

A comparative **EXPLORATION OF** **OF THE SOLAR CYCLE** *Celestial alignments* *of* **SAJIKDAN** *and* **TEMPLO MAYOR**

*Una exploración comparativa de
las alineaciones celestiales del ciclo solar
de Sajikdan y el Templo Mayor*

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ABSTRACT. *Sajikdan and Templo Mayor was shaped by the distinctive histories and cultures of the Joseon Dynasty and the Aztec Empire, rooted respectively in Confucian culture and Mesoamerican civilization. These symmetrical temples, constructed in the 14th and 15th centuries in the cities of Hanyang and Tenochtitlan. This study conducts a comparative analysis of the celestial alignments in relation to the orientations of the Templo Mayor and Sajikdan. Archaeological evidence attests that the façade of the Templo Mayor deviates by approximately 7° south of east. In that orientation, the sun rises between its twin temples 16 days before and after the equinoxes. This configuration is closely linked to the layout of the four principal avenues extending from the capital, Tenochtitlan. In contrast, no historical evidence accounts for Sajikdan's 29° clockwise orientation. Thus, an inferential methodological approach was employed to propose a correlation between its orientation and the winter solstice sunrise; an orientation consistent with the alignment of Sajikdan and Jongmyo. The winter solstice symbolised the yin–yang transition and the turning of the year, serving as a calendrical benchmark of the time. Despite the geographical distance between them, the comparative analysis of these two sites reveals how the civilizations inscribed astronomical, symbolic, and political dimensions into their respective ritual landscapes.*

Key words: *celestial alignment, the equinoxes, Sajikdan, winter solstice, Templo Mayor.*

RESUMEN. Sajikdan y el Templo Mayor tienen sus raíces en la tradición confuciana de la Dinastía Joseon y en la civilización mesoamericana del Imperio azteca. Estos templos simétricos, construidos en los siglos XIV y XV en las ciudades de Hanyang y Tenochtitlan, constituyen espacios rituales de carácter central. Este estudio realiza un análisis comparativo de las alineaciones celestiales en relación con sus orientaciones. La fachada del Templo Mayor, arqueológicamente confirmada, se desvía aproximadamente 7° al sur del este, y en esa posición el sol se eleva entre sus templos gemelos dieciséis días antes y después de los equinoccios. Esta disposición se halla estrechamente vinculada con el trazado de las cuatro vías principales que parten desde la capital, Tenochtitlan. En contraste, no existe evidencia histórica que explique la orientación en sentido horario de 29° de Sajikdan. Por ello, se adoptó un enfoque metodológico de carácter inferencial para proponer una correlación entre su orientación y la salida del solsticio de invierno, coherente con Sajikdan y Jongmyo. El solsticio de invierno simbolizaba la transición yin–yang y el giro del año, constituyendo un punto de referencia calendárico de la época. A pesar de la distancia geográfica entre ambos, el análisis comparativo de estos dos sitios revela cómo las civilizaciones inscribieron dimensiones astronómicas, simbólicas y políticas en sus respectivos paisajes rituales.

Palabras clave: alineación celestial, equinoccios, Sajikdan, solsticio de invierno, Templo Mayor.

SAJIKDAN AND TEMPLO MAYOR AS CULTURAL HERITAGE

Currently, the Sajik Daeje (rituals) conducted at the Sajikdan are designated as a National Intangible Cultural Heritage in Korea, while the Templo Mayor is recognised as a UNESCO World Heritage Site.

With the establishment of Joseon in 1392, one of the first structures built alongside the royal palace in Hanyang (modern-day Seoul) was the Sajikdan altars, dedicated to rituals for the gods of land and grain. The concept of Sajik can be understood as part of the Confucian cultural sphere.

The establishment of a new state frequently began with the construction of Sajikdan (Altar of Land and Grain), symbolising reverence for these deities and invoking their blessings for national peace and prosperity.

The Sajikdan in Hanyang served as the venue for the major national ritual, Sajik Daeje, from the early Joseon Dynasty starting in 1395 (Choi *et al.*, 2012: 147). These altars comprised paired platforms within a double-fenced enclosure, known as the Sadan and Jikdan Altars, each hosting two divine seats for a total of four deities (figure 3).

In addition to the central Sajikdan in Hanyang, provincial Sajikdan altars functioned as cultural and spatial nexuses, linking the central and provincial administrations of Joseon. These altars also symbolically reflected the structural arrangement of the national Sajikdan altars in the capital (Jang, 2011: 4). Since the Sajik Daeje was designated as a National Intangible Cultural Heritage in October 2000, it has been held annually on the fourth Saturday of September (figure 1).



FIGURE 1. REENACTMENT OF SAJIK DAEJE (21 SEPTEMBER 2023).

SOURCE: AUTHOR'S PHOTOGRAPH.

The Mexica founded their capital Tenochtitlan (present-day Mexico City), which later became the centre of the Aztec Empire. At the heart of Tenochtitlan, a sacred precinct was constructed, featuring the Templo Mayor was dedicated to Huitzilopochtli, the god of the sun and war,

and Tláloc, the god of rain. The Templo Mayor has been proposed to exemplify the Mexican perception of the cosmos, characterised by sacred mountains that represent the central symbolic structure of the vertical and horizontal dimensions of the Aztec universe (Moctezu-

ma, 1985: 797). Tláloc's sanctuary represents the Tonacatépetl, the pristine mountain of sustenance.

The other sanctuary symbolised the Coatepetl, the sacred mountain where Huitzilopochtli first incarnated (Florescano, 1999: 185; Levenson and Pacheco Silva, 2022: 155).

In Mesoamerican civilisations, dualism articulates the cyclical oppositions and complementarities that sustain the cosmic order. The pairing of Huitzilopochtli and Tláloc within the Templo Mayor epitomises a dualistic equilibrium of complementary yet interdependent forces. Tláloc, embodying rain, water, and fertility, symbolises the perpetuation of life, whereas Huitzilopochtli, the deity of the sun and war, functions as the divine protector of the Mexica people. Mirroring the dichotomies of day and night or the dry and rainy seasons, the two gods collectively articulate the interplay of solar and pluvial forces, with the temple serving as a spatial embodiment of this dualistic cosmology.

A notable similarity between the Sajikdan of Joseon Korea and the Templo Mayor of the Aztec tradition lies not only in their shared emphasis on paired deities but also in the incorporation of human-associated deities alongside natural deities within their divine frameworks. The temples of both cultures may appear to enshrine natural deities, such as gods of land and grain or sun and rain, but both include anthropogenic elements into their divine frameworks.

In Mesoamerican tradition, the boundaries between the human and non-human are blurred (López Austin, 2012: 2). This is evident in the mythology surrounding Huitzilopochtli, who is enshrined in one of the twin temples of the Templo Mayor. Supported by the absolute force of nature as the sun, Huitzilopochtli guided the Mexica through migration and the nation-building process. He exhibited human traits while also possessing divinity, and this god-man motif prominently emerged throughout their migration history (Pina, 2017: 54).

As for architectural features, the Templo Mayor was strategically oriented to align with the sunrise on the spring equinox, such that the sun would rise precisely between its twin

temples. Existing studies have addressed the Templo Mayor's orientation and its relationship to the equinoxes. However, little research exists on the specific angled orientation of Sajikdan — including the Sadan and Jikdan altars, the four gates, and the double enclosure (Yuwon and Juwon) — which was tilted approximately 29° clockwise from the cardinal east–west axis. In this study, it is proposed that this inclination is likely associated with the sunrise on the winter solstice and suggests a connection to traditional concepts of cardinal directions.

METHODOLOGY

For the Templo Mayor, the analysis incorporates azimuth measurements of multiple construction phases, obtained through archaeological excavation investigations (Aveni *et al.*, 1988: 294; Šprajc, 2000: S36). In contrast, for the Sajikdan, where historical documents on the rationale behind its orientation is absent, an inferential methodological approach is adopted. This approach entails the systematic construction of inquiry-driven hypotheses grounded in observed data and information, followed by their validation through comprehensive logical reasoning and contextual analysis. Data collection involves an extensive review of historical records, secondary sources related to archaeological findings, and on-site fieldwork for Sajikdan and Jongmyo. The astronomical data, including the azimuth of the winter solstice sunrise in both present day and historical Korea, was obtained from the Korea Astronomy and Space Science Institute and is based on almanac records.

For the purposes of comparative analysis, both sites are examined according to the following criteria: (1) architectural orientation and measured azimuth; (2) observed alignment with solar phenomena; (3) the inferred symbolic significance of the orientations; (4) spatial integration with surrounding topographical features.

DISCUSSION OF RESULTS

Whereas the orientation of the Templo Mayor has been the subject of extensive scholarly investigation, the rationale underlying Sajikdan's orientation remains elusive, even though temple orientations in traditional societies were typically conceived as reflections of culturally embedded principles. The discussion proceeds in two parts: first, the well-documented orientation of the Templo Mayor; second, an inferential approach to the orientation of Sajikdan.

1) Orientation and Alignment of the Templo Mayor

The central religious architecture at Tenochtitlan was concentrated within a walled ceremonial precinct (Smith, 2008: 580). This precinct formed part of a quadripartite urban plan, marked by avenues radiating from four gates and enclosing a square of roughly 440 m per side. Along its eastern edge stood the Templo Mayor, a large stepped pyramid crowned by twin sanctuaries dedicated to Tláloc (north) and Huitzilopochtli (south) (Aveni *et al.*, 1988: 287).

Debate on the temple's orientation originates with Maudslay (1912), who argued that the builders intentionally positioned the structure to engage the equinoctial sunrise. He proposed that an observer at the adjacent circular Temple of Quetzalcoatl could witness the sun emerging within the notch between the temples. Archaeological testing of this hypothesis began in 1975: using a surveyor's transit. Aveni and Gibbs measured the excavated south face of the Templo Mayor and found a deviation of $7^{\circ}06'$ south of a true east–west axis (azimuth $97^{\circ}06'$, Aveni and Gibbs, 1976: 512). Although this appears to conflict with Motolinía's equinoctial account, the result is consistent once the elevated, artificial horizon defined by the twin temples is considered: at ground level, the sunrise's slight southward drift naturally implies a south-of-east alignment. With the 1982 reopening of excavations under Matos Moctezuma, alignments of five earlier construction phases were recorded for the first time (Aveni *et al.*, 1988: 294). Continuity of rebuilding on the same sacred locus reflects

the value placed on place-based sacrality and historical continuity (Smith, 2008: 581).

As the Templo Mayor was regarded as the cosmic axis, successive constructions were not relocated to a new site but were instead superimposed upon the existing structure (Moctezuma, 1987: 191). As rebuilding increased the temple's height, equinoctial sunrise viewed from a fixed baseline would no longer pass cleanly through the notch. The most parsimonious explanation is that observations were conducted from the platforms of successive construction stages. This enabled the sun to continue rising between the twin temples despite the increasing height of the structure (Aveni *et al.*, 1988: 295).

At the summit of the Templo Mayor, the sun was observed to rise directly between the twin temples 16 days before and after the spring and autumn equinoxes, which are significant dates in the Aztec astronomical calendar. They correspond to the first day of the *Tlacaxipehualiztli* festival month and first day of the 13th month, *Tepeilhuitl*, in the 20-month Aztec calendar (López Luján, 2005: 55; Rowe, 1979: 230).

Motolinía, a Franciscan missionary in the 16th century, wrote in his *Historia de los Mexicanos por sus Pinturas* about the *Tlacaxipehualiztli* festival: This festival took place when the sun stood in the middle of Huicholobos [twin temples], which was at the Equinox, and because it was a little out of the straight, Montezuma wished to put it down and set it right (Aveni and Gibbs, 1976: 513; Maudslay, 1912, see figure 3). This historical account further underscores the symbolic significance of the Templo Mayor's spatial configuration.

Centred on the Templo Mayor, the centralised plan articulated through four equal axes embodied the quadripartite organization of Tenochtitlan (Smith, 2008: 157). The recorded azimuthal orientations of the Templo Mayor and its associated avenues exhibit a remarkable degree of consistency (see table 1, note *). The east–west axis exhibits a discrepancy of approximately one degree between the eastern and western avenues, while the north–south axis displays an almost identical deviation of about one degree.

TABLE 1. AZIMUTH MEASUREMENTS OF THE TEMPLO MAYOR IN PRIOR STUDIES

Author (Year, page)	Building (Phase)	Azimuth
Aveni & Gibbs (1976, p. 512)	not identified	97°06' ¹
Aveni, Calnek, and Hartung (1988, p. 294)	(II) (III) (IV) (IVb) (V)	96°37' ± 7' 96°19' ± 2' 97°12' ± 2' 96°10' ± 2' 97°22' ± 10'
Sprajc (2000, p. S13)	(II) Later	97°42' ± 30' ² 95°36' ± 30' ²

NOTES: 1. LATER STUDIES (SPRAJC, 2000: S36) CLARIFIED THAT THIS MEASUREMENT ACTUALLY CORRESPONDS TO THE SOUTHWEST END OF PHASE IV, EXPOSED PRIOR TO LARGE-SCALE EXCAVATIONS. 2. THIS AZIMUTH WAS PRESENTED IN CONJUNCTION WITH THE CALCULATED DATES ON WHICH THE SUN ALIGNS WITH THE MEASURED ORIENTATIONS.
*ARCHAEOLOGICAL EVIDENCE INDICATES THAT THE ALIGNMENTS OF TENOCHTITLAN'S MAIN AVENUES CLOSELY ALIGN WITH THE INCLINATION OF THE TEMPLO MAYOR, WITH AZIMUTHS OF E 97°18', W 278°21', N 6°24', AND S 187°36' (AVENI ET AL., 1988: 296).



FIGURE 2. CENTRAL WHITE COVERING INDICATING THE TEMPLO MAYOR ARCHAEOLOGICAL SITE.
SOURCE: ESRI. (N.D.).

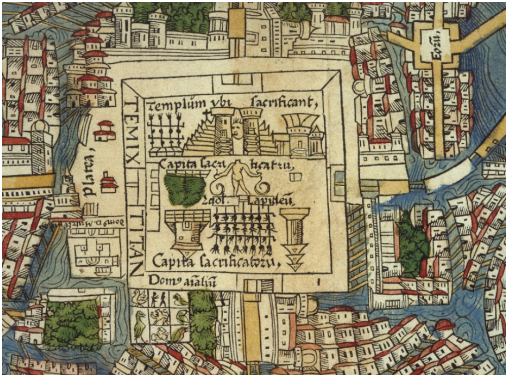


FIGURE 3. NUREMBERG MAP OF MEXICO CITY.
SOURCE: CORTÉS, HERNÁN (1524).

2) Orientation and Alignment of Sajikdan

As historical documents do not explain the inclination of the Sajikdan altars, this study formulates hypotheses using an inferential

approach based on observed data. These hypotheses are verified through logical analysis to explain the factors influencing the orientation of the Sajikdan altars.

Research Question 1: Is the inclined orientation of Sajikdan intentional?

The Sadan and Jikdan platforms of the Sajikdan altars, along with the surrounding double enclosure and the four gates indicating the cardinal directions, are consistently inclined approximately 28 to 30° clockwise (Choi *et al.*, 2012: 150, 156). As the field survey in this study, the actual measurements indicate an inclination closer to 29°.

To understand the rationale behind this angular orientation, a comprehensive analysis was conducted of the spatial relationships among Sajikdan, the royal palace, and Jongmyo. The Sajikdan altars were used for rituals honouring the gods of grain and land, while Jongmyo was dedicated to ancestral rites for the royal family.

During the Joseon Dynasty, the traditional urban planning practice of placing Jongmyo to the left and Sajikdan to the right of the royal palace (Gyeongbokgung Palace) was generally followed. The three most significant architectural structures of the dynasty were nearly aligned in a line. This study seeks to assess the intentionality behind the inclined orientation of Sajikdan by analysing and comparing the

angular alignments of these three structures. These three structures—Sajikdan, Gyeongbokgung Palace, and Jongmyo—are sequentially aligned and located within a two-kilometer radius.

Gyeongbokgung Palace, centrally positioned, faces south with its back to the north, and is tilted 7.5° east of north (*Gyejwa-jeonghyang*, see table 2). Jeongjeon (royal memorial main hall) of Jongmyo Shrine exhibits a southeast-facing orientation but is inclined approximately 29 to 30° from north to east. This matches the orientation of Sajikdan, which are also inclined approximately 29° clockwise. According to the dominant contemporary conception of cosmic order, the divine, *yin* and *yang*, and directional orientations were linked in a sequential relationship. Within this framework, the land god was associated with the formula ‘the land god = *yin* = northward’, designating the North Gate as the central point for the Sajik Daeje in Hanyang (Choi *et al.*, 2012: 150). Considering the horizontal alignment of Sajikdan– Gyeongbokgung Palace–Jongmyo, a consistent directional pattern is observed between Sajikdan and Jongmyo, suggesting that Sajikdan’s inclination is inferred to have been deliberate (figure 4).



FIGURE 4. AERIAL PHOTOGRAPHS SHOWING THE ORIENTATION OF SAJIKDAN, GYEONGBOKGUNG PALACE, AND JONGMYO.
SOURCE: VWORLD. (N.D.).

Research Question 2: Can the historical records of the Jongmyo site explain the inclined orientation of Sajikdan?

According to the Annals of King Taejo (Volume 6), when Hanyang was selected as the new capital on 19 September 1394, sites were designated for Jongmyo, Sajik, the royal palace, markets,

and roads. Jongmyo was located by applying the principle of *imjwa-byeonghyang*, at a distance of 2 *ri* (785 metres) east of the palace site (Kim, 1998: 15). *Imjwa-byeonghyang*, one of the 24 geomantic directions, is located just to the left of *ja* at *im*, indicating an azimuth from north to east between 352.5 to 337.5 °, facing the opposite south direction of *byeonghyang* (table 2). The northwest direction adopted here is traditionally recognised as the direction for the deceased; thus, it was presumably chosen to elevate their status.

Although the Annals of King Taejo specify the Jongmyo site as aligned with *imjwa-byeonghyang*, this reference applies only to the overall site location and not to the orientation

of major structures such as Jeongjeon (the royal memorial hall). The orientation of Jeongjeon, like that of the Sajikdan, was set at approximately 29–30° east of north. This suggests that the reference to *imjwa-byeonghyang* in the Annals of King Taejo pertains solely to the general orientation of the Jongmyo site, not the specific orientation of the Jeongjeon within it. Similarly, the main structures of Sajikdan were aligned approximately 29° east of north, which does not correspond to *imjwa-byeonghyang* but instead reflects a distinct directional alignment. Research Question 3: Is the inclined orientation of the main structures of Sajikdan related to the winter solstice sunrise azimuth?

TABLE 2. DIRECTIONS OF IMJWA-BYEONGHYANG AND GYEJWA-JEONGHYANG

Direction	Sitting Direction (*)	Facing Direction (*)	Azimuth Range (Sitting Direction→ Facing Direction)
<i>Imjwa-byeonghyang</i>	North-Northwest (Im)	South-Southeast (Byeong)	352.5°~337.5° → 157.5°~172.5°
<i>Gyejwa-jeonghyang</i>	North-Northeast (Gye)	South-Southwest (Jeong)	7.5°~22.5° → 187.5°~202.5°

NOTES: *THE DESIGNATION OF THE CORRESPONDING DIRECTION AMONG THE 24 CARDINAL DIRECTIONS.
SOURCE: AUTHOR'S ELABORATION BASED ON THE TRADITIONAL 24 CARDINAL DIRECTIONS SYSTEM.

The validation of the two aforementioned hypotheses confirms that the inclined orientation of the Sajikdan is intentional and that the records of Jongmyo's *imjwa-byeonghyang* do not account for Sajikdan's inclination.

Based on these findings, Hypothesis 3 examines the relationship between the inclination of Sajikdan's layout and the direction of the winter solstice sunrise, noting that the main structures – North Gate, South Gate, West Gate, Sadan, Jikdan, and the double enclosure – are inclined approximately 29° clockwise, aligning with the winter solstice sunrise direction. In their study on the inclined orientation of Sajikdan, Choi *et al.* (2012: 150, 156) also proposed that these structures, including the Sadan and Jikdan, the double enclosure, and the four cardinal gates, are tilted approximately 28° to 30° clockwise from the cardinal directions. This intentional inclination appears to align

with that of Jeongjeon, the main building at the Jongmyo site, as discussed in Hypothesis 1.

The Sajik Daeje was conducted on the first designated *Sin* day of the first lunar month to pray for a bountiful harvest, in the middle of the second and eighth lunar months, and on *Nap* day of the twelfth lunar month (Lee, 2018: 138). *Nap* day corresponds to the third *Mi* day of the lunar month counting from the winter solstice, also forming part of the annual ritual schedule at Jongmyo. This day was designated based on the winter solstice, and set by each dynasty according to the winter solstice (Seo and Park, 2014: 90, 93). East Asian countries have a long-standing tradition of meticulously segmenting agricultural seasons using a systematised almanac. Traditionally, in East Asia, the winter solstice is the longest night and shortest day of the year, marking both the year's end and beginning, and serves as the starting point of the year in the almanac (Kim and Park, 2023:

114; Lee, 2023: 177; Seo and Park, 2014: 112). Therefore, the winter solstice was a critical juncture in traditional society, marking the extremes of cold and heat and the renewal of the cosmic yin-yang cycle, thus shaping the life rhythms and temporal order of traditional society (Seo and Park, 2014: 102).

The Sajikdan, located at 126°58'07"E and 37°34'32"N, shows a winter solstice sunrise azimuth of about 29° south of east, both in present-day (2024) and in the late fourteenth century (1395), according to calculations by the

Korea Astronomy and Space Science Institute (table 3). If the orientation of the East Gate was determined based on the azimuth of the winter solstice sunrise, and the positions of the other cardinal gates were arranged accordingly, the current layout of the Sajikdan gates would reflect this arrangement. For example, the North Gate would be positioned approximately 29° eastward from true north, and the East Gate would be located approximately 29° southward from true east, as it is today (figure 5).

TABLE 3. THE SUNRISE AZIMUTH AT THE SAJIKDAN IN HANYANG (PRESENT-DAY SEOUL) DURING THE WINTER SOLSTICE

Winter solstice	Coordinates	Sunrise time on the winter solstice	Azimuth of the sunrise at the winter solstice *
21 December 2024	126°58'07"E 37°34'32"N	07:43 AM KST	119°25'49.21"
21 December 1394	126°58'07"E 37°34'32"N	07:44 AM KST	119° 22' 55.78"

*THE AZIMUTH IS MEASURED FROM THE NORTH TOWARDS THE EAST.
SOURCE: KOREA ASTRONOMY AND SPACE SCIENCE INSTITUTE (N.D).

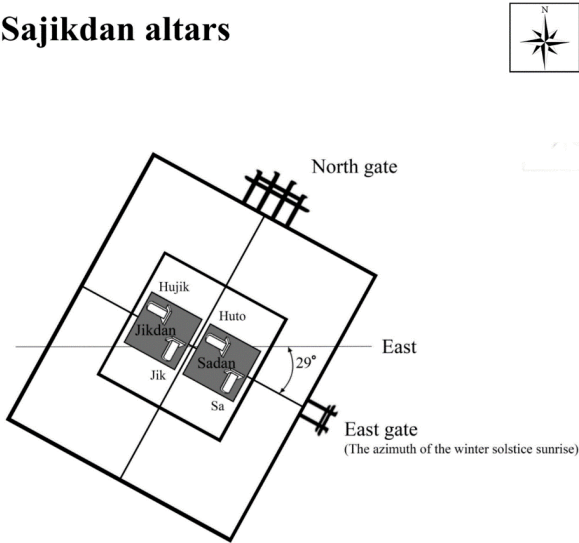


FIGURE 5. THE ORIENTATION AND MAIN COMPONENTS OF SAJIKDAN.
SOURCE: DRAWN BY THE AUTHOR (BASED ON FIELD SURVEY).

3) Comparative Results on Orientation and Alignment

The comparative analysis of Sajikdan and the Templo Mayor revealed distinct yet interconnected patterns when evaluated across four dimensions: (1) architectural orientation and measured azimuth; (2) observed alignment with solar phenomena; (3) the inferred symbolic

significance of the orientations; and (4) spatial integration with surrounding topographical features (see table 4).
Geographically, although the Templo Mayor and Sajikdan are situated in the distant regions of the Americas and Asia respectively, both temples exhibit a close association with the rising sun on specific calendrical dates.

Archaeological evidence shows that the façade of the Templo Mayor deviates about 7° south of east, a feature linked to major Aztec festivals. Sixteen days before and after the equinoxes correspond to two significant calendrical points: the first day of *Tlacaxipehualiztli*; the first day of the thirteenth month, *Tepeilhuitl* (López Luján, 2005: 55; Rowe, 1979: 230).

By contrast, in the case of Joseon’s Sajikdan, no direct historical records have been identified that explain the rationale behind its architectural orientation. This study therefore advances three hypotheses suggesting a possible correlation with the winter solstice. The solstice was regarded in Joseon as a crucial moment of *yin–yang* transition and was recognised as both the end of the old year and the beginning of the new, functioning as a calendrical benchmark. Both Sajikdan and the Templo Mayor thus demonstrate how temporal concepts linked

to the solar cycle were inscribed into spatial arrangements, providing important examples of how notions of space and time were interconnected in premodern societies.

Considering the influence of sacred space on urban spatial organization, the Templo Mayor was situated at the very centre of the Aztec capital, Tenochtitlan, where the sacred precinct was articulated into a quadripartite urban plan. The principal avenues extended outward at nearly the same angle as the skewed orientation of the temple’s façade, shaping the city’s east–west and north–south axes. In the case of Sajikdan, it was aligned as one of the three principal structures of the Joseon capital, and the near coincidence of its inclination with that of Jongmyo, as confirmed in this study, suggests that contemporaries recognised a directional and temporal framework as significant.

TABLE 4. COMPARATIVE ANALYSIS OF SAJIKDAN AND THE TEMPLO MAYOR ALONG FOUR DIMENSIONS

Category	Templo Mayor	Sajikdan
Location	99°07'53"W longitude and 19°26'06"N latitude	126°58'07"E longitude and 37°34'32"N latitude
Orientation (Azimuth)	Range 95°36'~ 97°42' ; Median = 96°46' ¹	Approx. 119°
Solar Alignment	Equinox; 16 days before and after both spring and autumn equinoxes	Inferred Winter Solstice
Symbolic Significance	Aztec astronomical calendar (20-month); first day of the <i>Tlacaxipehualiztli</i> festival month; first day of the 13th month, <i>Tepeilhuitl</i>	One of the 24 Solar Terms; yin–yang transformation point; calendrical reference
Integration with Topographical Context	Avenues aligned with the skewed temple façade	alignment with Jongmyo

NOTE: 1. RANGE AND MEDIAN VALUES ARE CALCULATED FROM ALL REPORTED AZIMUTH MEASUREMENTS LISTED IN TABLE 1. THESE FIGURES ARE PRESENTED AS DESCRIPTIVE SUMMARIES RATHER THAN WEIGHTED AVERAGES, GIVEN THE HETEROGENEITY OF DATA SOURCES AND CONSTRUCTION PHASES.

SOURCE: AUTHOR’S ELABORATION.

CONCLUSIONS

Despite their distant locations in the Americas and Asia, the Templo Mayor and Sajikdan both reveal deliberate orientations that connect sacred space with the solar cycle. Archaeological evidence shows that the façade of the Templo

Mayor deviates approximately 7° south of east. This orientation corresponded to significant calendrical dates—sixteen days before and after the equinoxes—which marked the beginning of *Tlacaxipehualiztli* and *Tepeilhuitl* in the 20-month Aztec calendar. In contrast, while no historical record explains the orientation of

Sajikdan, this study suggests its association with the winter solstice, a calendrical benchmark in Joseon symbolizing the *yin-yang* transition and the turning of the year. The architectural components of Sajikdan were deliberately set at a clockwise tilt of about 29°.

The Templo Mayor, at the heart of Tenochtitlan, structured the city through a quadripartite plan, with avenues extending at nearly the same skew as the temple façade. Sajikdan, one of the three most central structures of Hanyang, was aligned in a prescribed order with the other two principal edifices, symmetrically flanking the royal palace with Jongmyo, and inclined at nearly the same angle as the main hall of Jongmyo. The deliberate orientations of both sites demonstrate that astronomical, symbolic, and political dimensions were inseparably woven into their spatial configurations.

By juxtaposing the Templo Mayor and Sajikdan, this comparative study underscores how two geographically distant yet ritually central state altars reveal shared cosmological frameworks—one marked by the equinoxes and the other by the winter solstice. Their orientations illuminate the ways in which traditional civilizations inscribed temporal cycles into sacred landscapes. More broadly, this approach contributes to comparative heritage studies by showing how cross-cultural analysis of ritual sites can reveal universal patterns of linking sacred space with celestial order.

Note

1. Chinese characters used in the Korean context are presented with Korean pronunciation. In contrast, the pronunciation of the Chinese characters related to Chinese history is provided in Chinese pronunciation alongside the characters.

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