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Connecting the Sacred: Network Analysis of Buddhist Images on Early Medieval Chinese Pagodas from Nannieshui, Shanxi

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Abstract: The production of stone sculptures in the form of statues, steles, and pagodas was arguably one of the most prominent forms of Buddhist devotion in early medieval China. The abundant Buddhist imagery and devotional inscriptions adorning their surfaces provide rich information on their creation, commission, consecration, and worship, which is essential for comprehending the local community's religious landscape. This paper employs a network analysis approach to visualize and analyze the spatial arrangement of Buddhist images on the surfaces of pagodas from Nannieshui 南涅水, Shanxi 山西 Province. Network analysis reveals that Nannieshui pagodas were commissioned and worshipped differently from other kinds of stone sculpture, as shown by its emphasis on the spatial and sequential order of Buddhist images depicted on the exterior of these pagodas.

Keywords: pagoda; Shanxi; northern dynasties; network analysis

1. Introduction

A large number of stone blocks that were discovered in Nannieshui 南涅水, in Qinxian 沁縣, Shanxi 山西 Province, are elaborately decorated with rich imagery (Figure 1). Previous studies have found that these blocks had been stacked up in diminishing size to look like pagodas, the quintessential symbol and architecture of Buddhism.[1] Typically, pagodas in early medieval China appear in a multi-story, tower-like form (Figure 2).[2] The Buddhist imagery depicted on the surface of the stone blocks that had been stacked into pagodas is significant in terms of religion, art, and architecture. By using network analysis, we examine and visualize the spatial arrangement of Buddhist images on stone blocks found in Nannieshui. It highlights the spatial and sequential features of Buddhist images depicted on stone blocks, revealing the way Nannieshui stacked pagodas were commissioned and worshiped as distinct from other types of stone sculptures.

Buddhist stone sculpture, such as statues, steles, and pagodas, constitute the largest group of material evidence of Buddhist worship in early medieval China. Erected mostly within temple complexes but also near local roads, these sculptures consecrated space. The abundant Buddhist imagery and devotional inscriptions on the surfaces of these stone works form an array of configurations that were shaped by their design and for a particular audience. Therefore, understanding the commissioning, consecration, and worship of these sculptures is crucial to understand the local religious landscape.

Recently, digital tools and analytical approaches have been applied by a number of scholars in religious studies, but primarily in examining temple sites in certain regions on a macro-level through the lens of GIS techniques and in analyzing the historical networks of eminent monks and individuals in literary or political circles.[3] Art historians and archaeologists have explored Buddhist temple sites,[4] murals in cave temples,[5] and reliefs on individual statues.[6] Digital imaging techniques, such as 3D modeling and photogrammetry, have been employed in studying Buddhist sites and sculptures in exceptional detail and clarity.[7] The spatial depth and color adjustment made possible through diagonal shapes, layered landscapes, and vanishing points, have proven particularly helpful in studying

stone objects that often bear erosion and damage marks. Moreover, digital annotation reveals specific effectiveness in explaining iconography, epigraphs, inscribed names, and related religious texts.

Figure 1. Stocked pagodas on display in Qinxian Museum, Shanxi province. Source: *Nannieshui shike*, vol. 2, color plate 4.

Figure 2. Cao Tiandu 曹天度 Pagoda. Shuozhou, Shanxi Province. 466 CE, Northern Wei Dynasty. Stone. H. 211.7 cm (with chattra top). Repository: National Palace Museum, Taipei (*Chattra* in the Chongfu Monastery, Shanxi). Photo courtesy of Shih-yi Tu.

However, the rich data revealed in the pictorial programs and epigraphical sources on stone implements are usually examined on an individual basis. Art historians focus on the development of a particular image or the configuration of images on a few selected steles or statues. In Buddhist studies scholars focus on historical information and Buddhist doctrine recorded in epigraphs. The large number of stone sculpture from early medieval China has so far not been examined quantitatively. In this regard, studying a larger number of stone carvings as a group, as tools, environments, and frames, opens a venue for interdisciplinary studies in multiple aspects.

Below we explore how digitization and the application of network analysis can enhance our understanding of a group of almost 400 stone blocks that were once stacked up

to form 2–4 m tall Buddhist pagodas in the sixth century at Nannieshui County in Shanxi province. We pay particular attention to questions of the spatial relations and the periodization revealed by the carvings, thus providing evidence for understanding their commissioning and how they were used in worship as distinct from other types of statues and steles. Spatial arrangement here refers to the arrangement of images and epigraphs on the surface of a stone block, allowing for an inquiry into their religious significance and forms of worship. With the typical four-sided arrangement found at Nannieshui and the symbolic significance of pagoda worship, a natural spatial order emerges almost inevitably. Such arrangements are not found easily on other relief carving context, such as stone slabs, cliff carvings, or cave-temple interiors.[8] Are these arrangements pagoda-specific? What kind of order do the horizontal image configurations on each stone block follow? What do these orders say about Buddhism in a sixth-century Nannieshui county? In short, embedded in the scholarship of digital humanities at intersections between religion, art, and history, this study provides a new venue to deepen our understanding of the disarranged stone blocks used to stack pagodas.

2. Materials

Over 800 stone Buddhist sculptures, including individual statues, figured steles, and about 400 cubical or trapezoidal stone blocks, were discovered in 1957 in hoarding pits from a former temple site in the Nannieshui County of Shanxi province (Y. Guo 1959; T. Guo 1979; Shanxi Sheng Kaogu Yanjiusuo 1994; *Qinzhou zhi* 2003; Yagi 2004; Ishimatsu 2005; M. Zhang 2005; Cao 2011; Gao 2012; Zhao 2021; Shanxisheng Kaogu Yanjiuyuan and Qinxian Wenwuguan 2022) (Figure 3). These 400 or so stone blocks were originally stacked up in decreasing sizes to create multilevel pagodas upon commissioning. In an attempt to reconstruct them as they would have appeared originally, these stone blocks are displayed in the Qinxian Museum stacked vertically (see Figure 1).[9] The majority of Nannieshui pieces are in reasonably good shape and still bear inscriptions from the Song dynasty (960–1279) that supports the idea that they were intentionally buried in hoarding pits. Similar types of stone blocks, scattered across different sites, and less numerous than those found in Nannieshui, have also been found in eastern Gansu 甘肅 province.[10]
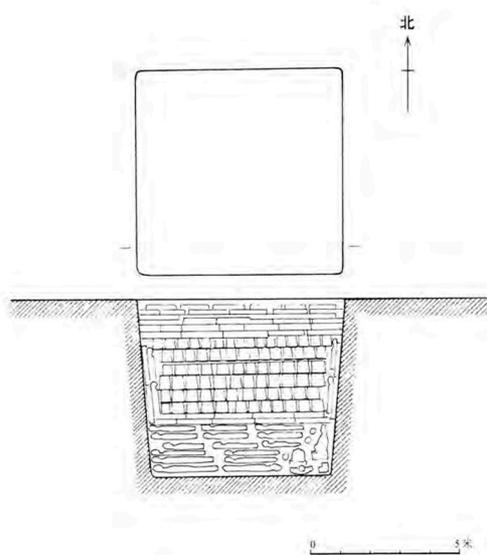

Figure 3. Diagram of the hoarding pit. Stone blocks were arranged in the middle section above statues and below steles. Source: *Nannieshui shike*, vol. 1, Figures 1–3.

According to the dedicatory inscriptions and the carving styles, the majority of stone blocks from Nannieshui were commissioned during the late fifth and sixth centuries, when northern China was ruled by the Northern Wei 北魏 (386–534), Eastern Wei 東魏 (534–50),

Western Wei 西魏 (535–57), Northern Qi 北齊 (550–77), and Northern Zhou 北周 (557–81). Since the conquest of northern China by non-Han regimes, Buddhism has thrived throughout China's religious landscape in spite of the political chaos and social upheaval. Both members of the imperial elite and commoners funded the construction of larger pagoda buildings and commissioned miniature pagodas.[11] The depiction of pagodas in reliefs and murals also proliferated in Buddhist cave temples and on Buddhist statues and steles.[12]

Among Nannieshui sculptures, each surviving stone block is decorated with Buddhist images on all four sides, suggesting that imagery plays a fundamental role. As a result, the stone blocks are sometimes referred to as *simianxiang* 四面像 (a four-sided image), or *zaoxiangshi* 造像石 (an image stone) in previous studies. However, inscriptions and the vertical rise of their multilevel structure suggest that they were created as pagodas, despite the fact that there are very few pieces that exhibit components imitating timber structures. The extensive use of Buddhist imagery on the surface of these stone blocks, in contrast to the simplification of structural elements, presents important issues that need to be addressed across the fields of religion, imagery, and architecture. What connection exists between the images chosen for each stone block? How did they fit into the local stone carving tradition's artistic, historical, and religious contexts? How did they relate to and differ from the common practice of erecting pagodas and commissioning Buddhist sculptures at the time? Furthermore, the reasoning behind the existing arrangement of these stacked pagodas in the Qinxian museum was made decades ago. It is important to revisit the decisions that went into the current arrangement of these stone blocks on display.

How is network analysis relevant to the study of Nannieshui stone blocks? As Johanna Drucker elaborates, "digitized art history" is based on the use of online resources, while "digital art history" uses computational methods, see (Drucker 2013; Brown 2020, p. 2). Network analysis is less commonly used in art history, especially when compared with digitization techniques, such as 3D scanning, relief annotation, etc. In the case of the Nannieshui stone blocks, network analysis can assist us to analyze and visualize the connections between the topics and the physical placement of each of the blocks independent from its modern display in the museum. It allows us to see which motifs were most central and how they relate to others in the program.

It is not possible to discern these connections and quantities by looking at the circa 400 blocks individually. Evaluating the various interdependent relations is necessary to answer queries about image arrangement. In the end, we want to know how various images were aligned on each stone block, how these stone blocks were stacked up, and if the configuration of images has altered over time. As previous scholarship mainly focuses on examining the most peculiar individual images and overall stylistic development through the sixth century, examining the iconography of images, their configuration on each stone block, and the symbolic meaning will provide us with new information about the religious significance of these stone blocks.

3. Dataset and Method

Investigating the 1544 sides of 386 stone blocks from Nannieshui, I have employed a network method to examine the images depicted on each of the four sides on each stone block. Network structure and data process are proved to be useful tools in understanding the complex nature of interactions among large numbers of figures (comparable to "actors", a term that is used in traditional network analysis works that focus on historical figures) in play, whether they are people or art objects. Historical network research has developed rapidly over the decades, constituting a salient method of examining the network of communicative interaction between people with the help of a formal model.[13] Scholars in Buddhist studies have used the method to examine eminent historical figures in Buddhism. Presenting a network analysis through visualization enables one to leverage the perceptual abilities of humans and identify features in network structure and data. For instance, social network analysis has been applied to record interactions between large

number of actors in Chinese Buddhist history, examining historical constellations and discovering new patterns of interactions, for instance, see (Bingenheimer 2018, 2020).

The network model moves away from individual instances of persons, works of art, or places toward analyzing the inter-relatedness of arbitrarily many instances and the evolving dynamics. This emphasis on groups rather than individuals thus aligns with our goal of analyzing the pagodas from Nannieshui as a group, composed of stone blocks, which are in turn conceptualized as ordered groups of images. A formal approach that models the Nannieshui pieces systematically as computable data enables us to discover patterns that are difficult to discern otherwise.

In particular, a network analysis enables us to reflect on, firstly, the configuration of images on each stone block and quickly identify those blocks that share the same configuration. In this regard, the metrics help to clarify the roles and importance of individual nodes (stone blocks as well as motifs depicted on each side of stone blocks), as well as the potential significance of the horizontal, sequential order of images on each stone block. Secondly, we can locate stone blocks that share the same configuration of images and explore their distribution within the larger group, even understand the popularity of each configuration in different time periods. Such an analysis will also produce quantitative evidence that will allow us to re-examine the chronology of Nannieshui stone blocks. Thirdly, the particular sequential ordering of images in a clockwise manner, as revealed by this study, reflects that the pagodas were used for circumambulation, alerting us to a difference between such free-standing pagodas, which are accessible from all sides, and steles and statues, which are clearly oriented with a "front" and a "back" in space.

Below, I am using Gephi, an open-source software for graph and network analyses (Bastian et al. 2009; Jacomy et al. 2014). Gephi processes large networks with complex datasets in real time and produces visual results that are valuable to explore and interpret networks. In this research, I model the network of Nannieshui stone blocks into a bi-modal network consisting of 410 nodes and 841 edges. The nodes are the summed results of 386 stone blocks and 24 different motifs (such as the standing Buddha, the pensive bodhisattva, etc.) that are found adorning the sides of these blocks (Figure 4).[14] The edges refer to all the connections between all the stone blocks and every motif adorning them (Figure 5). The spreadsheet of nodes includes detailed information of motif and stone blocks for reference, such as the discovery place, repository, execution date, material, and size of each stone block, and secondary iconographic elements of each side.[15]

To display the dataset in Gephi, I use the *Force Atlas 2* algorithm. *Force Atlas 2* results in a layout that gathers stone blocks, sharing similar pictorial programs of images. The node located centrally to each cluster is usually a motif in discussion (Figure 6). A motif-node stands out particularly if it is represented on more than one side of a stone block. In some cases, the motif-node is not easily identifiable if it is not frequently depicted at Nannieshui.

To distinguish motif-nodes from surrounding nodes of stone blocks, I have added two columns in the node list spreadsheet. One column applies an add-on named "polygon" to sort nodes by shapes. I assigned square to represent blocks while triangle to represent motifs. The other new column regulates colors of nodes for each question to be discussed. However, nodes are not sized proportionally to connectivity since the current design includes two different sets of nodes (motifs and stone blocks). The proportional size of different nodes might affect the visualization clarity.

Connections (edges) are effectively weighted according to how many times a motif is depicted on a four-sided stone block. The four-sided look of all stone blocks determines the maximum weight of 4.0, indicating a motif being depicted on all the four sides of a single stone block. All edges are sized proportionally to connectivity.

L	ID	Access-no	discoveryPla	discoveryPlace_la	repositoryPl	dataEst_CE	material	bottom-leng	mainFigure	attendants	disciples	additional	niche
!	m001								seated Buddha in medi	two standing	none	none	arche
3	m002								seated Buddha in fearl	two standing	none	none	arche
4	m003								seated Buddha in medi	attendant do	none	none	arche
5	m004								seated Buddha in fearl	attendant do	none	none	arche
5	m005								seated Bodhisattva wit	none	none	none	arche
7	m006								seated Buddha with leg	two standing	none	none	arche
3	m007								seated Buddha in medi	none	none	seated Budd	arche
)	m008								standing Buddha	none	none	none	arche
0	m009								Coffin burning	two standing	none	none	none
1	m010								Maitreya	none	none	none	arche
2	m011								Twin Buddhas	none	none	none	arche
3	m012								Conception	none	none	reborn being	arche
4	m013								Mahasattva jataka	none	none	none	none
5	m014								Pensive bodhisattva	none	none	none	none
6	m015								Pensive bodhisattva	none	none	horse	none
7	m016								Vimalakirti and Maitre	none	none	none	none
8	m017								Bodhisattva	none	none	none	none
9	m018								Ashoka story	two guardian	none	seated budd	arche
0	m019								Four seated Buddhas	none	none	none	none
1	m020								Nirvana	none	none		
2	m021								On elephant	two standing	none	none	none
3	m022								fasting buddha	none	none	none	none
4	m023								two standing bodhisattvas				
5	m024								unknown				
6													
7	s001	QN 1	Nannieshui		Nannieshui	NW-YC-510s	limestone	54					
8	s002	QN 2	Nannieshui		Nannieshui	EW-530S	limestone	47					
9	s003	QN 3	Nannieshui		Nannieshui	EW-530S	limestone	44					
0	s004	QN 4	Nannieshui		Nannieshui	NW-XP-520S	limestone	39					
1	s005	QN 5	Nannieshui		Nannieshui	NW-520S	limestone	36					
2	s006	QN 6	Nannieshui		Nannieshui	NW-517	limestone	33					
3	s007	QN 7	Nannieshui		Nannieshui	EW-530S	limestone	41					
4	s008	QN 8	Nannieshui		Nannieshui	EW-530S	limestone	41					
5	s009	QN 9	Nannieshui		Nannieshui	NW-EW	limestone	35					
6	s010	QN 10	Nannieshui		Nannieshui	NW-520S	limestone	33					
7	s011	QN 11	Nannieshui		Nannieshui	NW-520S	limestone	31					
8	s012	QN 12	Nannieshui		Nannieshui	EW-530S	limestone	30					
9	s013	QN 13	Nannieshui		Nannieshui	EW-533	limestone	33					
0	s014	QN 14	Nannieshui		Nannieshui	EW-530S	limestone	58					
1	s015	QN 15	Nannieshui		Nannieshui	EW-530S	limestone	54					
2	s016	QN 16	Nannieshui		Nannieshui	NW-520S	limestone	57					

Figure 4. A section of the dataset of nodes, formatted for use with Gephi software. The 24 identified motifs are prefixed m-. Stone blocks are named from s001 to s386, following the order of their reference in the archaeological report.

	A	B	C	D
1	ID	Source	Target	face
2	e0001	s001	m001	s001-1
3	e0002	s001	m001	s001-2
4	e0003	s001	m001	s001-3
5	e0004	s001	m001	s001-4
6	e0005	s002	m011	s002-1
7	e0006	s002	m018	s002-2
8	e0007	s002	m010	s002-3
9	e0008	s002	m014	s002-4
10	e0009	s003	m018	s003-1
11	e0010	s003	m003	s003-2
12	e0011	s003	m003	s003-3
13	e0012	s003	m011	s003-4
14	e0013	s004	m003	s004-1
15	e0014	s004	m003	s004-2
16	e0015	s004	m004	s004-3
17	e0016	s004	m004	s004-4
18	e0017	s005	m001	s005-1
19	e0018	s005	m001	s005-2
20	e0019	s005	m001	s005-3
21	e0020	s005	m001	s005-4
22	e0021	s006	m001	s006-1

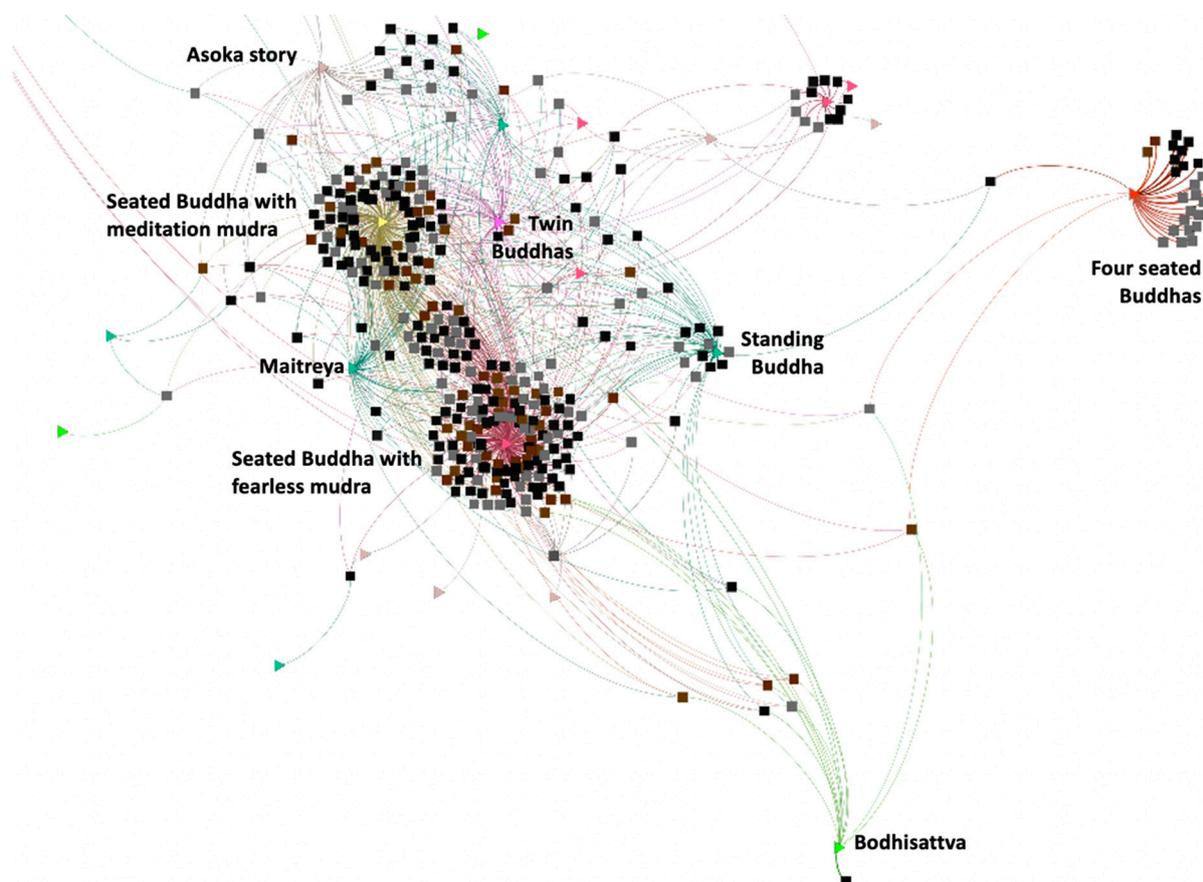**Figure 5.** A section of the dataset of edges, formatted for use with Gephi software.

Figure 6. The layout using *Force Atlas 2* algorithm. Square nodes: stone blocks (black nodes: Phase I-Northern Wei; grey nodes: Phase II-Eastern Wei; brown nodes: Phase III-Northern Qi). Triangle nodes: motifs (colored for clarity). Nodes not sized by degree.

Considering the clarity of the layout, I chose not to display the synchronic distinction or chronology of stone blocks in this network analysis. Instead, I assigned different colors to the three phases to which most Nannieshui blocks can be dated (Black nodes: Phase I-Northern Wei; grey nodes: Phase II-Eastern Wei; brown nodes: Phase III-Northern Qi). This allows us to see the sense of time embedded in the large number of blocks from Nannieshui as well as the change in each motif over time. Most blocks from Nannieshui do not bear inscriptions with precise dates. However, it is sufficient to apply a traditional art historical approach to construct a categorization of time phases based on stylistic traits displayed on each block. While in the dataset, I entered the estimated dates for each block as precisely as I could; I also divided the blocks into three main phases for visual clarity. These three time periods do not overlap precisely with the dynastic reigns of late Northern Wei (386–525), Eastern Wei (534–550), and Northern Qi (550–577), but they are a close approximation. A brighter color palette is employed to highlight nodes of motifs.

The visualization requires an interpretative framework in order to understand the religious phenomena more fully. The following section employs formal methods to discuss specific motifs and show how the visual metaphor of a separate cluster can serve as a heuristic tool that pinpoints questions on patterns of image alignment in Nannieshui.

4. Discoveries and Interpretations

The visualization of the alignment of motif on Nannieshui stone blocks in Gephi makes it possible to discern different sequential orders of the alignment of motifs from the same block. The immediate visualization of these patterns reveals that the same group

of motifs is often aligned in the same sequential order, which is crucial to understand the use of these blocks in ritual veneration.

4.1. Overall Discovery of Patterns in Images from Nannieshui

The visualization result shows a main section with several smaller clusters loosely connected on the edge (see Figure 6). The main section is further composed of clusters appearing in a different degree of density. A cluster usually forms with a motif-node in the center, surrounded by nodes of stone blocks that display the selected motif on one or more sides. Therefore, the denser the cluster, the more likely that the central motif is repeated on more than one side of the block. The center-periphery appearance also reveals the frequency of motifs in connection with the rest. The further a cluster floats from the main section, the less likely the motif-node of that cluster is aligned with other motifs.

Within the main section, two large clusters stand out in the center, indicating that the two motifs in the center of the two clusters—the seated Buddha with a fearless mudra and the seated Buddha with a meditation mudra—are the most frequently depicted motifs on Nannieshui stone blocks. The density of nodes in the two clusters indicates that often each of the two motifs is depicted repeatedly on more than one side of a block. Therefore, nodes from the smaller cluster located in between the two large clusters represent blocks that display each of the motifs under discussion on two out of the four sides of a block.

According to the assigned color palette that denotes the dates of execution, the two main motifs retained their popularity through the three periods at Nannieshui. Yet, the lower cluster, which centers on the motif—the seated Buddha with a meditation mudra— apparently includes more nodes in brown. This suggests that depicting the motif (a seated Buddha with a meditation mudra) on all four sides of a block became more popular during the third phase (~Northern Qi).

Similarly, the formation of a smaller cluster located to the right of the main section, which is centered on the motif of the standing Buddha, reveals the frequency of this motif being repeatedly carved on more than one side of a stone block (Figure 7). Figure 6 shows the overview of every link connected to the node of the standing Buddha motif. It highlights blocks that display the motif of the standing Buddha, as well as other motifs that are found aligned with the standing Buddha on any blocks. From the perspective of the center-periphery pattern as discussed above, on the five nodes located in the inner most ring of this cluster, the standing Buddha motif is portrayed on all the four sides of them. Nodes in the outer ring denote blocks that display the standing Buddha on three sides. The color difference further tells us that this phenomenon of repeating the standing Buddha motif on every side of a stone block took place only in the first two periods.

Another interesting visual pattern from the network analysis of Nannieshui blocks is the configuration of nodes regulated in groups (Figure 8). Above the two main clusters, we find such a group, including over 12 nodes of stone blocks. All these nodes share the exact same alignment of motifs on four sides in the same sequential order. The four motifs are the twin Buddhas, the Ashoka story, Maitreya, and the pensive bodhisattva (Figure 9). The node that is located slightly separated from the rest in the group features the four motifs like the other stone blocks while the sequential order of the four motifs is slightly different. The color difference further indicates that this alignment of motifs flourished primarily in Phase I but gradually declined in popularity in the following decades.
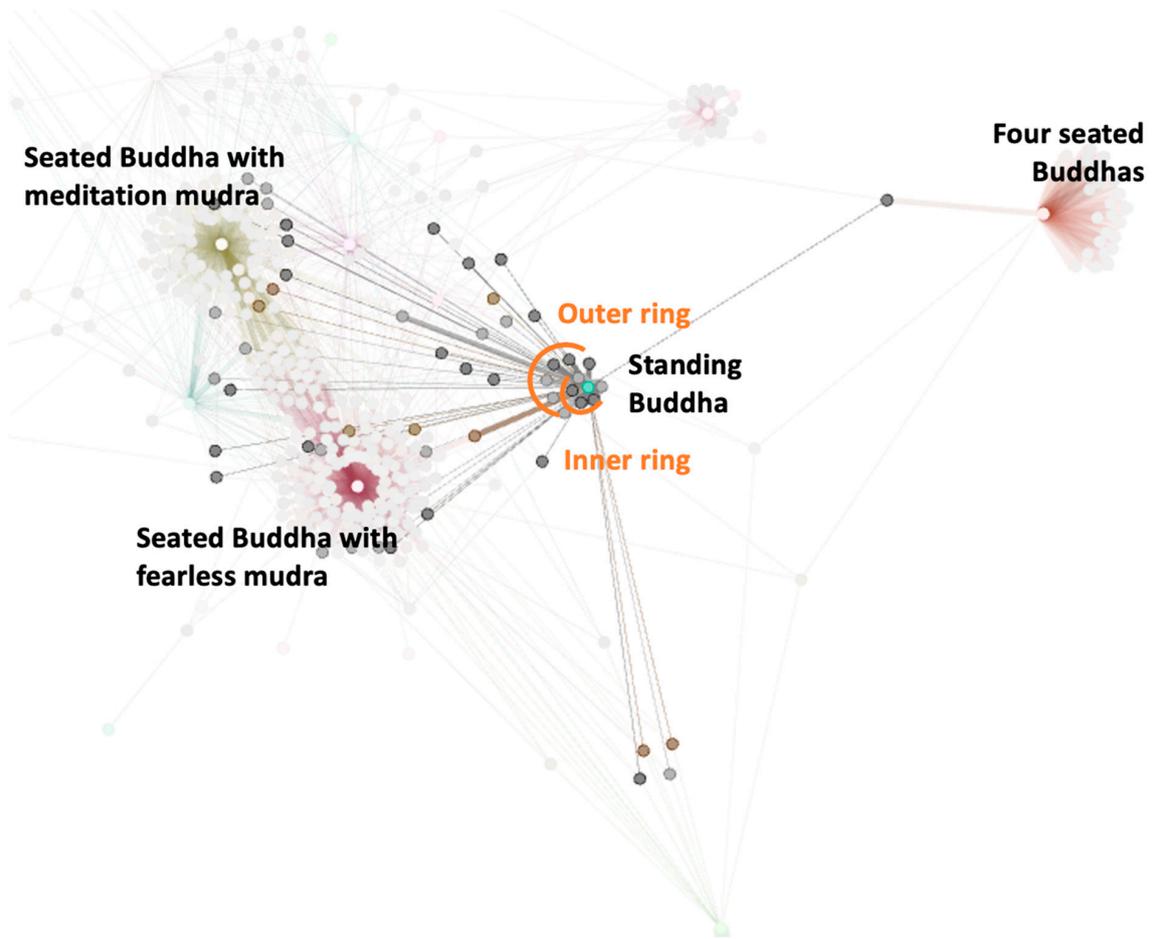
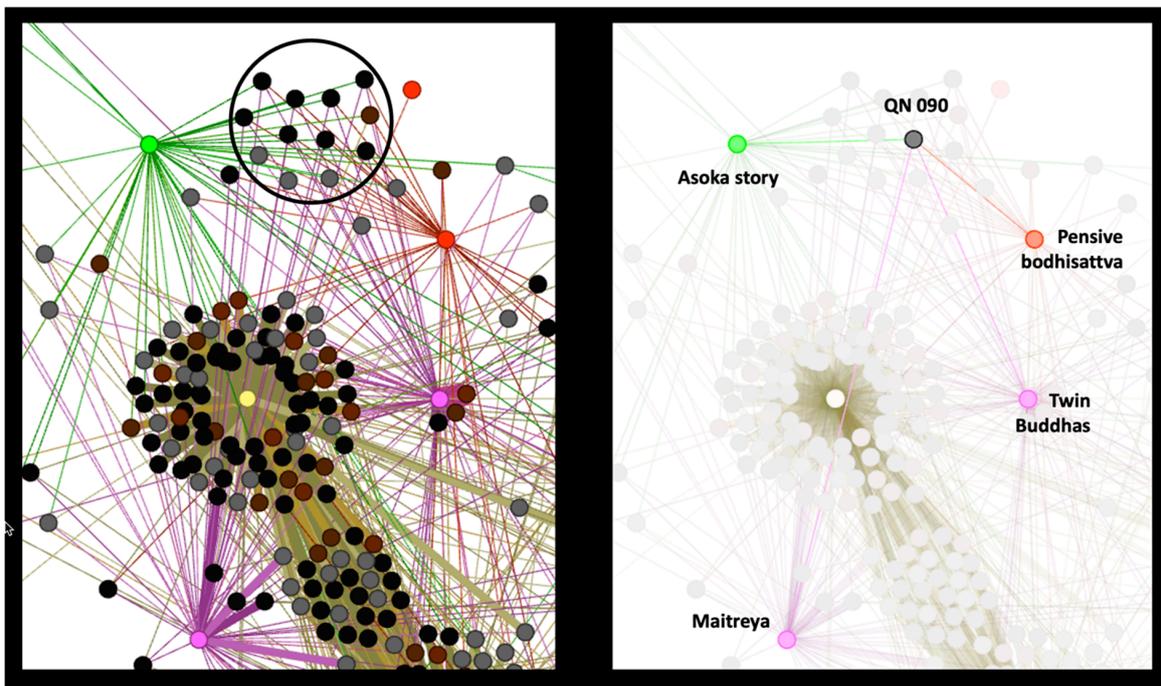**Figure 7.** The node of the standing Buddha and connected stone blocks.

Figure 8. Twelve stone blocks that share the same alignment of images; the block QN 090 as an example.
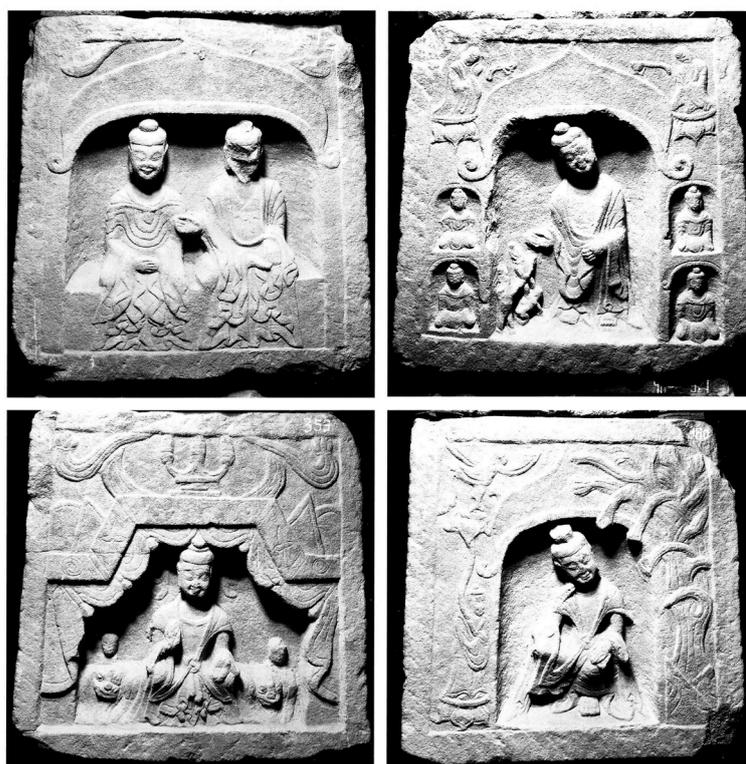
Figure 9. QN 90, Northern Wei. W. 35–38 cm; H. 38 cm. Clockwise from upper left. Source: *Nannieshui shike*, vol. 2, Figure 106.

From the perspective of the color difference, stone blocks that dated to the third phase are often found in clusters, indicating their popularity being repeatedly rendered on an individual block. In other words, the alignment of motifs mattered less and less at Nannieshui. The diminishing emphasis on the sequential order of motifs on blocks at Nannieshui correlates with the shifted perception of these blocks. A previous study of the author reveals a periodical shift from *futu* 浮圖 to *xiang* 像 and argues that the self-reference of *xiang* in inscriptions found on stacked pagodas is a phenomenon that had not taken place until the late sixth century (Zhao 2021). This shift of self-denotation of Nannieshui pagodas from *futu* to *xiang* lies in the specific emphasis on individual images on a side or the four-sided stone blocks, or *xiang*, which was fundamentally shaped by the very making and commissioning process of stacked pagodas. In addition, the growing understanding of the miraculous deeds of *xiang* also contribute to the transformation from *futu* to *xiang* among stacked pagodas.

4.2. Separated Clusters and Idiocyncratic Alignments

One can easily spot several smaller clusters floating far from the main section through the lens provided by the force-driven algorithm. This pattern refers to two layers of information (see Figure 6). Firstly, a small cluster always centers on a particular motif-node. Secondly, nodes of blocks located close to the motif-node always feature the central motif repeatedly on its three or four sides. For instance, the bottom cluster centers on the motif of the standing bodhisattva, but most blocks displaying this subject are located in between the motif-node and the main section. The only stone block located close to it depicts the bodhisattva motif on its four sides. Moreover, the cluster located to the upper right centers on the motif of the four seated Buddhas (hereafter the four Buddhas) and connects to the main section via merely three nodes. Except for these three nodes connecting with the main section, within this small cluster, all nodes relate to the node at the center via only one link. In the preview, we understand this central node to be the motif of the four Buddhas

(Figure 10). Additionally, all the nodes are blocks featuring the motif of four Buddhas on each of their four sides.
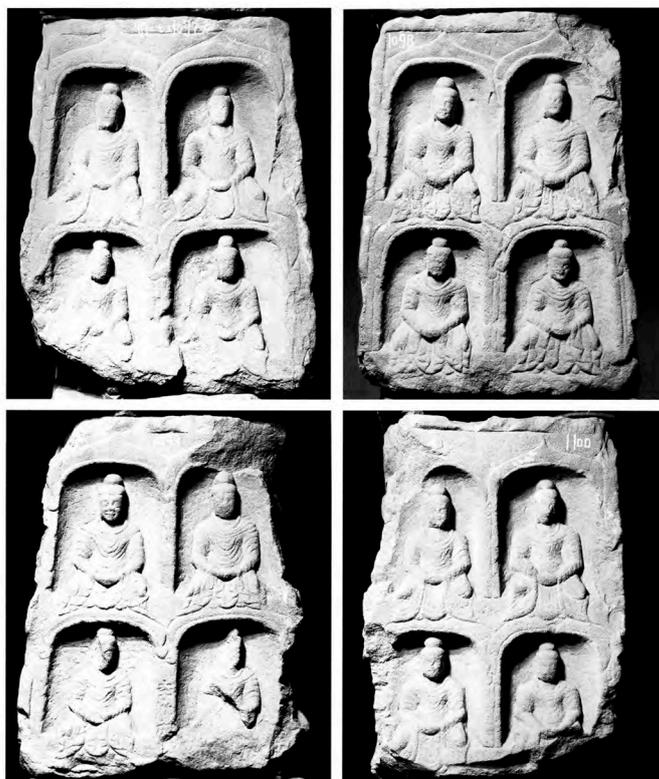

Figure 10. QN 275, Northern Wei. W. 22–33 cm; H. 40–41.5 cm. Clockwise from upper left. Source: *Nannieshui shike*, vol. 2, Figure 371.

While the network analysis method does not tell us why the image of four Buddhas as a motif became prominent, the visualization pinpoints that there are only three stone blocks not repeating the image of the four Buddhas on four sides. This idiosyncratic phenomenon leads to several questions. Why and how does the image of four Buddhas align with other motifs? Is it a phenomenon of a specific phase? Is there a chronological development of the subject? For the three idiosyncratic blocks that depict the four Buddhas motif merely on one side, what are the motifs on the other sides and in what sequence are they aligned horizontally? Answering these questions requires further examination of the stylistic traits of and the epigraphic inscriptions that have survived on the stone blocks featuring the motif of the four Buddhas.

Among the three blocks that align, the four Buddhas motif with other motifs, one is QN 256, dated precisely to 527 CE, Xiaochang 孝昌 era of Northern Wei, according to the surviving epigraph found on its one side (Figure 11). Rotating clockwise, the four sides of QN 256 feature a standing bodhisattva (side 1), two Buddhas sitting in separate niches (side 2), the four Buddhas (side 3), and a seated Buddha displaying the fearless mudra (side 4). In addition to the lengthy inscription on the lower part of side 2 revealing QN 256′s execution date, unrecognizable epigraphs are also inscribed on the edge of side 3. A comparison with other blocks suggests that the inscription probably comprises donor names. As shown in previous studies, an individual donor usually claims one side, or one niche of a block (Zhao 2021; Shanxisheng Kaogu Yanjiuyuan and Qinxian Wenwuguan 2022). The other block aligning the four Buddhas with other motifs, QN 68, features a configuration almost identical to that of QN 256. However, the stylistic traits of QN 68 suggest a later date of 550s to around 560s during the Northern Qi. Given the almost identical pictorial program on the two blocks, artisans of the later piece, QN 68, might have copied the pictorial program of QN 256.
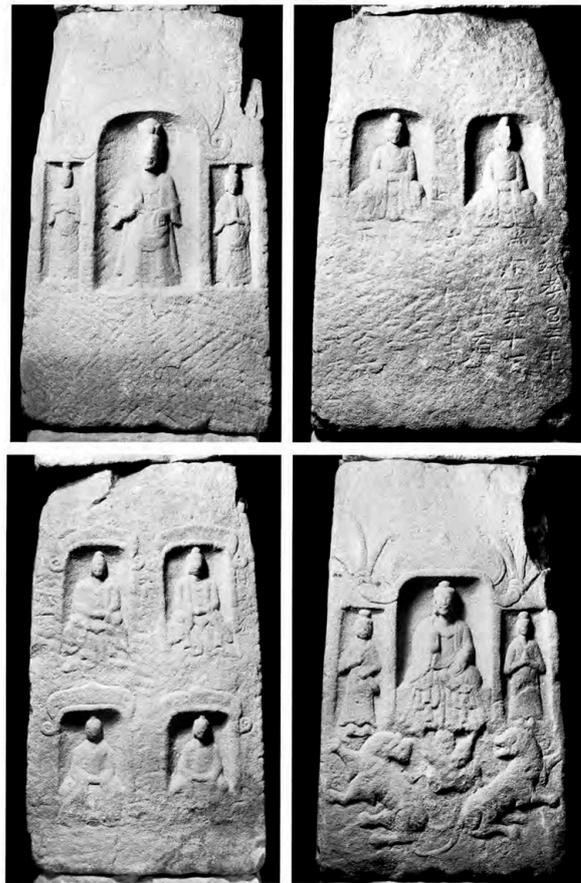
Figure 11. QN 256, Northern Wei, 527 CE. W. 29–40 cm; H. 64–66 cm. Clockwise from upper left. Source: *Nannieshui shike*, vol. 2, Figure 350.

Notably, the alignment of the four Buddhas motif with the standing bodhisattva was rarely portrayed as the main icon in southeast Shanxi during the sixth century. How can one explain this idiosyncratic pictorial program on QN 256 and QN 68? The standing bodhisattva motif was a prominent subject in statues and steles in Hebei and Shandong provinces, to the east and southeast of Nannieshui, around 540s during the Eastern Wei dynasty.[16] To understand more clearly the formation of the connection between the motif of the four Buddhas and that of the standing bodhisattva, I examined the latter's connection to other motifs in Gephi, and interesting patterns formed in several clusters (Figure 12).

The two small clusters located in the upper left show an alignment of the standing bodhisattva image with the two most frequently depicted motifs at Nannieshui, the seated Buddha displaying the fearless mudra, and the seated Buddha with a meditation mudra. Interestingly, the three blocks (QN 40, 99, and 105) in the lower cluster are all dated to Northern Qi, while the two in the upper cluster (QN 193 and 348) feature a typical Northern Wei style. Moreover, blocks in each cluster display not only identical style but also the exact same sequential order.[17] For instance, the two blocks from Northern Wei depict (clockwise) the standing bodhisattva, the Buddha with a fearless mudra, the Buddha with a meditation mudra, and the Buddha with a fearless mudra. Another cluster located to the lower right includes four blocks that share the same pictorial program, which aligns the standing Buddha, the standing bodhisattva, the Buddha with a fearless mudra, and the Buddha with a meditation mudra.
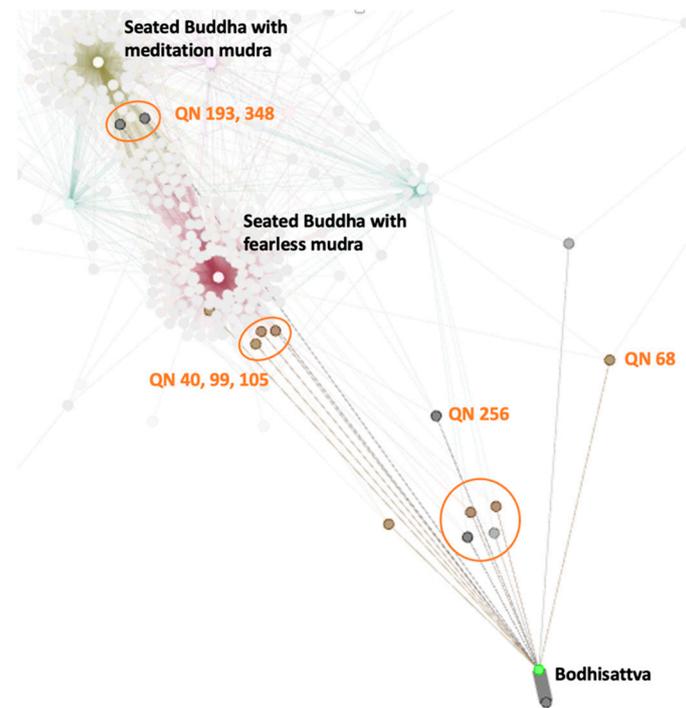
Figure 12. Alignment entered on the node of a standing bodhisattva image. Annotated.

Through the visual layout of the standing bodhisattva motif in connection to other motifs, we can see that the pictorial programs of the standing bodhisattva are relatively consistent. The only two exceptions are QN 68 and QN 256, which we have been discussing. The chronological gap between the two blocks suggests they were created as an experiment and never achieved popularity at Nannieshui.

Nevertheless, the above examination reveals the popularity of the standing bodhisattva since Northern Wei at Nannieshui, much earlier than its flourish in other parts of northern China. How did the standing bodhisattva transmit spatially and temporally in southeast Shanxi? Examining the standing bodhisattva motif in a chronological perspective, we do not find a clear shift of how the image is aligned with other motifs through the three phases. The visual result shows that nodes of the three colors denoting time periods that are found in different sections. In other words, the patterns of aligning the standing bodhisattva with other motifs did not change much over time.

Buddhist art exhibits a significant regional diversity as a result of political unrest and regional separation during the northern dynasties. Arts from the present-day Hebei and Shandong provinces in the east are explicitly similar, while Buddhist sculptures from Shanxi adhere to a different aesthetic. Nevertheless, Nannieshui is a key location for research since it is located close to the border between Shanxi and Hebei, and on the routes that connected regional political centers. Why did the standing bodhisattva flourish in the rural area of southeastern Shanxi earlier than sites in Hebei and Shandong, which are usually considered sources of influence in art since 530s? As the standing bodhisattva motif continued to flourish throughout the sixth century, how does it inform our understanding of the interaction between southeastern Shanxi and its bordering artistic hubs through the sixth century? These questions go beyond the scope of this essay, yet it serves as a good example to illustrate the potential of network analysis in the study of Buddhist pictorial programs from early medieval China. Although Nannieshui had never become a significant local center in history, its location on the path connecting several political centers in the sixth century suggests an unbalanced and a constantly shifting power play in Nannieshui (Y. Guo 1959; T. Guo 1979; Shanxi Sheng Kaogu Yanjiusuo 1994, pp. 313–18; M. Zhang 2005, pp. 51–68).

4.3. Between Pagodas and Steles: The Sequential Order of Images

As discussed above, a group of nodes appears in a regular pattern, denoting the exact same alignment of four different motifs, the twin Buddhas, the Aśoka story, the Maitreya bodhisattva, and the bodhisattva sitting in pensive position (see Figure 8). Looking into the details, it is quite intriguing since the Aśoka story and the pensive bodhisattva carry specific importance, respectively. Both motifs align with the others on blocks. However, the frequency of them being aligned with the twin Buddha and Maitreya motifs indicates a particular significance assigned to this combination. In addition, the color palette reveals that this combination only flourished during the first two periods and declined in popularity in Northern Qi.

The examination of this alignment further helps us understand the reception of the symbolic meaning of the pensive bodhisattva at Nannieshui. As shown in the lower right side of QN 90 in Figure 9, the bodhisattva sits under a tree on a high stool in a pensive pose, with one finger raised and one leg pendant while the opposite ankle rests across it, at the knee. A bodhisattva in such a pose is commonly referred to as a pensive bodhisattva (Ch. 思维 *siwei*) and frequently designated by the term *banjia* 半跏 ("*panga*" in Korean and "*hanka*" in Japanese).[18] Shown either seated independently accompanied by a kneeling horse or as half of a pair of attendants to Maitreya, the pensive bodhisattva can be ascribed to different meanings in the Buddhist pantheon. Its identity has been the subject of multiple studies, centering on the issue of whether the pensive image in China represents the Prince Siddhārtha in his first meditation, Śākyamuni before his enlightenment, or the bodhisattva Maitreya.[19]

The closest prototypes of the pensive Chinese bodhisattva are found in Buddhist art of the first to fourth centuries CE, from both Gandhāra and Mathurā in India,[20] and in fourth-century cave temples at Kizil in Central Asia.[21] In these regions, the most popular use of the pensive figure is to represent Siddhārtha during his first meditation under the jambu tree. The earliest extant Chinese representations of pensive bodhisattvas are found as flanking figures on the backscreen of a small bronze mirror that dates to the western Jin of the early fourth century. All the early and mid-fifth-century examples of pensive bodhisattvas are found in the cave temples of Gansu, paired with images of Maitreya.[22]

However, by the late fifth century in northern China, the pensive figure had started appearing separately, becoming either an independent form or appearing in a succession of narrative scenes representing the Buddha's life story.[23] In cases where the image of a pensive bodhisattva occurs independently, it occupies the entire side of a stele or a statue, or it appears in a niche, forming a pair with the main image on the other side, which is often the historical Buddha. This arrangement of the historical Buddha and the pensive bodhisattva as main images on the obverse and reverse sides of a statue elevates the importance of the latter, suggesting an emphasis on practicing the bodhisattva doctrine before attaining Buddhahood. In the following decades of the sixth century, the popularity of the pensive bodhisattvas varied according to region. Pensive bodhisattvas began to appear as main images, independently or in a pair, specifically in the Hebei region. In other areas of northern China, the bodhisattva appears more often as a subsidiary figure occupying corner positions on steles. The location of Nannieshui on the route connecting Pingcheng 平城, the previous capital of Northern Wei, with the later political and cultural center, City Ye 邺 in Hebei, demonstrates a Pingcheng origin of the preference of the pensive bodhisattva at Nannieshui.

Studying the above survey of the various forms in which the pensive bodhisattva was portrayed in fifth- and sixth-century China, we can see that the pensive figure rendered on stone blocks from Nannieshui belongs to the category of Prince Siddhārtha in his first meditation. This argument thus contributes to the interpretation of the pensive figure's stable alignment with the twin Buddhas, the Aśoka story, and Maitreya at Nannieshui, which had not been popular in other sites. This alignment stands out among other pictorial programs at Nannieshui in terms of its sequential stability in addition to its popularity. The four motifs are always arranged in the same sequential order, demonstrating a deliberate

design that imbues significance to both the artisans and the audience. These four motifs intentionally distinguish between the progression from pre-enlightenment to enlightenment and future Buddhahood, as well as the idea of the Buddhas of the three ages (past, present, and future) when viewed in the larger context of Buddhist art in early sixth-century Shanxi.

Firstly, we have the pensive bodhisattva representing the practice of meditation, which leads to the enlightenment of the historical Buddha. Then, the following motif, the twin Buddhas, is known for embodying the notion that more than one Buddha can exist simultaneously in the cosmos by joining the Buddhas of the present and the past sitting together. As a new Mahāyāna theme, the twin Buddhas motif is distinct from the early Buddhist belief that there was only one Buddha in each age. More importantly, with Prabhūtaratna as the past Buddha, the twin Buddhas motif replaces Dīpaṃkara and the seven Buddhas of the past, which represents buddhas of prior ages in the Gandhāran tradition. In Gandhāran art, the seven Buddhas and Dīpaṃkara Buddha usually designate the Buddhas of the three ages (the past, the present, and the future) theme, with the present age represented by the historical Buddha, and the future age by Maitreya (He 1992; Mizuno and Nagahiro 1951–1956, vols. 8 and 9, pp. 73–75).

Located after the twin Buddhas motif is the Aśoka story, which at Nannieshui shows the Buddha standing with his right hand touched by a child who is supported by another one (see Figure 9). The story represents the teaching that good karmic practices will lead to favorable reincarnation. In the narrative, the Buddha encounters several children playing outside during a trip. One child takes a handful of soil and climbs upon another child's shoulder to reach the Buddha's alms bowl in the hope of making offerings. The Buddha accepts the soil and predicts that the boy would be reborn as King Aśoka. The story originally belonged to the category of avadāna tales that correlates the virtuous deeds of the Buddha's past lives to subsequent lives' events. The story was translated into Chinese by An Faqin 安法欽 (active at Luoyang from 281 to 306), at the turn of the fourth century as *Ayu wang zhuan* 阿育王傳, and later by Sanghapāla 僧伽婆羅 (460–524 CE) in 512 CE as *Ayu wang jing* 阿育王經. Visually, the story already flourished in a relief around the second century CE in Gandhāra. By the late fifth century, Chinese representations of this story feature three children reaching out to a standing Buddha, emerged in Yungang cave temples.[24] The story is also carved on some of the pagoda sets discovered in eastern Gansu (B. Zhang 2000, p. 104, Figure 109; Gansusheng wenwu gongzuodui and Qingyang bei shiku wenwu baoguansuo 1987, pp. 11–15).

Lastly, we have Maitreya dressing as a bodhisattva sitting with legs crossed. Maitreya bodhisattva is said to reside in the Tuṣita Heaven until his final rebirth on earth, when he attains enlightenment and becomes the next Buddha (Wong 2004, chp. 6; Williams 2009, pp. 218–21). Maitreya scriptures were being translated into Chinese and informed of the Maitreya cult, which began to flourish in China in the fourth century. Ever since, devotion to Maitreya has continuously inspired religious and political movements for its prediction of future Buddhahood. Prior to its spread to Central Asia and China, Maitreya bodhisattva seated with crossed ankles became one of the most popular themes in Gandhāra art. Its frequent depiction at Yungang, and on fifth-century statues and steles, attests to its popularity as a devotional icon in northern China.

Therefore, the alignment of these four motifs is to be understood in the following way. The cycle starts with the pensive bodhisattva, which derives from the pre-enlightenment moment, followed by the twin Buddhas representing the past and present. The Aśoka story indicates the present as well as the future for the story's main teaching being the predicament of the future Buddhahood. The last scene ends with Maitreya, the future Buddha.

Using this alignment of motifs to represent the three ages is found particularly in the case of pictorial programs adorning surfaces of stacked pagodas (Zhao 2022). Miniature pagodas and pagoda reliefs dated to the Northern Wei period from the late fifth to the early sixth century always align the twin Buddhas motif with the seated Buddha and Maitreya and sometimes the life story of the Buddha horizontally or vertically. The importance of

sequential order of motifs in a clockwise manner strengthens the theory of pagodas being worshipped in a circumambulating way.

This examination of the alignment of the pensive bodhisattva also helps us to understand another motif popular at Nannieshui, which depicts a horse by the side of the pensive bodhisattva (node m015) (Figure 13). I assigned two different nodes to denote the motif of the pensive bodhisattva and the pensive bodhisattva accompanied by a horse for better understanding the development of these two types at Nannieshui. Indeed, in Gephi, we see distinctive networks formed, respectively, by these two types of the pensive bodhisattva. The bodhisattva with a horse is only found on three stone blocks (QN 73, 88, and 202) that align motifs differently from those that feature the typical pensive bodhisattva. Some scholars classify the motif with a horse representing the Great Departure, which refers to the narrative recounting Prince Siddhartha's leaving of the palace, an episode from the Buddha's life story. A bodhisattva sitting in a pensive pose from sixth-century Shanxi is often identified in previous scholarship as the Great Departure for the reason that a horse is depicted keeling by the foot of the bodhisattva, as the prince rides on his white horse in textual accounts. The episode highlights the historical Buddha leaving his princely life for a journey to seek enlightenment.
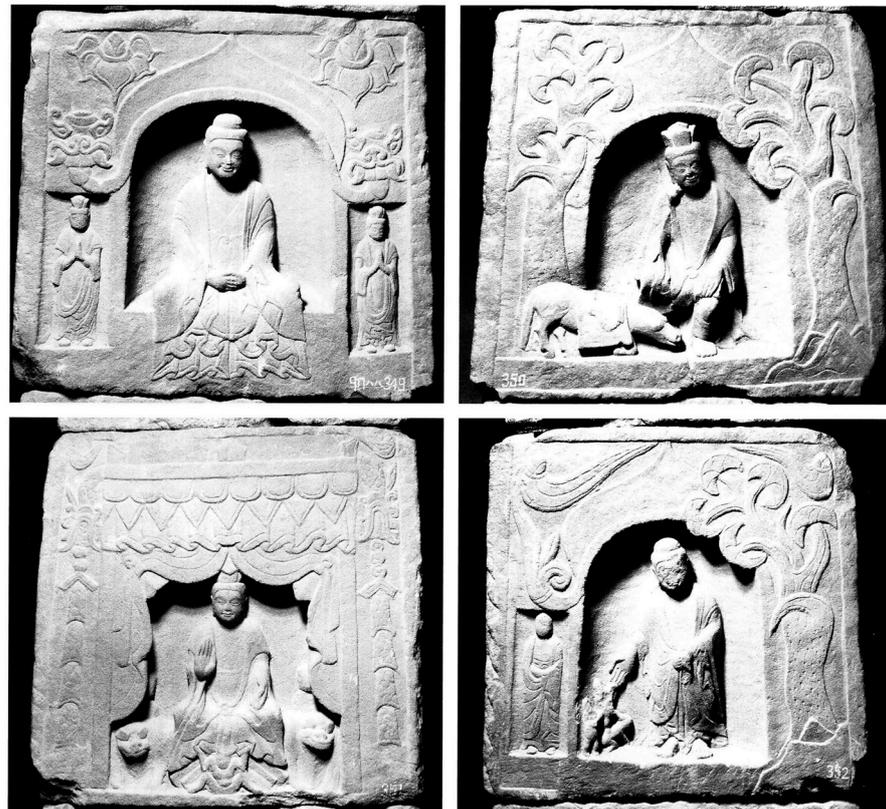

Figure 13. QN 88, Eastern Wei. W. 43–47 cm; H. 43–45 cm. Clockwise from upper left. Source: *Nannieshui shike*, vol. 2, Figure 104.

5. Limitation

Network analysis is confined by how researchers define the nodes and the edges that interconnect them. This ontological placement requires one to make original decisions on categorizing motifs carved on Nannieshui blocks into asserted types; therefore, the identification of each motif carries a significant impact on the result. Several motifs do not fit into the existing categories due to the provincial status of art of Nannieshui. Moreover, some motifs at Nannieshui exhibit variations in visual details, such as the decorative patterns

that are essential for stylistic study and some rarely seen elements that may be relevant to intriguing questions. These variations are not the focus of a network analysis.

Another limit as shown in this research is the lack of a diachronic computational method in its display. Rather than using a synchronic layout, I assigned different colors to distinguish stone blocks from three major periods based on their stylistic traits. This reluctance in employing a diachronic method derives from the concern to not complicate the visualization result and highlight the alignment of images.

6. Conclusions

To conclude, with Kubler's concern in *The Shape of Time*, "every trait of a thing is both a cluster of subordinate traits as well as subordinate part of another cluster." (Kubler 1962, p. 36). This study shows that a network analysis method can be an effective tool to provide a comprehensive look at different Buddhist images in connection to each other, rather than focusing on individual cases. It employs network analysis to better identify patterns of the configuration of images on each stone block from Nannieshui. These patterns are rooted in the perception of the symbolic meaning of each image or motif during the historical periods. Previous scholarship of Nannieshui stacked pagodas focused on an individual image and highlighted its popularity at Nannieshui. From a network or cluster perspective, however, the configuration of images occupies the central importance as it captures the audience's attention while they perform veneration by circumambulating clockwise around these pagodas. The network analysis reveals the awareness of the importance of aligning Buddhist motifs in a clockwise order on stone blocks used to stack pagodas at Nannieshui. This emphasis on the sequential order matches with the pictorial program that we found on other miniature pagodas from the northern dynasties, but not quite on steles. Despite their smaller scale in comparison to pagodas in the built-form, they might have been worshipped differently from ordinary steles and statues. It demonstrates the importance of the clockwise order of arranging images on pagodas and therefore helping us to better understand the perception of different types of Buddhist stone carvings in early medieval China.

This study only highlights several clusters; however, the formal approach indeed demonstrates the importance of sequential order of these images and the gradual diminishing of such an importance toward the third phase of execution. This historical development in the lack of interest in the alignment and pictorial program is echoed by recent studies of the shifted perception of pagoda, or the blurred boundary between pagoda and image during the second half of the sixth century (Zhao 2021). The reference to pagodas in surviving inscriptions on Nannieshui stacked pagodas reveals a transition from *futu* 浮圖 (pagoda) to *xiang* 像 (image). This transition related closely to the growing emphasis on individual image, which was formed by the very process of making these stacked pagodas into modules.

This article further addresses the potential of using network analysis in examining large sets of images for future research in the discipline of Buddhism and art history. This dataset of Nannieshui can be directly used in open-source SNA tools, such as Gephi, and easily exported with an emphasis on different aspects of the dataset. Researchers can quickly look up a specific image of interest and examine which other stone blocks share a similar configuration of images, styles, or sizes. Particularly, a combination of information of sizes, configuration, and style allows for the possible reconstruction of the order of how these blocks were stacked up originally. Another field that would be of potential for network analysis is the connectivity between Buddhist images and patrons; the information of whom could be extracted from the rich epigraphical sources inscribed on Buddhist stone remains. Finally, this approach could be applied in examining sites where a rich array of images, niches, or shrines are located, systematically arranged or not, and visualizing their patterns that developed chronologically, geographically, or via other variations.

Notes

[1] On an overview of the scholarship on Nannieshui sculptures. See (Zhao 2021). The pagoda is usually considered the reinterpretation of the hemispherical stūpa but features a tall, multistory, tower-like body, instead. Pagodas became the predominant form in East Asia following the eastward spread of Buddhism. Both pagodas and stūpas are generally referred to as *ta* 塔 in Chinese scholarship.

[2] This is based primarily on the shape of surviving miniature stone pagodas and pagoda images in relief carvings and mural paintings, as rarely any pagodas in the built-form survive intact.

[3] Pagodas in the built-form, usually of timber-wood structure, rarely survive from this period. For an overview of pagoda buildings, see (Lin 2016; Steinhardt 2011). GIS methods have been widely employed in mapping pilgrimage routes based on historical texts, Buddhist biographies, and gazetteers. For instance, Jason Protass examines the spatial pattern of the Northern Song Chan lineage by mapping out Chan sects in GIS. (Protass 2016). Wu Jiang centers on the locality of religious sects (Wu et al. 2013; Wu 2022). Peter Bol maps the distribution of religious sites based on their religious affiliations (Bol 2022). In cases studying historical figures, the location analysis method (LAM) measures the distance from their family clans to the prefectures of their political appointment, as well as their accessibility to a local devotional practice. Focusing on donors in medieval China, several studies have employed the social network analysis method to examine the interaction among individuals in literary or political circles, with a dataset made possible for designated historical periods. The network analysis method provides quantitative evidence to study historical structures and discern relevant communities. See (Bingenheimer 2018, 2020; Bingenheimer et al. 2011). Additionally, see (Vierthaler 2020) for an overview of the development of digital tools up to 2020 in East Asian studies.

[4] For instance, see (Luo 2020a, 2020b; Zhang and Zuo 2018, 2021). Peking University launched an experimental teaching center for virtual reality and simulation in archaeology in 2017 where a panorama database of Chinese cultural heritage sites, mostly architecture sites, were developed. See http://www.vr-heritage.com/tour/dab88f0bfc4b6b78. Last accessed on 30 April 2023 (an accessible sample).

[5] Buddhist grottoes that have been digitally documented and 3D-scanned include the Mogao Grottos in Dunhuang, Gansu province, the Yungang Grottos in Datong, Shanxi province, the Longmen Grottoes in Luoyang, Henan province, and the Dazu Grottos in Chongqing. The Center for the Art of East Asia at the University of Chicago has also completed two digital projects that record and archive the dislocated sculptures from Tianlongshan Grottoes in Taiyuan, Shanxi province, and Xiangtangshan Grottos in Handan, Hebei province. See https://tls.uchicago.edu/ and https://xts.uchicago.edu/ (last accessed on 3 April 2023). A recent example is a 3D scanning project undertaken at the Yungang Grottos in Datong, Shanxi province. See (Diao and Ning 2020).

[6] The most representative case is the 3D scanning and annotation project undertaken by the National Museum of Asian Art, Washington, D.C. See https://asia.si.edu/exhibition/body-of-devotion-the-cosmic-buddha-in-3d/ (last accessed on 3 April 2023).

[7] On the stage of using digital tools to study art history, see (Brown 2020). For an overview of the recent development in employing digital approaches to study Chinese Buddhist architecture, see (Luo 2020a).

[8] The square central pillars featured in some Buddhist cave temples, such as the Northern Wei Caves 5 and 6 at Yungang 雲岡, Pingcheng 平城 (present-day Datong 大同), Shanxi 山西 province, employ four-sided pictorial programs similar to pagodas. This connection between central pillars and pagodas has been a topic for a number of studies. Yet, it goes beyond the scope of this paper. For reference, see (B. Su 1996).

[9] This reconstruction of the vertical alignment of stone blocks at Nannieshui is debatable since the original sequence for arranging them has been lost. The current alignment as shown in the museum has not been updated since the initial installment and does not incorporate recent studies. See (Zhao 2021).

[10] Once a center of Buddhism, the region is home to several cave-temple sites and numerous Buddhist statues and steles that date to the northern dynasties (Gansusheng wenwu gongzuodui and Qingyang bei shiku wenwu baoguansuo 1987; Cheng 1998; Cheng and Yang 2003; Dong 2008).

11　On the construction of pagodas during the northern dynasties, see (*Luoyang qielan ji jiaoshi* 1963; *Shui jing zhu* 2007; Xu 1994; B. Su 2011; Steinhardt 2011, 2014). On the commission of miniature pagodas during the northern dynasties in China, see (Yin 2000; Wang 2006; X. Su 2010; Zhao 2022).

12　On the pagoda images in reliefs and murals of Buddhist cave temples in China, see (Xiao 1989; Zhao 2021).

13　Social network analysis has been widely used across the social and political sciences. On some examples using interdisciplinary method-borrowing of a digital approach in humanities, see (McCarty 2013; Veidlinger 2019; Clark and Lindsey 2022).

14　Around 20 stone blocks are not included in the current study. Some underwent severe damage, leaving the images on one or more sides unidentifiable. Some feature an oxagonal shape, not fitting into the current analysis. In the spreadsheet of edges, I assign blocks as "source" while images as "target". This source–target design does not make any difference when all the nodes are processed as undirected in Gephi.

15　All sculptures under discussion in this paper were carved from limestone and discovered at Nannieshui. It is for future comparison with sculptures from other sites to include the discovery place and material in the spreadsheet. A local quarry of limestone was found not far from the hoarding pit in the same county. (Shanxisheng Kaogu Yanjiuyuan and Qinxian Wenwuguan 2022, p. 9).

16　The most prominent group of Hebei materials was discovered in a hoard in 1953 at Quyang, consisting of Buddhist statues dated from the 520s to the 750s. See (Y. Lee 1994; Li and Tian 1999; Li 2007). For Shandong materials, see (Nickel 2002; Wang and Wang 2002; Qingzhou shi 2014).

17　Specifically, the standing bodhisattva carved on QN 193 and QN 348 of the Northern Wei appears with a hair style of the Buddha despite the typical bodhisattva dress.

18　Junghee Lee has combed through the historiography on this exact topic. See (J. Lee 1993). For major studies on the subject, see (Mizuno 1940; Rei 1975; Berthier 1982; Leidy 1990; Hsu 2002).

19　Various evidence has been provided by scholars on each side. The debate partially results from an ahistorical approach to piecemeal interpretations of inscriptions on statues from different periods of the fifth and sixth centuries. For a detailed discussion, see (J. Lee 1993; Hsu 2002). Both scholars agree that pensive figures dated prior to the mid-sixth century represent Prince Siddhārtha.

20　For Gandhara, see (Ingholt 1957, figs. 225 and 257; Foucher 1905, vol. 1, figs. 76 and 77). For Mathura, see (Lerner 1984, pp. 30–35).

21　*Chūgoku Sekkutsu: Kizil*, 2 vols., pls. 87 and 88. Lee, "The Origin and Development", pp. 316–17.

22　On one of the Northern Liang *stūpas* dating to the 430s CE, the pensive figure is depicted on a horizontal register together with Maitreya and six seated Buddha figures, representing the succession of past Buddhas followed by Śākyamuni and the Maitreya of the future. The pensive bodhisattva is arranged on the lower belt with another six Buddha images and one Maitreya on a stone pagoda discovered in Jiuquan, Western Gansu province. A number of similar stone stūpas were discovered in the region and dated, by their inscriptions, to the Northern Liang period.

23　One of the earliest surviving pensive images can be found on the back of a 471 bronze statue's backscreen. The piece was dedicated by Chou Jinu 仇寄奴 to his deceased parents. It was uncovered in Xincheng, Hebei Province. (Matsubara 1995, vol. 1, pls. 36 and 37). There are two other bronze statues that apply a very similar rendering of a pensive bodhisattva on the backscreen's reverse side. One piece, dated to 484, depicts the pensive bodhisattva on the back and a standing Avalokiteśvara on the front. See (Matsubara 1995, pls. 74–75). The other statue with the same iconography was excavated in Pingquan, Hebei Province and dated to 489 using an inscription on its pedestal. (Matsubara 1995, pl. 86).

24　On the Gandharan tradition, see (Strong 1983; Behrendt 2003, 2007; Branccacio and Behrendt 2006). On the Yungang tradition, see Caves 5–11, 5–38, 25, 28, 29, 33, 33–34, and 34; (Yi 2017, chps. 5 and 6). For an example, see (Yungang Shiku Wenwu Baoguansuo 1991, Figure 197). For a comprehensive study of the story's iconography, see (Li 1996; Hu 2005; Yi 2017, chp. 3).

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