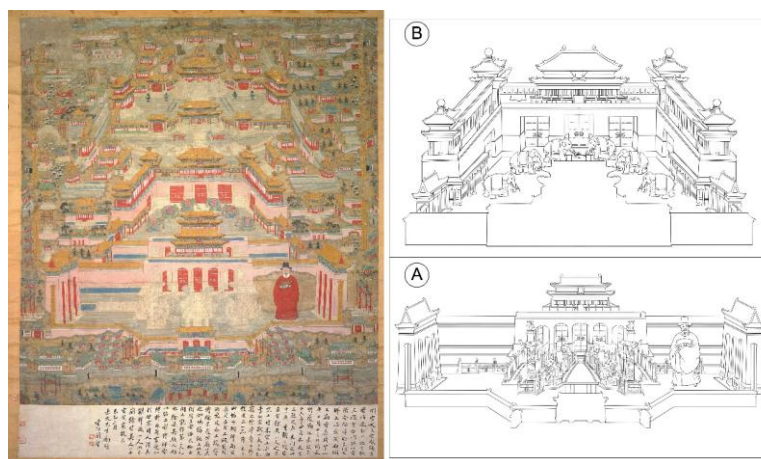
The factor that shifts the elephants from their disordered wandering to an orderly formation (standing solemnly in readiness) is the sound: specifically, the chime of the bell and the crack of the whip. In fact, “the bell chimes and the whip cracks” serves as a literary expression encompassing all the sounds within the court ceremony. According to the ritual procedures outlined in the *Da Ming Hui Dian*, the bell and whip sounds occur in two distinct stages, each preceded by the drum strikes. Shen et al. (1988) in “Libu II, Court Ritual: Regular Ritual”, noted that:

For the morning ritual, when the drum is struck, civil and military officials stand in hierarchical order outside of the Left and Right *yemen* (side gates next to the main entrance of the imperial palace). They wait for the bell to chime and the gates to open, then enter in hierarchical sequence. After crossing the Golden Water Bridge, they reach the *danchi*⁸ in front of the Huangji Gate, where they stand on the east and west sides facing each other, awaiting the emperor to ascend the throne. The whip is cracked (juan 44).

凡早朝，鼓起，文武官各于左、右掖门外序立。候鐘鸣开门，各以次进。过金水桥，至皇极门丹墀，东西相向立，候上御宝座。鸣鞭。

It is evident that, whether through literary expression found in Xie Zhaozhi’s *Wu Za Zu* or through institutionalized sequence recorded in Shen Shixing’s *Da Ming Hui Dian*, the sounds (drum, bell, whip) are intricately linked to specific actions and spatial locations. More significantly, the actions that follow these sounds highlight an order of positions, such as “standing in hierarchical order”, “in hierarchical sequence” and “stand on the east and west sides facing each other.”

Figure 1: Left- illustration of the Peking Palace; right-two scenes from *dailou tu*



Thus, we identify two distinct space-time structures. In the first, the relationship between

⁸ *danchi* 丹墀: terrace plaza, the place where rituals are held.

the actions of the participants (entering the imperial city), time (at *wugeng*⁹), and space (the Left Chang'an Gate) is loosely connected. What connects them is primarily an institution—"gate opening."¹ Although the Left Chang'an Gate functions as a solid physical boundary, the actions of the officials before and after the "gate opening—entering" remain unchanged, characterized by continuous movement. Whether they stay outside the gate depends on their arrival time, which is determined by the conventional "clock time"—the *wugeng*. In contrast, the second structure is framed by a "non-ordinary" temporal structure defined by sound. Within this framework, the actions of the participants (or elephants) are meticulously organized and precisely aligned with specific spatial positions, thus establishing a mutually interactive order. Between order and disorder, there is a transitional space, serving as the first stopping point for officials upon entering the Left Chang'an Gate – *nei chaofang* (the inner court waiting rooms). Situated just inside the Duan Gate, these rooms were carefully organized—officials gathered there according to their departments, while foreign envoys were directed to either side of the Imperial Gate (Xu, 2021).¹ The situation with the inner court waiting rooms was entirely different. Here, halls were divided by administrative department and seating arranged by rank. In the Hanlin Academy's court waiting room, for instance, the Grand Secretary (*gelao*) sat in the northern area, the scholars are seated in the central area, while the remaining officials are positioned in the southern area, forming a spatial order that gradually ascends in rank from south to north (Yin, 1982). Thus, the real threshold was not at the Chang'an or Chengtian Gates, but at the Duan Gate: where officials' loose gathering was transformed into a carefully staged hierarchy.

The regular ritual commences with a sequence of three drum strikes: the first (*chuyan*), second (*ciyan*), and third drum strikes (*sanyan*). Upon the first drumming, officials proceed from the court waiting room to the plaza in front of the Wumen Gate to form an orderly line. The civil and military officials are divided into east and west formations, arranged in an orderly structure with both rows and columns, and their positions and orientations vary according to their rank in the official hierarchy.¹ In addition to the spatial relationships of front and rear

⁹ *wugeng* 五更: a traditional Chinese timekeeping, roughly between 3:00 a.m. to 5:00 a.m.

¹ The left and right Chang'an gates had a "gate registry" where "officials attending court must report to the gate registry 应朝官员必须填报门籍" daily. At the end of each month, the "gate registry" records were submitted to the Department of Personnel and the Department of Military Affairs (Gao, 2008).

¹ By contrast, the *wai chaofang* (the outer court waiting rooms) outside the Left and Right Chang'an Gates appear to have been little used, but based on the limited records, it appears that the regulation of the outer court waiting rooms was comparative loose. Joseon envoys, who were typically meticulous in documenting court rituals, made no mention of them, with only a single documentation by the envoy Ho Kyun in the second year of Wanli reign (1574) mentioning "rest in a corridor" outside of the Left Gate while awaiting entry. An impeachment memorial by Hu Guan (1400–1458) in the tenth year of the Zhengtong reign (1436–1449), vividly records that the ritual halls outside the Chang'an Gates had been taken over by meritorious ministers and imperial relatives, and even used to house poultry and livestock (Sun et al., 1964, juan 129).

¹ The *chaoban* (court ranking system that directly associates with the order to attend court) of the Ming Dynasty was closely intertwined with the bureaucratic system and political affairs, serving as one of the ritualized

positions, as well as the eastward and northward orientations, the lining-up process is completed in sequence to the sound of the drum. Liao Daonan (1493–1547) of the Jiajing reign (1522-1566) informs us that, following the first drumming, officials would initially take their seats in order beneath the shed on either side of the Wumen Gate. After the third drumming, higher-ranking officials would then join the formation and proceed inside (Liao, 2013, juan 11). However, the situation was different in earlier periods. During the Chenghua reign (1465-1487), Peng Shi (1416–1475), the Grand Secretariat, suffered from asthma and was unable to stand for long. He would intermittently sit on a stool under the shed, while the Secretaries of the various departments would sit behind him, and the lower-ranking officials were required to remain standing, awaiting their turn (Yin, 1982). In this space, stretching from the court waiting room to the Wumen Gate, the order was no longer solely determined by the relationship between individuals (their official position) and their designated positions (seats within the court waiting room), the time factor has now come into play.

In fact, officials joining the formation based on their ranks was not a spontaneous or arbitrary action. If we trace back further, the ritual system established during the early Ming Dynasty for the “*shuowang chao*” already began to establish an ordered relationship among three interconnected elements: people, time, and place. As Shen et al. (1988) explain in “Libu II, Court Ritual: Bi-Monthly Ritual”:

In the fourteenth year of the [Hongwu reign 1368-1398], it was established that the first (*shuo*) and fifteenth (*wang*) days of each month, all civil and military officials would wear their court attire and await the commencement of the court ritual, signaled by three drum strikes. Dukes and marquises, first- and second-rank officials would enter through the East and West Corner Gates and wait, while officials ranked third and below would line up in an orderly way within the *danchi*. Upon the sounding of three bell chimes, officials of higher rank would enter sequentially and take their positions. Once the bell ceased, the emperor would take his seat. Following the sound of the whip, hundreds of officials would perform the five bows of respect. (juan 44)

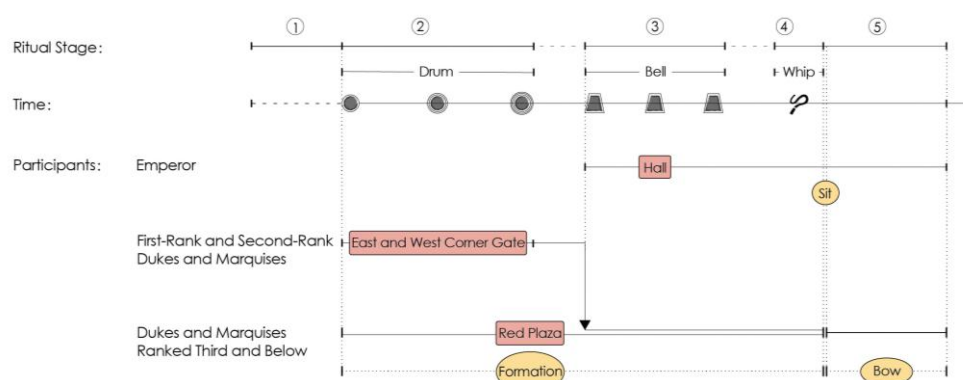
洪武十四年定：凡朔望日。文武百官各具朝服，俟鼓三严。公侯、一品、品官，入东、西角门俟。其余三品以下，先于丹墀内班横行序立。钟三鸣。公侯、一品、二品以次入班序立。鐘鸣毕。仪礼司奏外办。导驾官导上位陞御座。鸣鞭讫。鸣赞唱班齐。通赞诣中道。班首臣某等起居，圣躬万福毕。百官行五拜礼。仪礼司奏礼毕而退。

The ritual regulations for the “bi-monthly ritual” (*shuowang chaoyi*), initially formulated in the third year of the Hongwu reign (1370), underwent two revisions in the fourteenth year (1381) and seventeenth year (1384) of the same reign. Among these, the most significant modification introduced in 1381 was the incorporation of three sounds: the three drum strikes,

manifestations of political order. While its fundamental framework adhered to the *pin ding ban* (ranking by official ranks) system established during the Hongwu reign, it underwent numerous changes over different periods (Hu, 2009).

three bell chimes, and the crack of the whip¹ (Xu, Y.K. et al., ca. 1987, juan 17). These adjustments effectively structured the entire ritual into five distinct stages: before the drum strikes, during the drum strikes, during the bell chimes, the crack of the whip, and the post-whip (Fig. 2). This man-made ritual temporal framework delineates the time, sequence, and positions of three distinct groups: the emperor, the “dukes, marquises, first- and second-rank officials,” and the lower-ranking officials. In fact, the three primary sounds – the drum, bell, and whip – constitute the foundational temporal framework for nearly all rituals within the Imperial City of Beijing.

Figure 2: Fourteenth year of the Hongwu Reign (1381) bi-monthly ritual diagram



Based on this framework, the spatial configuration of the regular ritual can be deconstructed into three parts: the drum sound space, the bell sound space, and the whip sound space. Far from being random, this pattern is appropriated from ancient traditions. “The earth drum and wooden mallet are part of the music of the *Yiqi Shi*”¹, “The objects made by⁴the craftsmen assigned by the *Huang Di* (Yellow Emperor)”¹, “The *Tiaolang Shi* is responsible for wielding the whip to drive others away.”¹ Each sound can be traced back to that mythical golden age. In Mircea Eliade’s concept of “sacred time”, this situation is referred to as the “regeneration of

¹ Original text: “国朝，正旦³冬至、圣节朝会，及蕃使来朝，设鸣鞭四人于奉天殿丹陛上，北向立，百官入旁折位。皇帝出谨身殿，鸣鞭三，皇帝升奉天殿，鸣鞭三，朝毕皇帝还宫，鸣鞭三。常朝皇帝升殿鸣鞭三，朝毕鸣鞭三。”

¹ Original text: “出土鼓蕢桴，⁴伊耆氏之乐。” (Kong, 1980) The *Yiqi Shi* was a title for ancient Chinese rulers recorded in historical texts, often associated with the Yan Emperor Shennong (who is credited with founding agricultural civilization and inventing ritual instruments such as the earthen drum) and with Emperor Yao (c. 2400-2200 BCE). In terms of historical genealogy, it roughly belongs to the era of the Three Sovereigns and Five Emperors.

¹ Original text: “黄帝工人垂所造。” (Qin, 1957) The Yellow Emperor (c. 2700–2500 BCE), regarded as the ancestor of Chinese nation, was an ancient ruler of China.

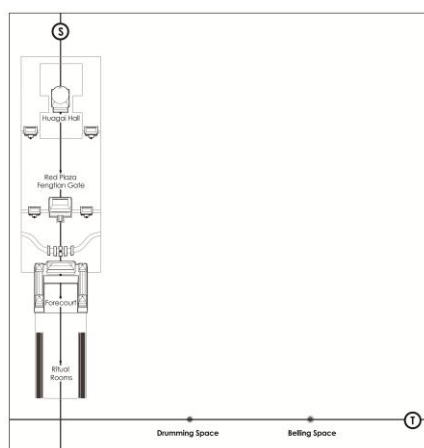
¹ Original text: “条狼氏掌执鞭以趋辟。” (Ruan, ed., 1980) The *Tiaolang Shi* was an official post recorded in the ancient Chinese text *Zhouli*, primarily responsible for clearing obstacles from the roads, driving away pedestrians, and maintaining order during travel. This position can be traced back as early as the Shang and Zhou periods (c. 1600–256 BCE).

time”, distinct from the secular, and represents the “manifested original mythic time” (Eliade, 2002, pp. 32-35).

3. Space-time framework: diagrammatic interpretation of sounds and positions

To adequately capture the intricate interplay of time, space, and human action, conventional descriptive methods such as textual narration and architectural floor plans often prove insufficient. To address this, an analytical diagram is introduced that overlays spatial and temporal systems, offering a visualize representation of the ritual environment’s complexity. In this framework, physical space unfolds on the Y-axis, while ritual time along the X-axis—not as measured clock time, but as an internal rhythm through sounds like drum, bell, and whip (Fig. 3). Constructing this framework requires a rigorous method of translating textual evidence into a consistent visual language: a procedural baseline is established from official records like the *Da Ming Hui Dian*, then refined with details from personal accounts and visual sources. Within the diagrams, participants’ movements are traced as directional lines and their static presence as shaded areas, allowing textual descriptions like “enter in hierarchical sequence” (*yici jin*) to be precisely mapped. This method no longer treats space as a static backdrop but as the stage for a narrative ‘event’ and posits that true meaning emerges from the synthesis of space, movement, and sequence (Tschumi, 1994).¹ This visual technique⁷ transforms the invisible ritual space-time structure into a visible and analyzable form.

Figure 3: Space-time framework diagram



Applying this framework, the regular ritual’s spatial configuration can be deconstructed into three primary sound spaces—the drum, the bell, and the whip. Taking the drum sound

¹ This concept is rooted in Tschumi’s theory from the mid-1970s, which defines architecture through the tripartite relationship of Space, Event, and Movement (SEM). This framework shifts the primary focus of architecture from its static form (proportion, material, etc.) to “what happens in it.” Tschumi refers to this combination of events and movements as a “program,” arguing that “Without a program, there is no architecture.” He further emphasizes the point by stating, “There is no such thing as a neutral space... a building has no existence if no event takes place in it.”

space as an example, it is itself further divided into three distinct units: 1) The First Drumming Space: where officials transition from the court waiting room to the space in front of the Women Gate (Fig. 4-A); 2) The Second Drumming Space: the first stage of lineup formation at the gate, with officials assembling in an orderly way, while senior officials wait sitting under the shed (Fig. 4-B); 3) The Third Drumming Space: the completion of the lineup (Fig. 4-C). Although these three units occupy the same location, the distinct actions and positional change and adjustments of the participants within each unit prevent them from being viewed as a single, unified space. In other words, what appears to be one continuous space unfolds into multiple, functionally differentiated spatial units. This division aims to emphasize that the order within the court ritual space is often generated through subtle variations, for example like in the first year of the Tianshun reign (1457), Shi Heng (?-1460) suggested improving the order and organization of the imperial palace gates, stating that “at the third drum strikes of the regular ritual, the two gates open first. The flag-bearing general advance and take their positions; after the bell chimes, the court officials enter in order.” (Sun et al., 1964, juan 274)¹ The measure of differentiating the entry times for the guards and court officials led to the further division of spatial unit C into spatial unit C-1 within this specific ritual practice (Fig. 4-C-1).

8

When comparing the congratulatory rituals held on the Winter Solstice, the New Year’s Day, and the Longevity Festival (Shen et al., 1988, juan 43)¹, we observe that although the drum-striking stage is common to all, the actions it initiates delineate a broader and more intricate spatial range: 1) The First Drumming Space: officials line up in front of the Women Gate (Fig. 5-A); 2) The Second Drumming Space: officials enter the Left and Right Side Gates, cross the Golden Water Bridge, pass through the East and West Corner Gates (name later changed to Hongzheng Gate and Xuanzhi Gate, now known as Zhaode Gate and Zhenduo Gate), and arrive at the *danchi* of the Fengtian Hall (Fig. 5-B); 3) The Third Drumming Space: The *zhishi* officials² reach the Huagai Hall (Fig. 5-C).

¹ Original text: “常朝第三通鼓起，先开二门，官军旗校将军先进摆列，待钟响，朝官依次而进。”

¹ Original text: “鼓初严，文武官具朝服齐班于午门外。鼓次严，引礼引百官由左、右掖门入，诣丹墀东西、北向立。鼓三严，执事官诣华盖殿伺候。”

² *zhishiguan* 执事官: staff responsible for executing the tasks.

Figure 4: Regular ritual's "drum sound space" diagram

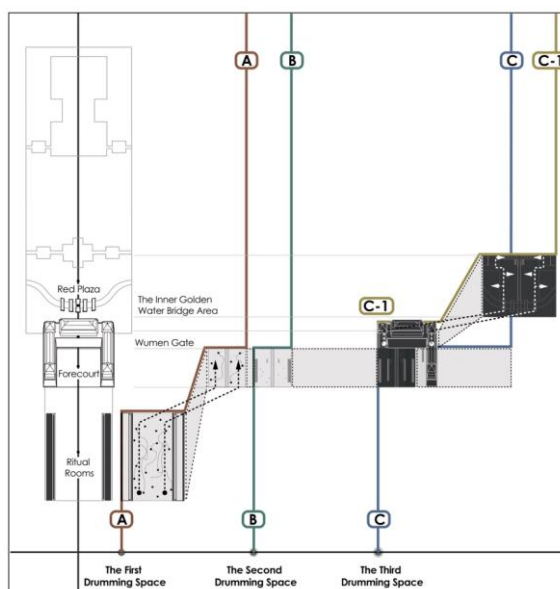
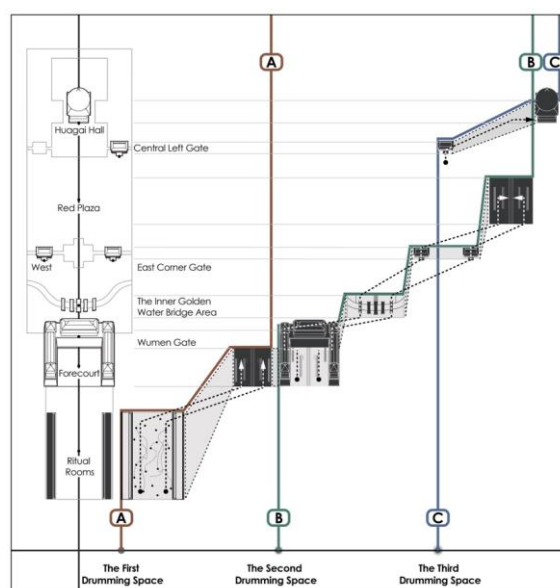


Figure 5: Congratulatory ritual's "drum sound space" diagram



From the perspective of the officials' movements, the "bell sound space" resembles the "drum sound space". The bell sound in the regular ritual is accompanied by the opening of the gates. Afterward, hundreds of officials "enter in order, cross the Golden Water Bridge, and reach the *danchi* of the Huangji Gate, where they stand facing each other (east and west), waiting for the emperor to ascend the throne" (Shen et al., 1988 juan 44).² (Fig. 6-A) When

² Original text: "各以次进，过金水桥，至皇极门丹墀，东西相向立，候上御宝座。"

the bell stops during the court ritual, “the emperor, in full *gunmian*², ascends the throne” (Slfen et al., 1988, p. 43).² At this stage, the officials line up in the *danchi* of the Fengtian Hall, awaiting the emperor (Fig. 7-A). However, from the moment the bell chimes, in addition to the large procession of officials moving from south to north, the ceremony introduces a crucial participant—the emperor, arriving from the north and more precisely, the bell’s sound becomes more closely connected to the emperor’s movements. The diagram shows this critical relationship visible by rendering the emperor’s and the officials’ movements as two opposing directional lines along the north-south axis. The cessation of the bell indicates that the emperor has arrived at his designated position, which is the Fengtian Gate in the regular ritual (Fig. 6-B), or the Huagai Hall-Fengtian Hall in the congratulatory ritual (Fig. 7-B).

In other words, the “bell sound space” presents a dualistic “oppositional” relationship that is absent in the “drum sound space”. This evident dualistic relationship within the ritual space of the Imperial City aligns with the architectural layout, where civil and military officials are symmetrically arranged in a left-right (east-west) formation. However, in the “bell sound space,” a different duality emerges, defined by the north-south axis - the emperor and the officials. Moreover, this structure emerges from the simultaneous “symmetrical” (oriented toward each other) movements, a dynamic that cannot be observed in the static arrangement of the architecture. This emergent dynamic is made visible through our diagrammatic method, which translates narrative accounts of the ceremony into opposing trajectories on the space-time structure. More significantly, the tension between these movements intensifies as the two forces draw closer, ultimately transforming the court ritual (congratulatory ritual and regular ritual) becomes akin to the “sacred” space in religious ceremonies, where the emperor and officials meet from two opposing directions.

² *gunmian* 衮冕: special attire for the emperor's most important ceremonies.

² Original text: “皇帝具衮冕升座。”

Figure 6: Regular ritual's "bell sound space" diagram

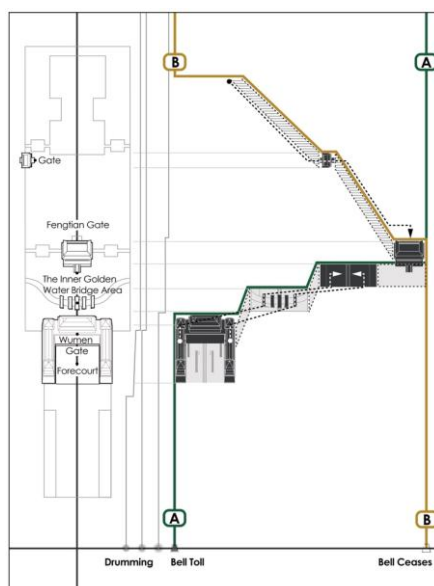
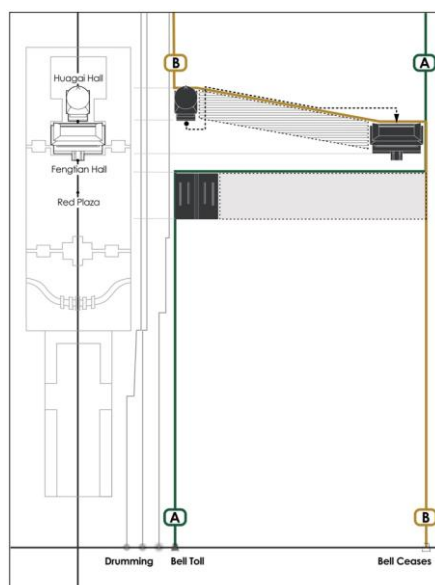


Figure 7: Congratulatory ritual's "bell sound space" diagram



Unlike the previous two, the “whip sound space” does not involve changes in spatial positioning. Rather, the sound regulates subtle movements and postures at fixed locations. In the regular ritual, the whip sound occurs in two distinct stages. The first marks the alignment of officials before their bows—the emperor, seated on the dragon throne, while hundreds of officials shift from facing one another to standing in the northward direction (Lin, 1981).² The

² Original text: “质明入于左掖门。千官先入，东西庭相向而立。皇上自皇极门北，揭黄屋北帘而登。鸣鞭三次，乃坐于黄椅。千官俱北向立，一拜三叩头而起，还入于东西相向之位。” Zhao Xian (1544–1592), in his *Yanxing lu* [燕行录] written during the envoy mission for the Shengji Festival in 1574 (Wanli reign), as preserved in

second indicates the conclusion of the ceremony: “the whip cracks, the emperor rises, hundreds of officials exit in sequence.” (Shen et al., 1988, juan 44)² In the congratulatory rituals, the sound (temporal rhythm) transitions into another phase after the whip sound—characterized by musical features such as the “*jichang*”² and instrumental music.

4. Variety and flexibility in ritual organization

4.1 The shifting centers in ritual practice

In earlier discussions of the congratulatory and regular rituals, the Wumen Gate, again being the main gate of the imperial city, repeatedly emerged as a prominent spatial boundary—the southernmost boundary of the ritual space. This recurrence might give the impression that Wumen Gate functions as the central role and the most significant demarcation of the imperial rituals. However, this perception shifts when other rituals are taken into account. For instance, the *Yanxinglu Xuanji* records a different “bell sound space” situation during the Qing dynasty’s *Xiang Taimiao*² in 19th year of the Kangxi reign (1690). Joseon envoy Xu (1962) documented a unique relationship between the Wumen Gate and Duan Gate:

When the eastern sky brightens (signaling the dawn or the commencement of the ritual), all the officials emerge from the crowd and position themselves outside the Duan Gate. The bell in the Wufeng Tower chimes, and its sound reverberates through the Duan Gate. As the bell chimed with increasing frequency and a quickening rhythm, the officials rose to their feet. Meanwhile, the ritual procession, accompanied by the emperor’s carriage, made its entrance. Numerous royals on horseback follow the procession from within the Wumen Gate. As it moves through Duan Gate, the bell ceases, signaling the officials to rise and kneel in reverence (p.272).

东方向明，诸官从人出，屏于端门之外。五凤楼上击钟，端门上应之，钟声甚紧，百官起立，先有小黄舆八，多秉灯火而出，小豹尾继行者多，其后黄屋，只以四灯前导而行，诸王及口自午门内骑从者甚多，出端门而钟止，百官离席而跪。

Here, the boundary of the ritual space extended further south to the area outside the Duan Gate. As noted earlier, ritual elephants (*yixiang*) marked the beginning of ceremonies: their number signifies the type of ritual, and their orderly arrangement signals that the ritual is about to commence. In regular rituals, these elephants appeared at the Wumen Gate, reinforcing its function as the starting point within the broader ceremonial sequence. Yet in the *Xiang Taimiao*

Yanxing lu quanji [燕行录全集], vol. 5.

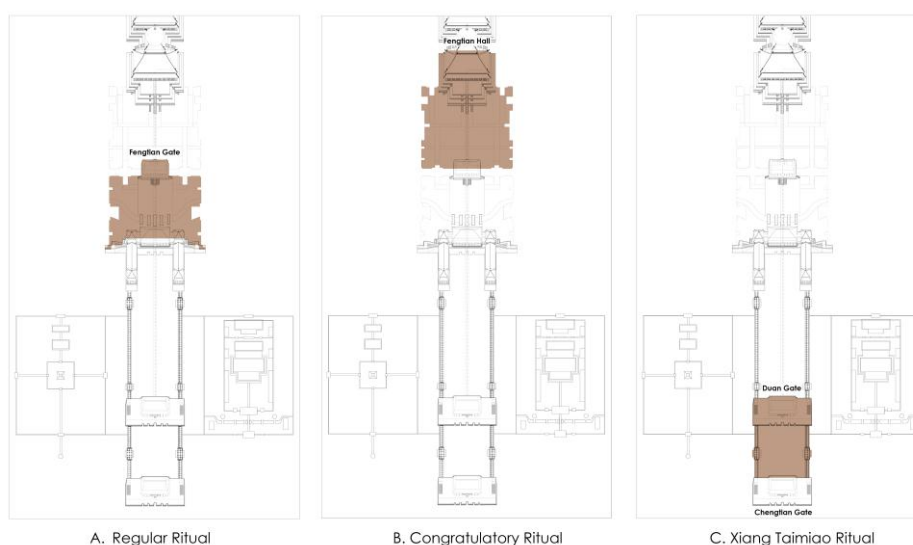
² Original text: “鸣鞭，驾兴⁵ 百官以次出。”

² *jichang* 鸡唱: time announcement through singing.

² *Xiang Taimiao* 享太庙: a shamanic ritual space, also known as *Tangzi Jitian* 堂子祭天.

ritual, the area between Chengtian Gate and Duan Gate took on a far more central role. The *Da Ming Hui Dian* specifies that “for the Xiang Taimiao ritual, ten ritual elephants are to be arranged inside Chengtian Gate” (Shen et al., 1988, juan 22), indicating that the ritual’s symbolic location shifted from Wumen Gate to the area between Duan and Chengtian Gates—a space that was, in fact, a transitional zone in regular ceremonies. In fact, this movement and transformation of the ritual center, along with its spatial range and boundaries, occurred in every ritual held within the Imperial City. In the regular ritual, the center was typically located in the courtyard of the Fengtian Gate (Fig. 8-A); in the congratulatory ritual, it shifted northward to the courtyard of the Fengtian Hall (Fig. 8-B); and in the *Xiang Taimiao* ritual, it was relocated further south to the open space beyond Duan Gate (Fig. 8-C).

Fig. 8: *The Shifting Center of Different Rituals*



Such flexibility in redefining the ritual center was made possible by the spatial organization of the Forbidden City, which is structured through a sequential combination of gates, courtyards, and architectural enclosures. The arrangement provided a robust framework that allowed ritual centers to shift according to specific ceremonial needs. First, the unified plan organization—anchored by the central axis and a symmetrical left–right layout—established a stable framework of positional relationships, enabling the functions and roles of different spaces to be reassigned or transformed with ease during rituals. Second, the architectural elements themselves—halls, gates, and courtyards—were inherently polysemous: their functions can be defined or redefined through ritual practice. In this way, the courtyard-based arrangement created a series of discrete yet interconnected zones, each serving as a temporary center at different stages of the ritual. Consequently, we cannot—and should not—rely on a singular, idealized spatial model such as the *Sanchao Wumen*² to interpret the imperial ritual space, as

² *Sanchao Wumen* 三朝五门: Three Audience Halls and Five Gates, which means the ideal model of ancient Chinese imperial cities.

doing so risks oversimplifying the inherent complexity and polycentric nature of the Imperial City's ritual system.

4.2 The order of participants in “bell sound space”

Building on the previous diagrammatic analysis of the “bell sound space” in the regular and congratulatory rituals, it is evident that sound played a pivotal role in coordinating participants' positions and movements. In the regular ritual (Fig. 9), the chiming of the bell signaled officials to advance in orderly formation from south to north—crossing the Golden Water Bridge and reaching the *danchi* of the Fengtian Gate—while the emperor moved southward from the north to the gate. In contrast, during the congratulatory ritual (Fig. 10), officials arrived ahead of the emperor and waited in the plaza. Despite these differences, in both cases the emperor and officials ultimately met at the same location when the bell ceased. In the *Xiang Taimiao* ritual (Fig. 11), however, the movement was almost entirely one-directional: the emperor advanced toward the ancestral temple, while the officials remained fixed along the ritual route, almost as part of the ritual setting.

Figure 9: The regular ritual's “bell sound space” diagram

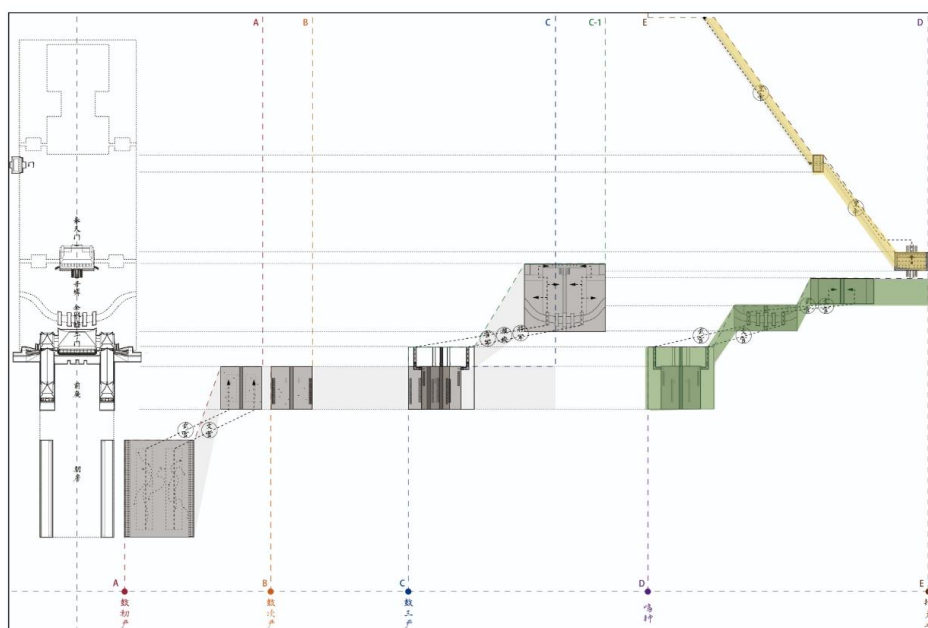


Figure 10: The congratulatory ritual's “bell sound space” diagram

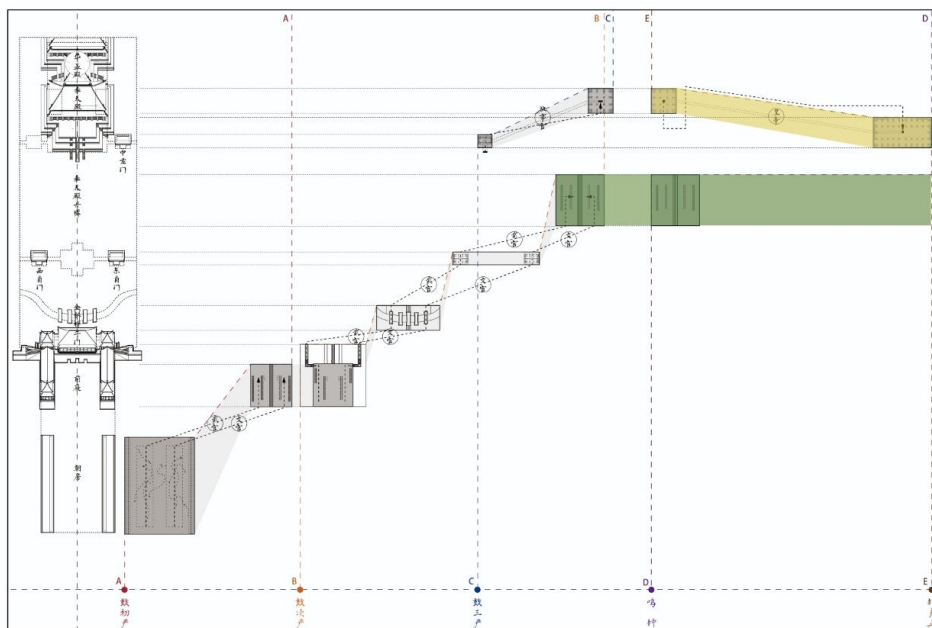
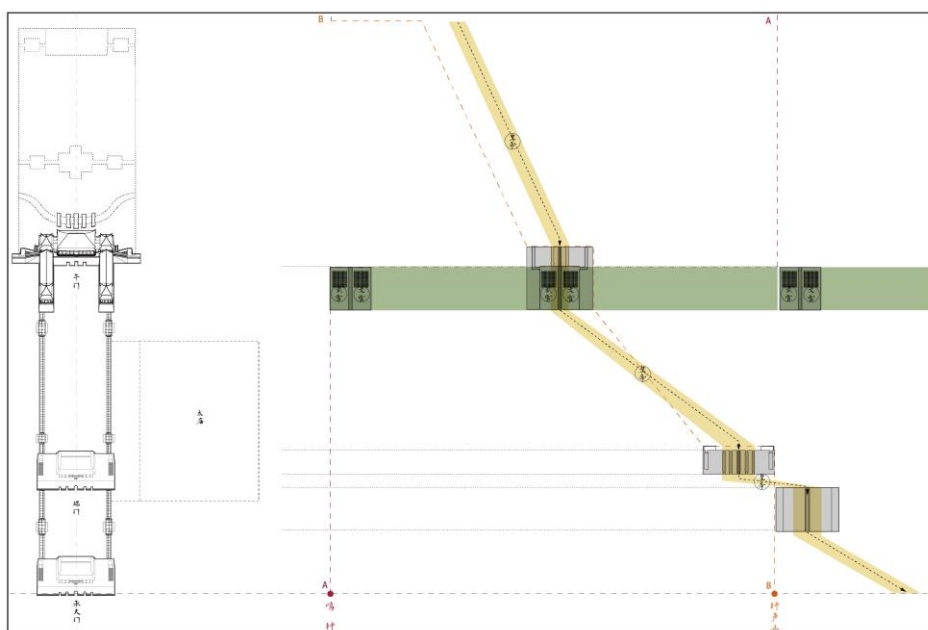


Figure 11: The Xiang Taimiao ritual's "bell sound space" diagram



Indeed, these three relationships between the officials and the emperor demonstrate that the bell sound did more than simply marking a moment during the ritual; it actively structured the order of the participants. In the regular ritual, the symmetrical convergence of the emperor and officials along the north–south axis suggests a balanced, almost reciprocal relationship between ruler and subjects. Their shared movement toward a meeting point transformed the architectural axis into a dynamic stage, with the encounter itself becoming the central moment of the ritual. By contrast, the congratulatory ritual employs the same bell cue to create a different order: officials, having arrived early, remain still, framing the emperor’s movement.

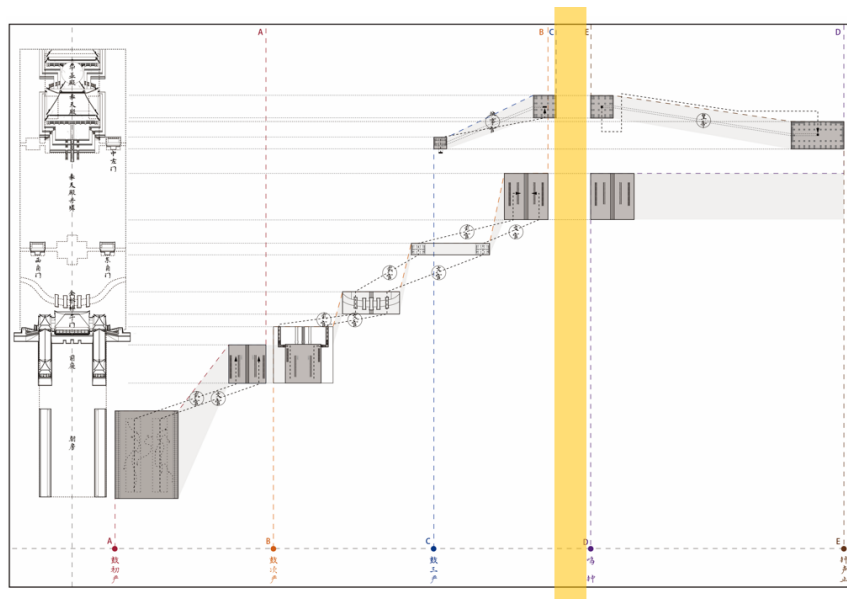
Here, hierarchy is reinforced both visually and spatially—the emperor’s southward advance becomes the sole focus of action, while the officials’ stillness underscores their role as witnesses and recipients of imperial presence. In the *Xiang Taimiao* ritual, the relationship between the emperor and the officials differed from the previous two cases: the bell no longer coordinated their convergence but instead punctuates a one-way procession. The emperor passes through a sequence of spatial thresholds toward the ancestral temple, while the officials stood as fixed markers along the route, highlighting the ritual as an exclusive imperial privilege with the emperor as its sole officiant.

Comparing these three cases, we can see more clearly the complexity of China’s political order. On the one hand, the emperor’s absolute authority is emphasized, as in the congratulatory ritual and the *Xiang Taimiao* ritual, where officials remain stationary and the emperor alone commands the movement of the ritual. On the other hand, in the regular court ritual, the distinctive principle of moral governance is inscribed into spatial practice: the symmetrical convergence of ruler and officials creates a momentary sense of equilibrium, a performative gesture of respect toward the officials. This ruler–subject dynamic is embedded within the ritual’s space–time framework, where the bell not only choreographs the rhythm of actions but also conveys the ethical principles that underpin imperial authority.

4.3 “Gaps” in the space-time framework

Beyond regulating the relationship between the emperor and officials through sound, the diagrammatic analysis also reveals a recurring and distinctive phenomenon: the presence of “gaps” within the sound space. A notable example occurs under Emperor Xiaozong (r. 1470–1505), whose habitual lateness created pauses of uncertain duration in court and ritual schedules, sometimes delaying the start of state affairs until well after sunrise (Li et al., 1962). Similar disruptions were recorded under Emperor Wuzong (r. 1491–1521), when civil and military officials, exhausted from prolonged waiting, experienced both mental fatigue and administrative delays (Fei et al., 1964). One can easily imagine the scene: officials standing in place, waiting for a sound that failed to arrive on time. In the diagram of the regular morning audience, such a gap is clearly visible, indicating that the bell-sound space and the drum-sound space functioned as two separate parts.

Figure 12: The gap between drum-sound and bell-sound spaces in the regular ritual



The independence of these two parts enabled them to operate separately within the ritual while preserving the integrity of the whole. Such flexibility and combinability reveal the modular character of ancient Chinese ritual practice. Moreover, upon closer examination, such autonomous units were not limited to the single sound spaces of the regular court ritual; they also appeared in more large-scale ceremonies.² In grand rituals, each sub-ritual could likewise function as an independent module embedded within the overarching ritual framework.

The three cases discussed in this section illustrate that first, the ritual procedure itself was organized as a sequence of modules, each functioning as a discrete unit. At the same time, the layout of the Forbidden City was likewise structured through a series of courtyards, each forming an independent spatial entity. These two modes of organization together constituted the ritual environment and established the order of participants and their relationships. This was both the meaning and the function of the system: to construct order through the performative unfolding of ritual and to reveal the imperial authority and ruler–subject relationships embedded within it.

5. Conclusion

Taking the *dailou tu* as its point of departure, this study elucidates the latent space-time framework embedded in traditional rituals. By transforming official textual records into analytical diagrams, it visualizes ceremonial procedures to uncover intricate structures, space-

² For example, the fourteen-day sacrificial ceremony at the Temple of Heaven can be understood as a macro-level ritual sequence composed of four sub-rituals—bi-monthly ritual, ancestral worship ritual, regular ritual, and congratulatory ritual—each functioning as an independent module. These modules were flexibly organized and integrated, together constituting the overall structure of the extended ceremony.

time dynamics, and participants' actions that are otherwise difficult to perceive. The study's core contribution lies not only in clarifying the internal mechanics of specific historical rituals but also to in demonstrating the potential of a new interdisciplinary methodology found in diagrammatic analysis. The research culminates in three major conclusions.

Firstly, to truly understand the Forbidden City, one must look beyond its masterful spatial order to a second, equally crucial dimension: time, as defined by ritual. In imperial ceremonies, space (the locations and sites of the built environment) and time (the rhythm and sequence created by sounds) operate as distinct yet unequal systems, with the temporal system playing the more decisive role. The temporal system is marked by a dual nature: it provides stability by creating a distinct ritual rhythm through unique sounds like bells and drums, yet it also allows flexibility, as its constituent stages function as independent modules that can be adjusted when necessary. Correspondingly, the spatial system also possesses this duality. Its unified architectural layout, such as the central axis, offers a stable stage for rituals. At the same time, buildings themselves (halls, gates, courtyards) carried inherently multiple meanings; their specific functions remained fluid, becoming more clearly defined only through ritual practices.

Furthermore, the ritual spatial order of the Forbidden city emerged from the interaction between time, movement, and space, where sound regulate participants' positions and actions, defining ritual space into units, zones, and sequences. Ritual space did not have an absolute fixed "center". Elements such as halls or gates within the physical space could all become the "temporary centers" at different ritual stages, depending on how participants were positioned and how movements were performed. In this sense, each ritual would redefine the extent and boundaries of its spatial domain. Thus, ritual spaces within the Forbidden City could only be distinguished individually through their specific ritual practices, essentially forming a concept of "ritual + space". Such a polycentric and zoned ritual spatial structure fundamentally distinguished the Chinese imperial city from the ritual spaces of most Western temples or churches.

Lastly, an efficient modular system managed the complex demands of imperial rituals, enabling rapid transitions between temporary ceremonial centers. This system's logic was compositional: major state ceremonies were assembled from smaller, self-contained sub-rituals. Each sub-ritual, with its own complete set of procedures, functioned as an independent "ritual module". The design methodology of all state rituals, including those within the Forbidden City, was therefore based on the strategic combination of these modules. In contemporary terms, this seemingly complex system operated through a remarkably efficient programming mechanism. This modular construction strategy is not only crucial for interpreting the ritual space of the Chinese imperial city, but also reflects a sophisticated understanding of space-time management that remains highly relevant to contemporary environmental design.

Nevertheless, the complexity of ritual space in China's imperial period, along with its deep ideological and political significance, means that several important issues remain beyond the scope of this paper. First, the relationship between the individual and ritual, as well as with ritual space is a key topic in current ritual studies. However, given the limitations of scope and length, this aspect is not fully addressed in-depth here. Further research centered on the individual would undoubtedly deepen the discussion. Second, musical compositions also constitute a vital part of ritual soundscape. They differ significantly from the types of sound discussed previously, such as drums and bells, music introduces a different set of acoustic and symbolic dynamics. This opens a promising direction for future research towards a more comprehensive understanding of the interplay between sound and space.

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