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KNOWLEDGE, POWER, AND TECHNOLOGY

Diagrams of Troop Formation in Early Song Military History*

LIN FAN 林凡

This article examines the epistemological nature, material forms, and social functions of zhentu (diagrams of troop formation) in the context of early Northern Song history. The first two sections contextualize the concept of zhentu in the new political and military institutions during this period. In the early Northern Song, the diagrams and geographic knowledge came to be incorporated into the imperial knowledge system in a more systematic manner. The third section divides the diagrams into two categories according to their forms and purposes: diagrams involving relative positions that were used for military training purposes, and diagrams combining topographical components that were used for military campaigns. The last section of the article discusses how the use of diagrams was intertwined in court debates. Their making and circulation demonstrate the changing power dynamics between the emperor and the court officials.

KEYWORDS: zhentu, diagram of troop formation, military history, Wujing zongyao

ABBREVIATIONS

SKQS	Yingyin Wenyuange Sikuquanshu 景印文淵閣四庫全書
SS	Songshi 宋史
WJZY	Wujing zongyao 武經總要
XZZTJCB	Xu Zizhi tongjian changbian 續資治通鑑長編

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INTRODUCTION

Battle formations have always been a core component in campaigns in military history across the world. Since the late Spring and Autumn Period (476–221 BCE) in early China, *zhenfa* 陣法 (formation strategy) has been widely incorporated into military texts. *Zhen* 陣 has been commonly translated as “battle formation,” but this article adopts a broader translation, “troop formation,” for the following reason: Although the purpose of *zhen* was primarily designed for military engagement, it could also be practiced in the contexts of training, marching, and camping.

By the Tang (618–906), knowledge about troop formation had been presented in an extensive, systematic manner in military texts and encyclopedias, but these texts rarely provide information about their diagrams. It was only in the early Northern Song (960–1127) that *zhentu* 陣圖 (diagrams of troop formation) were foregrounded in court debates exponentially. While these diagrams were often collected in the private hands of aristocratic families during the Tang, they came to be controlled by the imperial court during the Northern Song. The shift of the diagrams from the private realm to the court paralleled the larger social transition from the Tang when aristocrats were the backbone of the imperial power structure to the Song (960–1279) when bureaucrats, especially civil officials, gained the upper hand at the court. Therefore, Song diagrams of troop formations were not merely technical knowledge, but also devices that consolidated the newly-established military and political institutions.

In early scholarship, *zhentu* have been primarily studied within the context of political history, especially in relation to the Song court's policy of curbing the power of military officials. The vehement opposition voiced by Song officials against the court has been echoed among historians until modern times. Wu Han and Qi Xia associate the use of diagrams of battle formation with a broader power configuration at the Song court – that is, the political dominance of civil officials over military officials that, as they believed, would have eventually led to the military failures of the dynasty.¹ Deng Guangming argues that later emperors, continuing the established rules of the first two emperors, Taizu 太祖 (r. 960–976) and Taizong 太宗 (r. 976–997), had severely limited the agency and adaptability of military officials, which was a major flaw of the Northern Song court policy of *jiangcong zhongyu* 將從中御 (centralized control over the generals).² However, recent scholarship offers a more balanced understanding of Song military policy and thus military diagrams. Wang Zengyu, Fang Chen-hua, and Peter Lorge extrapolate that while the Song court intended to prioritize the civil (*zhongwen* 重文), it did not mean to de-emphasize the military (*qingwu* 輕武), but rather strived to restrain the military/martial (*yiwu* 抑武) with a set of measures, one of which was to get civil officials involved in extensive military bureaucracy and deployment.³ In fact, their argument is confirmed by the fact that the criticism of the policy – i.e.,

¹ Wu Han is the first scholar to raise this issue and argues that this is the main reason for the military failure of the Song court. See Wu Han 1957. Qi Xia, situating this practice in the power struggles at the court of Taizong 太宗, considers it a backlash against the emperor's overemphasis on *shounei xuwai* 守內虛外 (internal stability over the defense of the border). See Qi Xia 1999.

² Deng Guangming 1986.

³ Wang Zengyu 1983; Fang Chen-hua 2004 and 2019; Lorge 2017.

centralized control of military generals – mostly came from civil officials. By the reign of Shenzong 神宗 (r. 1067–1085), although the policy remained to be the principle of court governance, it often failed in reality due to the malfunctioned communications of geographical information and military diagrams between the court and generals.⁴ More specifically, Chen Feng and Chen Andi look into a few historical moments of the early Northern Song, and argue that the primary goal of making military diagrams during Shenzong's reign was to win in military campaigns, but not to restrain military officials.⁵

During the past decade, scholarship on military history started to shift its foci to the cultural and social aspects of military texts as well as army life. M.A. Butler points out that *zhentu* in middle period China were ideational battle schemas that could embody ritual and cosmological understanding, and the cultural logic of Song *zhentu* were increasingly associated with the forces of landscape, geography, and territory.⁶ If diagrams are generally considered to be instructive devices to mobilize mass movement of the army, Elad Alyagon brings our attention to the living reality of low-born military men who would have constituted the troop formations. Peasants, criminals, and other lower-class people were conscripted and tattooed on their faces, arms, or hands. However, the stigma that was meant to indicate their underprivileged status and to keep them under watch was paradoxically developed into “a lower-class masculine martial subculture hostile to elite values and institutions.”⁷ Research on the history of technology and cartography provides yet another perspective to understand the production and use of *zhentu*. Francesca Bray's definition of *tu* 圖 as “templates for action” that “encode special technical knowledge” serves as the departure point for later research.⁸ From the perspective of maps, Cordell Yee poses that it is written text, rather than drawing, that constituted the primary means of conveying accurate and detailed information of location and distance.⁹ Although Bray and Yee argue that writings on technical arts were mostly produced by and for the scholarly elite, Pan Sheng's findings show that military-related maps were often produced by low-ranking technical professionals but not highly educated civil officials.¹⁰ William Rowe also looks into the agency of early modern texts, arguing that technical treaties provided means for the dissemination and continuing production of practical knowledge at the various echelons of society.¹¹ These discussions serve as the basis of my inquiry into the contributors of *zhentu* and their social status, and how the production of geographical knowledge and military knowledge converged.

Using the “goose file” formation (*yanhang zhen* 雁行陣) as a case study, Tsang Shui-lung shows the stability of the formations in textual transmission over a thousand years. Butler also demonstrates the continuities in military philosophy and

⁴ Fang Chen-hua 2020.

⁵ Chen Feng 2001; Chen Andi 2019.

⁶ Butler 2016.

⁷ Alyagon 2016.

⁸ Bray 2007, pp. 2–3.

⁹ Yee 1994, pp. 37–53.

¹⁰ Pan Sheng 2013; Pan Sheng 2014, pp. 216–226, 265–276.

¹¹ Rowe 2012.

practices between the Song and the previous dynasties.¹² Drawing from the rich records in historical texts, encyclopedias, and military texts, this article focuses on changes in the conceptualization of and the practice of *zhentu* in the early Northern Song. It considers the timespan from the 990s, when Emperor Taizong began to enforce centralized control of *zhentu* to the 1080s, when emperor Shenzong decided to loosen his grip on the diagrams of battle formations and give more power to on-the-ground military commanders. It begins by exploring how new policies on military and geographical knowledge in the Northern Song led to a redefinition of the concept and materiality of *zhentu*. It then examines two types of diagrams serving military campaign and training purposes, respectively. The third part of this article examines the circulation of *zhentu* within and outside the court. I conclude by arguing that the institutional changes in the Tang–Song transitions led to redefining the epistemological nature, material forms, and social functions of *zhentu* in the early Northern Song.

ZHENTU: RESTRICTED KNOWLEDGE IN THE TANG–SONG TRANSITION

Before the Song, diagrams of troop formations were widely used in military campaigns. As David Graff has shown, Tang armies had evidently adopted fixed battle formations, which usually deploy cavalry on the flanks and infantry in the center.¹³ However, the diagrams were only sporadically recorded in bibliographies in official histories and, thus, never existed as an independent category in the official knowledge system. For example, either troop formation or its diagram is not an individual category in the lengthy “Bingdian” 兵典 (Institutions on the Army) in *Tongdian* 通典 (Comprehensive Institutions).¹⁴ When Zhang Yanyuan 張彥遠 (ca. 815–877) penned his *Lidai minghua ji* 歷代名畫記 (Record of Famous Painters of the Past) around 847, the diagrams were mostly in the hands of aristocratic families. The chapter of “Shu gu mihua zhentu” 述古秘畫珍圖 (On Secret Pictures and Precious Images from Ancient Times) lists a few diagrams. Three of them contain the word *zhentu* in their titles, including *Chi You wangzi bingfa yingzhentu* 蚩尤王子兵法營陣圖 (Diagrams of Camping Formations based on the Strategies of Prince Chi You), *Sunzi bazhentu* 孫子八陣圖 (Diagrams of Eight Troop Formations by Master Sun), and *Wu Sunzi pinmu babian zhentu* 吳孫子牝牡八變陣圖 (Diagrams of Troop Formations with Eight Variations on Yin and Yang by Master Sun [Wu] from the Wu State).¹⁵ The titles of another three suggest that they should also be deemed as diagrams of troop formations, including *Huangdi gongfa tu* 黃帝攻法圖 (Diagram for the Yellow Emperor’s Attacking Strategy), *Wu Xu shuizhan tu* 伍胥水戰圖 (Diagram for River Battle by Wu Xu), and *Taiyi sangong yongbing cheng tu* 太一三宮用兵成圖 (Diagram for Achieving Military Success with the Great One and Three Palaces).¹⁶ Although the term *tu* here refers to diagrams of troop formations, it could cover a broad variety of instructive

¹² Graff 2008; Tsang Shui-lung 2008; Butler 2016.

¹³ Graff 2020, p. 205.

¹⁴ *Tongdian* j. 148–162.

¹⁵ *Lidai minghua ji*, pp. 77, 80.

¹⁶ *Lidai minghua ji*, p. 77. For detailed research on *zhentu* of the pre-Song period, see Li Xunxiang 1999.

images and spatial layouts, including diagrams, charts, maps, and paintings.¹⁷ In *Lidai Minghua ji*, the works that belong to the category of “Secret Pictures and Precious Images,” as opposed to the prevalent wall paintings in public space and especially Buddhist temples, are primarily rendered on silk or paper in portable form and only accessible to a limited number of private owners.¹⁸ These private owners could be military generals, officials, or collectors like Zhang Yanyuan’s own grandfather from the elite backgrounds. In the most influential military work of the Tang dynasty, *Li Weigong wendui* 李衛公問對 (Questions and Answers with Li Weigong), Emperor Taizong (r. 626–649) enthusiastically requested his general Li Jing 李靖 (571–649) to select a few historical troop formations, chart them, and submit these.¹⁹ In the case of *Taibai yinjing* 太白陰經 (Secret Classic of Venus), the author Li Quan 李筌 (active 8th century) was a civil official interested in Daoism and military strategies, but not a military officer. Requested by the emperor Suzong 肅宗 (r. 711–762), he presented the military text, which contains the troop formations transmitted from antiquity. As he cautioned in the preface, this is secret knowledge military experts do not randomly transmit.

Some of these “secret” images would have been deprived of ownership in the raid of illicit books on *yinyang*, cosmology, and divination in 977, even if they had survived the social turmoil in the late Tang. In the aftermath of confiscating books and winnowing the diviners, selected books entered the imperial library, and the most able diviners were assigned posts at the Bureau of Astronomy. The censorship did not aim to eliminate all this knowledge, but to control its circulation.²⁰ The circulation of maps was already widely censored and foreigners in particular were not allowed to own maps.²¹ In fact, cosmological, divination, and geographical knowledge were crucial components of military practices and diagrams of troop formations in the early Northern Song.²²

Zhentu and books on military strategies were not explicitly included in this edict, but other sources show that they were considered sensitive knowledge that should be properly guarded by the court. For example, the *Shenwu milüe* 神武秘略 (Secret Strategies of the Divine and the Martial) compiled in 1037 was only circulated among officials above certain ranks in the three military districts on the northern and northwestern borders. The *Xu Zizhi tongjian changbian* thus records the event:

On the day of *wuzi*, the *Secret Strategies of the Divine and the Martial* composed by the emperor was granted to area commanders, circuit military administrators, and prefects of military prefectures in Hebei, Hedong and Shanxi prefectures. If these

¹⁷ Bray 2007, pp. 2–3.

¹⁸ Zhang Yanyuan discusses the ranking, pricing and dealing of art works among the elite families before and during the Tang in another two chapters of his book, “Lun mingjia pindi” 論名價品第 (On Reputation, Price, and Ranking) and “Lun jianshi shoucang gouqiu yuewan” 論鑒識收藏購求閱玩 (On Appraisal, Collection, Purchase and Appreciation). See *Lidai minghua ji*, pp. 42–48.

¹⁹ *Li Weigong wendui* 2.2b.

²⁰ 兩京諸道陰陽卜筮人等，向令傳送至闕，詢其所習，皆懵昧無所取，蓋矯言禍福，誑耀流俗，以取貴耳。自今除二宅及易筮外，其天文相術六壬遁甲三命及它陰陽書，限詔到一月送官。XZZTJCB 18.414–416. For more discussions, see De Weerdt 2006, p. 166.

²¹ Lin Fan 2015, pp. 104–107.

²² Yates 2005, pp. 15–43.

officials are replaced, the book should be handed to their successors. Previously, Vice Administrator of the Bureau of Military Affairs Han Yi [韓億, 972–1044] suggested that military officials should learn military writings, but these books were prohibited not to spread. Han asked to compile the essential works and give them to officials. The emperor therefore composed the *Secret Strategies of the Divine and the Martial*. In total, there are thirty chapters in ten volumes, and the preface was penned by the emperor himself.²³

Zhentu could be treated in the same fashion as the military text. The phrases “secret” (*mi* 秘) and “prohibited not to spread” (*jin bu chuan* 禁不傳) in the preface suggest that ownership, accessibility, and circulation of the military knowledge were now taken over by the court. In 1016, Shi Pu 石普 (d. 1035), Military Commissioner of Hexi (*Hexi jiedushi* 河西節度使) in charge of Xuzhou 許州 (in present-day Henan) made such a plea to Emperor Zhenzong 真宗 (r. 998–1022):

Merchants from Qinzhou [in present-day Gansu] told me that Gusiluo [唃廝囉, 997–1065]²⁴ is furtively plotting a reprisal on Cao Wei [曹瑋, 973–1030]. I plead to grant Cao the *zhentu* that I had presented to you previously. It will help [Cao] Wei win the fight.²⁵

Shi's suggestion was immediately rejected, and he was also blamed for intervening in affairs beyond his own responsibility. The fact that Shi Pu did not send the diagrams himself but requested the court to forward them to Cao Wei already suggests that the diagrams could only flow vertically between the emperor and his officials, but not among peer officials. In his memorial, Shi cautiously mentioned that his information came from travelling merchants, clarifying there were no lateral connections unknown to the emperor. However, as a military general who was known to be versed in the “dangerous” skills including *yinyang*, astronomy, and mantic arts, and now as a powerful regional military official who attempted to orchestrate affairs of other regions, Shi unavoidably aroused alert and uneasiness on the side of the emperor. Shi's venture directly led to his eventual demotion and exile.²⁶ The *zhentu* that had been privately owned by the privileged aristocrats in the Tang, were made accessible to selected military officials and became incorporated into the imperial power structure and knowledge system in the early Northern Song.

Under the pressure from the frontiers, both the emperor and court officials started to realize the disadvantage of censorship of military works, including *zhentu*. Establishing a military examination system and a military academy in 1029 during the reign of Renzong 仁宗 (r. 1022–1063) paved the way for

²³ 戊子，以《御製神武秘略》賜河北、河東、陝西緣邊部署鈐轄知州軍，每得代，更相付授。始，韓億同知樞密院事，建言武臣宜知兵書而禁不傳，請纂集其要賜之。上於是作《神武秘略》，凡三十篇，分十卷，仍自作序焉。XZZTJCB 120.2833.

²⁴ Gusiluo, the descendant of a Tibetan chieftain, was the ruler of the Tibetan Federation in Gansu Corridor in the early eleventh century. See SS 492.14159–14160; McGrath 2009, pp. 300–303.

²⁵ 商賈自秦州來，言唃廝囉欲陰報曹瑋，請以臣嘗所獻陣圖付瑋，可使瑋必勝。XZZTJCB 88.2027; SS 324.10474–10475.

²⁶ *Ibid.*

making military texts available to a larger number of examination candidates.²⁷ In this context, Fu Bi's 富弼 (1004–1083) memorial in 1034 was a turning point in the sense that it proposed the open access of military texts at the military academy for the following reasons: first, military texts were not banned in ancient times; second, the military examination candidates should learn the classics and historical cases like their civil-service-examination counterparts; third, the rebels who were the primary concerns of the court mostly originated from the peasant class and would not read these texts anyway; fourth, the families that collected books already had these texts. Therefore, censorship would only do harm to fostering talents for the court.²⁸ Fu Bi's ideas, as Fang Zhenhua correctly argues, derived from the civil model to train literati officials – that is, to read Confucian classics and official histories.²⁹ During the Baoyuan 寶元 era (1038–1040), Fu Bi's proposal was first materialized in *Wujing shenglüe* 武經聖略 (Military Canons and Divine Strategies), which was compiled by Wang Zhu 王洙 (997–1057).³⁰ Along the same lines, Zeng Gongliang 曾公亮 (998–1078) and Ding Du 丁度 (990–1053) compiled the military encyclopedia *Wujing zongyao* 武經總要 (Collection of the Essential Military Canons) between 1040 and 1043. It consists of four parts: institutions (*zhidu* 制度), which includes military institutions, organizations, military strategies, and troop formations; frontier defense (*bianfang* 邊防), which includes geographical and topographical features in frontier prefectures; cases (*gushi* 故事); and divination (*zhanhou* 占候) of weather and constellation, a part contributed by the Directorate of Astronomy, Yang Weide 楊惟德 (11th c.).³¹ *Wujing zongyao* was crucial to redefining *zhentu*, as two fascicles in the canon are dedicated to the troops formations, and for the first time, contemporary diagrams were accepted into the “military canon.”

Wujing zongyao was supposedly disseminated to a larger readership. *Shenwu milü* was only distributed in three circuits, but *Wujing zongyao* could be disseminated to more circuits, as its section of “Frontier Defense” covers detailed geographical knowledge of garrisons, strategic passes, and military towns in all circuits on the northern, western, and southern borders. By the twelfth century, both Chao Gongwu 晁公武 (1105–1180) and Chen Zhensun 陳振孫 (1183–1262), the most renowned bibliophiles of the Southern Song (1127–1279), had respectively noted this book in their private catalogs, *Junzhai dushu zhi* 郡齋讀書志 (Records of Reading Books in Junzhai's Collection) and *Zhizhai shulu jieti* 直齋書錄解題 (An Annotated Record of the Books in Zhizhai's Collection). In the Southern Song, *Wujing zongyao* was reprinted, and this edition became the base version for later editions in the Ming dynasty (1368–1644).³² It is not surprising that over time books and other texts that were subject to restricted access were disseminated to the wider readership.³³ However, comparing the catalogs made by these two private collectors with the imperial catalog, one may still find a huge

²⁷ *Songhuiyao jigao* 17.5b.

²⁸ *Song mingchen zouyi* 82.20a–21a.

²⁹ Fang Chen-hua 2004, pp. 6–7.

³⁰ *Qinding Siku quanshu zongmu* 99.14a–15a.

³¹ WJZY, “Xu” 序, 2b–3b (pp. 4–6).

³² *Wujingzongyao qianji*, 775.

³³ De Weerd 2006.

TABLE 1

HOLDINGS OF MILITARY TEXTS IN SONG PRIVATE CATALOGS (*JUNZHAI DUSHU ZHI* AND *ZHIZHAI SHULU JIETI*) AND THE IMPERIAL CATALOG (*SONGSHI*, “YIWEN ZHI”³⁴)

<i>Number</i>	<i>Junzhai dushu zhi</i>	<i>Zhizhai shulu jieti</i>	“Yiwen zhi”
Military texts	27	22	347
Song Military texts	9 or 10	12	At least 185
<i>Zhentu</i>	1	1	At least 20

gap in the size of their collections (see Table 1). Not only the “Yiwen zhi” 藝文志 (Bibliography) of the *Songshi* 宋史 (Song History) consists of more than twenty *zhentu*, but also the sheer number of the titles in it also shows that *zhentu* and military texts remained to be “dangerous knowledge” only accessible to selected officials related with the court throughout the Song dynasty.

DIAGRAMS OF THE PAST AND PRESENT

The Song court looked at pre-Song troop formations and diagrams with a critical eye. *Wujing zongyao* divides troop formations into two categories: *benchao zhenfa* 本朝陣法 (formations of one’s own dynasty, i.e., the Song) and *gu zhenfa* 古陣法 (formations of the ancient time). By coining pre-Song times as “ancient,” *Wujing zongyao* defines the Song dynasty as a new era in troop formation and diagram making. It lists three types of *zhentu*: the comprehensive diagram composed by Emperor Taizong (see Figure 1), the diagrams of the Eight Troop Formations (*ba zhen* 八陣), and the diagrams of Regular Troop Formations (*chang zhen* 常陣).

The *Ping Rong wanquan zhentu* 平戎萬全陣圖 (Comprehensive Deployments for Pacifying the Rong) that Taizong composed to fight the Khitans, is the first piece in the chapter on the formations of the Song. Such an arrangement is emblematic of the leading role of the emperor or the central court.

Emperor Yizu [Taizu], who pacified the realm with military power, was acquainted with all ancient military strategies. During the Yongxi era [984–987], the Khitans frequently pillaged on the borders, so Emperor Taizong made the *Diagram of Troop Formation of Comprehensive Deployments to Pacify the Rong*, granted it to his generals, and requested them to follow it. Now it is carefully recorded here and placed at the beginning of this chapter to present the sagely rule of his majesty.³⁵

The intent of constructing a smooth transmission from Taizu to Taizong in this passage is apparent, although by this time people’s memory of Taizong’s suspicious

³⁴ *Junzhai dushu zhi* 3b.17b–21b (pp. 73–75); *Zhizhai shulu jieti*, pp. 359–363; SS 207.5277–5288.

³⁵ 藝祖皇帝，以武德綏靖天下，於古兵法靡不該通。雍熙中，契丹數盜邊境，太宗皇帝乃自制《平戎萬全陣圖》，以授大將，俾從事焉。今存其詳，用冠篇首，以示聖制云。WJZY 7.3b–4a (pp. 274–275).

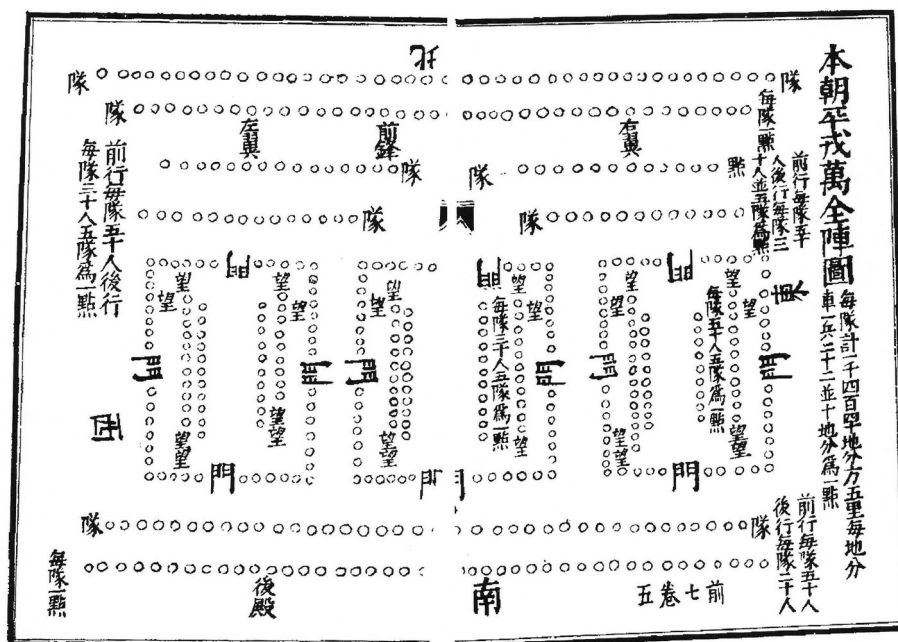


FIGURE 1: *Ping Rong wanquan zhentu* 平戎萬全陣圖 (Comprehensive Deployments for Pacifying the Rong). Source: WJZY 7.5a–5b.

succession of the throne was still fresh.³⁶ The diagram is presented here not only as the collective military wisdom of both emperors, but also as a visual metaphor for the authority and legitimacy of Taizong.

The lengthy text following the diagram explains that the troop formation mobilizes 140,930 troops (110,280 infantrymen and 30,650 cavalrymen) and 1,440 chariots. In the diagram, each dot represents a unit of 30 or 50 soldiers, depending on their functions in the formation (see Figure 1).³⁷ Such a formation would occupy eight to nine kilometers on each side. At first glance, the structure of the whole formation is composed of encased squares like an enforced city. The four cardinal directions and strategic positions, such as entrances and entries, are particularly marked out on the image, borrowing terms from city planning such as *men* 門 (gate) and *wang* 望 (watch tower). With the commander-in-chief and main force at the center, the gates of each square-shaped brigade and the watchtowers at the four corners, the structure of this gigantic formation is reminiscent of the ideal structure of an imperial palace. The focus of this formation is also rather on the defense than the attack, as explained in the text:

While making this formation, [the emperor] specifically considered the topography of the north of the [Yellow] River. The flat terrain often allows the barbarian cavalry to

³⁶ Lau – Huang 2009, pp. 242–244.

³⁷ WJZY 7.6a–7b (pp. 279–282).

move recklessly. Therefore, after trying other formations he expanded the formation, aiming to block the galloping horses and to illuminate our strength and authority.³⁸

The diagram was first used in the summer of 987, one year after a severe loss in a campaign with the Liao. The design and rhetoric made the diagram symbolic of Taizong's authority, although it did not prove to be successful in reality.³⁹ However, except for its on-the-ground use, the map also had a symbolic meaning. Taizong showed it to three generals, Pan Mei 潘美 (921–987), who was the commander of Bingzhou 并州, Tian Chongjin 田重進 (929–997) of Dingzhou 定州, and Cui Han 崔翰 (*fl.* 10th century) of the Palace Army. After instructing them on the strategy, he gave each of them a piece of his own calligraphy of the *Liutao* 六韜 (Six Strategies) and a treatise on the cultivation of general's virtues, "Jiang you wucai shiguo" 將有五才十過 (Five Talents and Ten Faults of a General).⁴⁰ Bestowing these gifts upon the generals seems to be more ceremonial than functional. It was a gesture from the emperor to establish a bond of trust and closeness with his officials.

In 989, two years later, the criticism of the centralized control of diagrams reached the court. Earlier in the first month of this year, Taizong had issued an edict calling for defensive strategies to protect the Song (960–1279) territory from Khitan aggression. The officials Zhang Ji 張洎 (934–997), Wang Yucheng 王禹偁 (954–1001), and Tian Xi 田錫 (940–1003) then immediately expressed their concerns about the weakened agency of field commanders.⁴¹ Zhang Ji's memorial also ascribed the recent military defeats to the same reason, "the central kingdom [i.e., the Song] lost its topographical advantage, dispersed its military forces; generals were controlled by the central government, and soldiers were not able to follow orders."⁴² Along the same line, Wang Yucheng pointed out the most pressing issue that the court needed to tend was that "the problem of military forces lies in their lack of consistency, and the problem of military officials lies in their lack of power."⁴³ Tian Xi, the outspoken Drafter, especially deprecated the emperor and the court for using *zhentu* to restrain the agency of commanders in military campaigns.

As for the current strategy of defending against the Rong people, nothing is more pressing than to appoint commanders. After being selected, they should be given the authority and be held responsible for the loss. There is no need to provide them with *zhentu* or strategies. Naturally, they should be able to adapt to the changing situations and get prepared for contingency. If so, there is no reason not to succeed and defeat the enemy [...] Even the experienced general Zhao Chongguo [137–152 BCE] believed that "Seeing it once is better than hearing about it one hundred times." However, nowadays every time when the commanders are appointed, the central court would issue an edict prescribing the strategy or giving them *zhentu*. The commander who follows these cannot make appropriate decisions, but if he makes his

³⁸ 特以河朔之壤，遠近如砥，胡虜恃馬常為奔冲，故因洞嘗餘法增廣其制，所以挫馳突之銳，明堅重之威。WJZY 7.7b (p. 282).

³⁹ Chen – Wang 2006.

⁴⁰ *Yu hai* 241.9b.

⁴¹ XZZTJCB 30.666–678.

⁴² 蓋中國失地利，分兵力，將從中御，士不用命也。XZZTJCB 30.666.

⁴³ 一曰兵勢患在不合，將臣患在無權。XZZTJCB 30.668.

own decision, he was accused of disobeying the order from the emperor. I do not see the advantage of relying on this policy to achieve victory.⁴⁴

Tian's memorial directly pointed to Taizong's intervention of military campaigns with *zhentu*. By this time the most memorable one would have been the *Ping Rong wanquan zhentu*, which Taizong composed two years earlier.⁴⁵ The case of Zhao Chongguo of the Western Han made the practice that Taizong wanted to established as standard for the Song less convincing. The term *jiangcong zhongyu*, which repeatedly appears in their memorials, was drawn from the Zhou dynasty (1045–256 BC) military treatises *Junzhi* 軍志 (Treatise on the Army) and *Liutao*.⁴⁶ In early Chinese context, such a practice was doomed to fail. Zhang Ji thus quoted *Junzhi* to caution the emperor, "If a commander has to be controlled by the central court [in a campaign] and vanguards are not carefully chosen, then he is doomed to failure."⁴⁷ Their memorials for the first time questioned the legitimacy of the emperor and the court and thus the concept of *benchao* 本朝 (one's own dynasty, i.e., the Song), and as we shall see in the third section of this article, the debate would continue to the later decades.

The latter two types of *benchao zhentu* already existed in the previous dynasties, but they were completely reformulated according to the Song military needs and represented with a new visual vocabulary. On ancient diagrams, the basic unit is *dui* 隊, which consists of 100 soldiers and is represented by a dot on the diagram, and the most common units on the diagrams are *qu* 曲 and *bu* 部 (see Figure 2). A *qu* troop consists of four *dui* of 400 soldiers, and thus represented by 4 dots; a *bu* troop consists of eight *dui* of 800 soldiers, and thus represented by 8 dots.⁴⁸ The *buqu* 部曲 structure has a strong connotation of private troops led by generals with aristocratic backgrounds from the Three Kingdom period onwards, and especially with the *fanzhen* 藩鎮 (autonomous regional governors) during the late Tang.⁴⁹ In contrast to *buqu*, Song diagrams adopt new troops units and more specific functions, including *dadui* 大隊 (infantry), *madui* 馬隊 (cavalry), *zhanfeng dui* 戰鋒隊 (vanguard), *gongnu zhu dui* 弓弩駐隊 (archers and crossbows), and *qibing dui* 奇兵隊 (surprise-attack force) (see Figure 3). Take the *muzhen* 牡陣 (The Yang Troop Formation) in the "Ba zhen" 八陣 (Eight Troop Formations) as an example: The pre-Song diagram deploys 4,000–5,000 soldiers, whereas the Song diagram deploys a much larger troop of 14,000 soldiers. It is clear that the Song troops were more specialized and institutionalized, and demanded a more streamlined training.

⁴⁴ 今之禦戎，無先於選將帥，既得將帥，請委任責成，不必降以陣圖，不須授之方略，自然因機設變，觀釁制宜，無不成功，無不破敵矣... 趙充國老將，尚云百聞不如一見。況今委任將帥，而每事欲從中降詔，授以方略，或賜以陣圖，依從則有未合宜，專斷則是違上旨，以此制勝，未見其長。XZZTJCB 30.675.

⁴⁵ XZZTJCB 28.638.

⁴⁶ 臣聞國不可從外治，軍不可從中御。Liutao 3.5b–6a.

⁴⁷ 將從中御，兵無選鋒，必敗。XZZTJCB 30.668.

⁴⁸ WJZY 8.8b (p. 336).

⁴⁹ Guo Shaohua 2018.

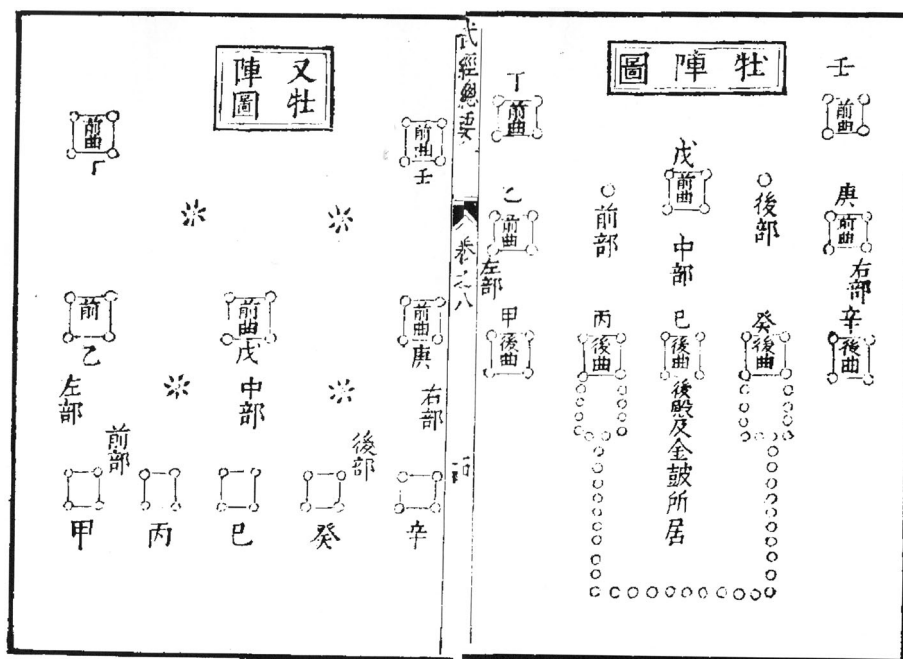


FIGURE 2: *Gu muzhen tu* 古壯陣圖 (Ancient Diagram of the yang Troop Formation)
Source: WJZY 8.16a-16b.

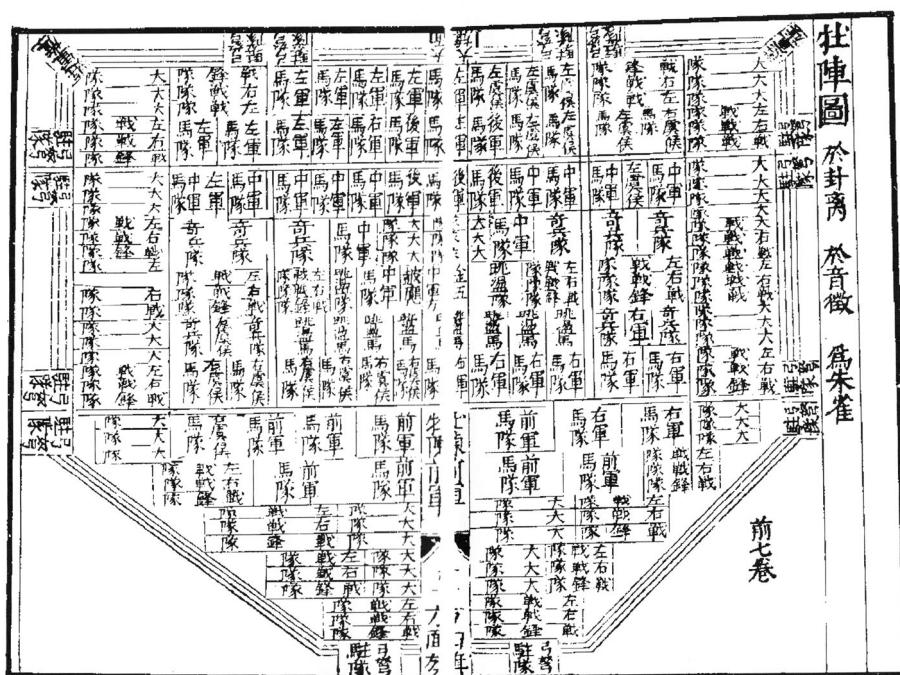


FIGURE 3: *Song muzhen tu* 宋壯陣圖 (Song Diagram of the yang Troop Formation). Source: WJZY 7.11a-11b.

RELATIVE POSITIONS AND GEOGRAPHIC POSITIONS

Looking at the *Ping Rong wanquan zhentu*, an engaged reader would immediately wonder how the commander-in-chief could control such a large number of troops. The formation complex consisted of over 140,000 soldiers and covered 60–80 square kilometers. Given that flags and drums were the usual means for communication, the troop units must have mastered their codes corresponding with formations and topographical knowledge of the local regions in order to synchronize movements with each other.

In his *Taibai yinjing*, Li Quan gave the caveat that “Diagrams are made to teach how to camp and fight, so that soldiers will learn where to advance and stop with bells and drum.”⁵⁰ The war in 1003 between the Song and Liao can offer us a glimpse of how training diagrams could be used in campaigns. In the late Xianping 咸平 era (998–1003), after many years of wars on the Song–Liao borders, both sides were actively preparing for a decisive strike on the other. In the sixth month of 1003, emperor Zhenzong presented a *zhentu* and wanted to discuss its viability with the ministers:

Now, the situation of the enemy is still unclear, so it is particularly necessary to get prepared to stop them. Although a large number of troops have already been stationed there, we should select our spearhead forces to occupy the strategic locations. All three armies from Zhending, Dingzhou and Gaoyang [in present-day Hebei] should meet at Dingzhou, and deploy a great troop formation along the Tang River. Dispatch troops and build rail fencing according to the position of the enemy. When the enemies come, defend strongly and do not chase. Wait two nights until they are exhausted, and then charge towards them with drums. Do not let the main force scatter; let our vanguards and support forces attack the enemies first. If the enemy attempts to constrain the great formation, then place our cavalry at the center, and surround them with infantry. Engage them with short weapons, and do not let anyone straggle away. If the formation of troops is well maintained, the enemy cavalry will have no way to make a breakthrough.⁵¹

Then three cavalry units were deployed near Dingzhou to stop the Liao army: 6,000 cavalymen to guard Weilu 威虜; 5,000 to guard Baozhou 保州, and 5,000 to guard Beiping 北平. The emperor was well aware that the situation might change in the battles, so the *zhentu* and the strategy also considered a few proposals dealing with the potential enemy movements,

If the enemy goes south to penetrate Baozhou [in present-day Hebei] and encounters the main force of our army, then order the troops at Weilu to meet [Yang] Yanlang’s [ca. 9th – 10th c.] army, besiege the enemy both in the front and rear, and then seize

⁵⁰ 夫營壘教戰有圖，使士卒知進止、識金鼓。 *Taibai yinjing* 6.1b.

⁵¹ 今敵勢未輯，尤須防遏。屯兵雖多，必擇精銳先據要害以制之。凡鎮定高陽三路兵悉會定州，夾唐河為大陣。量寇遠近，出軍樹柵。寇來堅守勿逐，俟信宿寇疲，則鳴鼓挑戰，勿離隊伍，令先鋒策先鋒。誘逼大陣，則以騎卒居中，步卒環之，短兵接戰，亦勿離隊，伍貴持重，而敵騎無以馳突也。 *XZZTJCB* 54.1195.

opportunities to counterattack. If the enemy skips Dingzhou and advances to invade the further south, then join the forces with Tian Min [ca. 9th – 10th c.] from Beiping at the northern borders to capture their provisions, and ask troops at Xiong, Ba and Polu [in present-day Hebei] to support.⁵²

Several other units of 5,000 soldiers were positioned at strategic locations to ensure that the enemy had nowhere to escape. The proposal of *zhentu* was soon responded to by the ministers Feng Zheng 馮拯 (958–1023), Li Hang 李沆 (947–1004) and Xie Dequan 謝德權 (952–1010). Xie was concerned that the merging of three forces at Dingzhou would make it too cumbersome to move, and suggested consolidating Chanzhou 澶州 (in present-day Henan).⁵³ Feng's memorial was more concrete in deployment:

It is suitable to increase the troops at Tanghe up to sixty thousand. Make the main formation in the north of Dingwu, make the Chief Administrator lead a middle formation in Xingzhou, make the military administer of the circuit lead a rear formation in Tianxiong military prefecture, and remove the two troops from Mozhou and Langshan [all in present-day Hebei].⁵⁴

The exchange with the ministers implies that the *zhentu* under discussion combined topographical elements and a few types of troop formations such as the Great Formation (*dazhen* 大陣), the Middle Formation (*zhongzhen* 中陣), the Back Formation (*houzhen* 後陣), the vanguards (*xianfeng* 先鋒), and the support forces (*ce xianfeng zhen* 策先鋒陣). These troop formations are all listed in the “regular formations” in the *Wujing zongyao*; at this time, the officials at the court and on the field must have been familiar with their forms and use. The diagram also combines necessary topographical elements, such as directions, locations, and rivers. Not coincidentally, the “Bian fang” 邊防 (Defense of the Frontiers) section in the *Wujing zongyao* also provides extremely detailed information on frontier prefectures, including topographical features and garrison locations.⁵⁵ Therefore, the *zhentu* discussed in this article can be divided into two categories: the diagrams that were used for training purposes, and the diagrams for battles. In the first scenario, the diagrams served as basic learning modules that could be used in different conditions. In various places, *Wujing zongyao* emphasizes the significance of understanding and taking advantage of topography: “One thrives with the aid of topography; one loses without it.”⁵⁶ Therefore, it clarifies which type of topography each formation especially suits. For example, the *pinzhen* 牝陣 (*yin* 陰 formation) that is associated with water meets the needs of valley and rivers, and the *muzhen* 牡

⁵² 若敵南越保州，與大軍遇，則令威虜之師與延朗會，使其腹背受敵，乘便掩殺。若敵不攻定州，縱軼南侵，則復會北平田敏，合勢入北界邀其輜重，令雄霸破虜以來互為應援。XZZTJCB 54.1196.

⁵³ As it turned out in 1004, the Liao troops did skip Dingzhou and headed straight to Tangzhou. SS 390.10166.

⁵⁴ 宜於唐河增屯兵至六萬，控定武之北為大陣，邢州置都部署為中陣，天雄軍置鈐轄為後陣，罷莫州、狼山兩路兵。XZZTJCB 54.1196–1197.

⁵⁵ WJZY j. 16–22 (pp. 777–1128).

⁵⁶ 得地助者昌，失地者亡。WJZY 8.2a (p. 367).

陣 (*yang* 陽 formation) meets that of a slope.⁵⁷ In the second scenario, it combined specific topographic elements and military strategies. For example, in 1069, when Zhao Xie 趙禕 (1026–1090) requested the court to explore the possibility of using the *Bazhentu* 八陣圖 (Diagrams of Eight Troop Formations) of Zhuge Liang 諸葛亮 (181–234), so that they could be granted to generals on the front in response to changes on battlefield. Emperor Shenzong ordered Guo Kui 郭逵 (1022–1088) to explore this with Zhao Xie, study them with topography, and then finalize them and report them to the court.⁵⁸ Therefore, these two types of images produce two sets of positions: relative positions in the diagrams and geographic positions on topographical maps. Diagrams, maps, and geographical information were spread across the texts available to generals. In 1072, for example, the court granted Wang Chao 王韶 (1030–1081), prefect of Tongyuan 通遠 military prefecture (in present-day Gansu), one copy for each of the following: *The Imperially Comprised Diagram for Attacking and Defending Tactics, Techniques for Marching with Rings and Beads, Geomancy and Astronomy, Regulations on Battle and Defence in the Four Circuits*, as well as the two military encyclopedias mentioned above, *Wujing zongyao* and *Shenwu milüe*. At the meantime, the court also allowed the Military Commissions of the Qinfeng 秦鳳 circuit to make copies of other texts.⁵⁹

Issuing diagrams to generals for military training and imperial inspections remained regular practices throughout the Song. Although most troop formations in the *Wujing zongyao* were composed of dozens of thousands of soldiers, the training could often be reduced to a smaller scale. In one drill that was prepared for Emperor Taizong, the formation only consists of several hundreds of horsemen and infantrymen. He was very impressed by the presentation and commented that with this he could imagine the magnificence of the full-scale formation made of ten thousand people.⁶⁰ In addition to testing the viability of the formations, such events were also aimed to select the most capable warriors. In 1003, Emperor Zhenzong instructed the troops to exercise three new formations in the palace, and at the same time he ordered the promotion of soldiers with outstanding performances.⁶¹ The section on “Xunlian zhi zhi” 訓練之制 (The Intuitions of Training) in the *Songshi* shows that formations were practiced regularly in the palace or in the suburb of the capital and skilled soldiers were sent to local regions to train others.⁶² During Emperor Renzong’s time, such exercises were often held in front of the Chongzheng dian 崇政殿 (Hall of the Glorious Administration), the palace hall for regular meetings with the ministers to deal with administrative affairs, including the presentation and distribution of *zhentu*.⁶³ Exercises for large-scale formations took place in the suburbs of the capital. In 999, Emperor Zhenzong ordered the building of military camps outside the imperial city, and in 1003, he called on the

⁵⁷ WJZY 7.10a, 7.12a (pp. 288, 291).

⁵⁸ 趙禕乞講求諸葛亮八陣法，以授邊將，使之應變。詔郭逵同禕講求，相度地形，定為陣圖聞奏。SS 195.4862.

⁵⁹ 詔賜《御製攻守圖》、《行軍環珠》、《武經總要》、《神武秘略》、《風角集占》、《四路戰守約束》各一部，餘令關秦鳳路經略司抄錄。SS 195.4863.

⁶⁰ *Yuhai* 143.8a–8b.

⁶¹ XZZTJCB 55.1216.

⁶² SS 195.4853–4862.

⁶³ For more of these manoeuvres, see *Yu hai* 143.7b–25a; SS 195.4862–4873; XZZTJCB 105.2447.

ministers to inspect the newly-trained imperial army led by Commander-in-Chief of the Palace Army (*dianqian du zhibuishi* 殿前都指揮使) Gao Qiong 高瓊 (935–1006). After seeing the neatly arranged formations, the emperor commented, “The peasants in the past have now been transformed into the best soldiers.”⁶⁴ Emperor Renzong again followed this practice. Compared with the small-scale inspections in the palace, the formations in the suburbs were usually in full-scale and sometimes were equipped with explosive firearms, such as trebuchet catapults.⁶⁵ The imperial park at Jinming Lake (Jinming chi 金明池) that served as the venue for naval training was open to the public twice in spring and autumn.⁶⁶ During the Xining 熙寧 (1068–1077) era, *dayue* 大閱 (large-scale military exercises) were moved to Jingjia pi 荆家陂 in the southern suburb due limited space in the palace.⁶⁷ In the Southern Song, as the size of the palace was considerably reduced and the court was constantly under the pressure of war, exercises took place in the suburb regularly and could be seen by the general public. The term *dayue* that used to be primarily associated with the imperial court in previous dynasties was also applied to the exercises in frontier regions and local jurisdictions during the Song. Watching the *dayue* became a popular literary theme from the late Northern Song onwards. In his “Upon the Large-scale Military Exercise on the eleventh day of third month, I Improvised Three Extempore Quatrains” (“Sanyue shiyi ri dayue ouzuo san jueju” 三月十一日大閱偶作三絕句), Chao Shuozi 晁說之 (1059–1129), who served as the military controller in the Luzhou 鄜州 prefecture (in present-day Shaanxi) about 1114–1117, looked at it as a spectacle: “Seen from the top of the hill, the flag full-blown by wind is stunning; do not talk about riding the blood-sweating horses outside the pass yet.”⁶⁸ Reading *Wujingzongyao* and the institutional history together with literature such as this poem, one could imagine how a spectacular picture of the training scene could stimulate the senses and emotions of a viewer with a mixture of the sound of drums and shouting, colorful patterns of flags, tattooed soldiers and horses in the changing formations, and even the astounding effect of newly invented gunpowder weapons.

The military training with *zhentu* could efficiently prepare the troops for action. In 1004, as Gao Qiong escorted the emperor to the battle front in Chanyuan 澶淵, the emperor showed Gao two diagrams, *yixing yizhi* 一行一止 (one for marching and the other for camping), and the troops were able to depart the next day.⁶⁹ These two diagrams might have been variant formations from the “Junxing cidì” 軍行次第 (Marching Order of Troops) and “Ying fa” 營法 (Ways of Camping) in *Wujing zongyao*.⁷⁰ Through training, Gao’s troops must have been familiar with these formations and could depart immediately. The diagrams function like modules and thus need literacy in their practical use: practice with each formation in training and tally it with others in a campaign. After a long term of practice, the diagrams could easily

⁶⁴ XZZTJCB 55.1213.

⁶⁵ For a history of the usage of firearms in city defense and siege, see Needham – Yates 1994, pp. 184–240; *Yu hai* 143.14b.

⁶⁶ XZZTJCB 68.1530.

⁶⁷ SS 195.4857.

⁶⁸ 風旗且好岡頭看，汗馬休論塞外期。 *Songshan wenji* 7.11a.

⁶⁹ XZZTJCB 58.1287.

⁷⁰ WJZY j. 5–6.

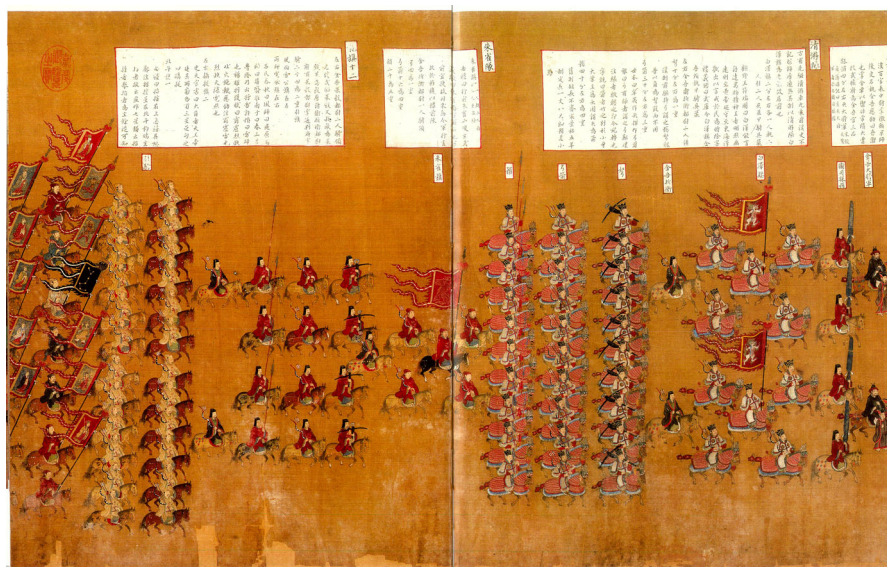


FIGURE 4: *Dajia lubu tu* 大駕鹵簿圖 (Illustrations of the Imperial Guard of Honor). Detail. Color on silk, 14.8 m x 0.514 m. Northern Song dynasty. Source: National Museum of China, Beijing.

be adapted according to conditions of topography, weather, and enemies. The ways in which they were combined together formulated a strategy in response to various possibilities and provided comprehensible “vocabularies” that soldiers, generals, and the emperor could communicate both in training and on the field.

The logic of the military exercises and their diagrams could also be examined in juxtaposition with other large-scale projects. During the Song, *jutu yiwen* 具圖以聞 (report with an image/diagram) came to be a common expression when the court requested pictorial representations of the ongoing processes of state projects, new designs of military defenses, troop formations, and court ceremonies. Patricia Ebrey suggests to read *Dajia lubu tu* 大駕鹵簿圖 (Illustrations of the Imperial Guard of Honor) together with the *Ping Rong wanquan zhentu* in the sense that they both belong to the visual culture and illustrate relative positions (see Figure 4).⁷¹ Just like military deployment, such a ceremony mobilized a tremendous amount of manpower, animals, and equipment. As Peter J. Golas has observed, the Song witnessed a golden age of illustrating technology.⁷² *Zhentu*, as a significant part of this pictorial conglomerate, also contributed to the imaging and visualizing of the empire.

COURT DEBATES OVER *ZHENTU*

The *Huqian jing* 虎鈴經 (The Classic of the Tiger Seal) by an individual, the low-rank official Xu Dong 許洞 (ca. 10th–11th c.), and *Wujing zongyao*, as the

⁷¹ Ebrey 1999, pp. 58–59.

⁷² Golas 2015, pp. 37–43.

result of collective, institutionalized effort pose two different attitudes towards *zhentu*, especially their stances towards the Daoist-cum-military-strategist Li Quan. Strongly influenced by Daoist and *yinyang* philosophy, Li Quan states that “it is clear that diagrams of troop formations are not made for battles. Is it not ridiculous that the mediocre generals mistake the formations for training for those for battles?”⁷³ Xu Dong’s thoughts and diagrams show tremendous consistency with those of Li Quan. *Wujing zongyao*, however, stands its ground by defending the use of *zhentu*, and criticizes that Li Quan’s opinion was wrong. It traces the origin of *zhentu* to the legendary *Bazhentu* attributed to Zhuge Liang.⁷⁴ The key message in the rhetoric of the compilers is that the troop formations already contained inexhaustible potential in response to the changing movements of the enemy. If *zhentu* were indeed necessary, then who had the power to own them and to circulate them?

The debate over the emperor’s control of military diagrams, as mentioned at the beginning of this article, turned out to be a key issue in the power dynamic at the court. However, considered in the historical context, the practices and positions of the emperors could vary from period to period. As various scholars have observed, the firm grip of the emperor slowly relaxed towards the reign of Shenzong.

As Wu Han points out, Taizu was no doubt a brilliant military leader, but he was not an enthusiastic user of fixed diagrams in military campaigns.⁷⁵ Only once, in 961, was he recorded rewarding a military official for the latter’s presentation of a diagram. The diagram was prepared for taking over the Youzhou 幽州 area (in present-day Beijing and Hebei), but Taizu never used it to conduct any military actions.⁷⁶ It was Taizong who started to orchestrate military campaigns with set-piece diagrams, and who thus drew the most direct criticism. As mentioned at the beginning of this article, the issue that was raised by Tian Xi, Wang Yucheng and Zhang Ji in 989 was the first open opposition, and their opinion was echoed during the following decades, such as in Zhu Taifu’s 朱台符 (965–1006) memorial in 999.⁷⁷ Throughout his reign, Taizong was rather adamant in keeping the line, with very few exceptions.⁷⁸ In a series of military actions against the Tangut leader Li Jiqian 李繼遷 (963–1004) in 996, Taizong not only prescribed the strategies to the generals, but also let them practice at the court:

Originally, when the emperor gave the strategy to the generals, he asked them to first present their troops at Chongzheng Hall, array them in attacking mode, and then practice bayonet charging and shooting. He also ordered for them to be equipped with stronger crossbows. Therefore, when the army encountered the enemies [on the battlefield], they arranged the troop formations and shot ten thousand crossbows

⁷³ 則其戰陣無圖，明矣。而庸將以教習之陣為戰敵之陣，不亦謬乎！*Taibai yinjing*, 6.1a–1b. The quoted sentence in this paragraph comes from *Sunzi*, see *Shiyijia zhu Sunzi* 9b.

⁷⁴ *WJZY* 7.1a–3b (pp. 269–274).

⁷⁵ Wu Han 1957, p. 94.

⁷⁶ *XZZTJCB* 4.112.

⁷⁷ *XZZTJCB* 44.937.

⁷⁸ In 979, General Zhao Yanjin 趙延進 (ca. 10th c.) changed Taizong’s diagram in a campaign despite his fellow general’s hesitation. Finally, they defeated the enemy. In the end, he was praised by the emperor. However, this should be considered as an isolated case as it took place at the very beginning of Taizong’s reign. See *XZZTJCB* 20.462–463.

all together. The enemies had no way to fight back; once shooting started they dispersed. After sixteen campaigns, our troops eliminated their stronghold.⁷⁹

After hearing about the victory, Taizong was complacent about his own overall scheming, but in response to Li Jiqian's escape, he especially emphasized the importance of obedience of the generals:

The timing of this expedition, including the encounter and withdrawal, is all under my prediction. However, only because some generals did not closely follow my deployment, this evil enemy [i.e., Li Jiqian] ran away. [...] After the war began at the turn of the autumn, it was extremely hot, but I have been making plans without rest. Carefulness is the most important quality when it comes to dispatching troops and making troop formations. Although a warrior can lead a few thousand soldiers to fight the enemies, without receiving an order his action will make no difference in the overall result and will only disturb the whole deployment. For this reason, I always warn that one who violates the order will receive a death sentence, so no one dares to act recklessly. Troop formation is a great art of the military strategists, which is different from normal situations. It is not appropriate for common people to discuss about it. I made the *zhentu* and gave it to Wang Chao, and told him not to show it to other people. When Wang returns, you can borrow it to look.⁸⁰

In the story above, Taizong not only designed the strategy and supervised the drill, but also commanded the movement of the army on the battleground. The tone of his reproach of disobedient actions was harsh. However, considering that most of Taizong's military expeditions after 979 were not very successful,⁸¹ one can read his obsession with diagrams as a means that was primarily aimed to maintain his authority.

Compared with his father, Zhenzong became more open in deploying the military, making troop formation diagrams, and inspecting the borders. In 1001, Zhenzong stated that he was always willing to discuss military affairs with his ministers, so they did not need to hide their opinions.⁸² This is clearly the case in the Chanzhou War in 1003 and 1004, as mentioned above. Zhenzong also encouraged the creation of diagrams, which can also be understood as an approval of their usage in battles. In 1001, before Wang Chao's forces were sent to support Lingzhou 靈州 (in the present-day Ningxia autonomous region) under the threat of the Tanguts, Zhenzong asked Wang about his strategies. Wang presented two diagrams, and the emperor endorsed them with satisfaction. In the first diagram, provisions were placed in the middle of the formation and surrounded by troops; in the second, when under attack, the first

⁷⁹ 上初以方略授諸將，先閱兵崇政殿，列陣為攻擊之狀，刺射之節，且令多設強弩。及遇賊，布陣，萬弩齊發，賊無所施其技，矢才一發，賊皆散走。凡十六戰而抵其巢穴，悉焚蕩之。XZZTJCB 40.852.

⁸⁰ 此行合戰與還師之期，悉如所料，但諸將不能盡依方略，致此賊越逸... 師興以來，夏秋之際，炎熱尤甚，朕躬自謀度，未嘗寧息。大抵行軍布陣，當務持重，雖有勇者率數千人以先犯賊，亦無能損益，適足撓亂行伍。朕每深戒之，違令者必斬，果無敢輕率者。布陣乃兵家大法，非常情所究，小人有輕議者，甚非所宜。朕自為陣圖與王超，令勿妄示人。超回日，汝可取圖觀之。XZZTJCB 40.852.

⁸¹ Wang Zengyu 2015, pp. 221–222.

⁸² 軍國之事，無鉅細必與卿等議之，朕未嘗專斷，卿等各宜無隱，以副朕意也。XZZTJCB 49.1065.

formation would turn into a square shape and would be protected by mobile forces with crossbows.⁸³ The diagrams were greatly inspired by the great Tang military strategist Li Jing, and from the above description, they were probably variations of the *Rong zizhong fangzhen tu* 容輜重方陣圖 (Square-shape Formation Containing the Provisions) from the *Benchao bazhen fa* 本朝八陣法 (Strategies of the Eight Formations of the Song) in *Wujing zongyao*. In 1003, Gao Qiong submitted a set of “Bianjian zhentu” 鞭箭陣圖 (Diagrams of Whip-Crossbows) to the court.⁸⁴ The section of “Shoucheng” 守城 (Defending the City) in *Wujing zonyao* also includes an entry under the same title depicting a set of weapons that could be used in the siege of a city (see Figure 5). On the left of the page, it shows the regular whip-crossbow, and on the right its newly invented gunpowder-driven version.⁸⁵ The inclusion of diagrams such as these in this encyclopedia could be due to the collective efforts of multiple parties including the field commanders.

Presenting these newly created diagrams to the emperor or the central court implies that these components were already used in their training and could be incorporated into combat when needed. After Emperor Renzong was given the full power to rule after the death of the regent Empress Liu (968–1033) in 1033, his acceptance of the political ideal of “co-governing the realm” (*gong zhi tianxia* 共治天下) with his ministers meant that collective decisions on military affairs were made at the central court,

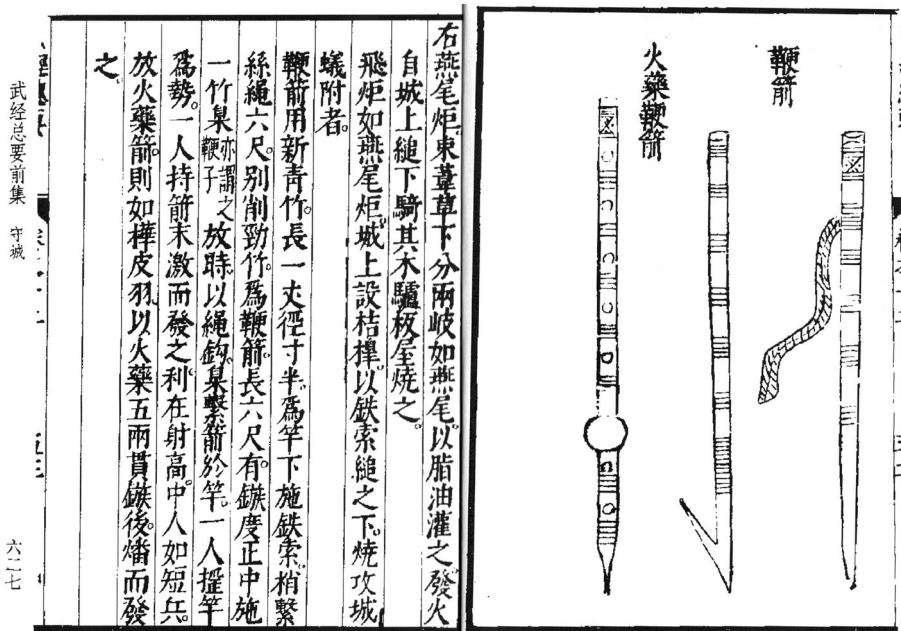


FIGURE 5: *Bianjian zhentu* 鞭箭陣圖 (Diagrams of Whip-Crossbows). Source: WJZY 12. 53a–b.

⁸³ XZZTJCB 50.1103.

⁸⁴ XZZTJCB 55.1215.

⁸⁵ WJZY 12. 53a–b (pp. 626–627). For more on similar devices, see Needham – Yates 1994, pp. 212–225.

and more agency was given to commanders. After the war broke out with the Xi Xia 西夏 (1038–1227) in 1038, he started to inspect military drills of troop formations regularly at the court and rewarded generals who presented diagrams. In 1040, when Li Yuanhao 李元昊 (1003–1048) captured strategic forts near Yan'an 延安 prefecture (in present-day Shaanxi), the military situation on the borders with Xi Xia became disadvantageous for the Song. Lacking effective countermeasures, Renzong opened the floor to permit officials at central and local levels to comment on military policies and strategies. Commissioner of State Finance (*sansi shi* 三司使) Yan Shu 晏殊 (991–1055) submitted a proposal including the following measures:

[Yan] pleaded to stop appointing eunuchs to supervise troops and giving *zhentu* to field commanders, and to conscript and train archers. He also asked the emperor to spend the excessive treasures from the palace to cover the expenses on the frontiers. [...] Most of these suggestions were well taken. The emperor began to send edicts to officials in outlying regions to enquire about strategies on defense or attack.⁸⁶

Wang Deyong 王德用 (987–1065) also made the same comment on this issue.⁸⁷ In 1046, when the northern frontier prefectures received an order to adopt new troop formations, Wang protested for its rush. As a result, the court ordered the continuing use of the old diagrams in campaigns but of the new one in training.⁸⁸ While the court solicited opinions on frontier affairs, Wang took the chance to point out the limit of the centralized making of diagrams:

[Wang] Deyong said, “during the reign eras of Xianping and Jingde [1004–1007], [Zhenzong] granted *zhentu* to the military generals. [As a result,] they all rigidly followed the strategies and did not back out even in case of emergency, so they failed all the time. I sincerely hope that you do not grant the diagrams to generals anymore, so that they can respond to the changes, initiate surprise attacks, and make extraordinary achievements.” The emperor agreed with him.⁸⁹

Wang was asked as a regional military official, and his advice was taken. Among the Northern Song emperors, Renzong was the first to acknowledge the countereffect of the practice of controlling field commanders through diagrams. By this time, as more civil officials were appointed to the Bureau of Military Affairs, the threat that military generals had once posed to the throne was no longer the primary concern for the emperor.

In a conversation between the ambitious Shenzong and his reformist minister Wang Anshi 王安石 (1021–1086), the emperor admitted the failure of the policy of “centralized control over the generals,” especially Emperor Taizong’s control of military generals through the diagrams.⁹⁰ Shenzong himself was interested in diagrams of battle

⁸⁶ 請罷內臣監兵，不以陣圖授諸將，及募弓箭手教之，以備戰鬥。又請出宮中長物助邊費... 事多施行。帝初以手詔賜大臣居外者，詢攻守之略。XZZTJCB 126.2988.

⁸⁷ *Shilin yanyu* 9.132. Wang was also one of the few military officials who were finally appointed to the Bureau of Military Affairs. See *Chen Feng* 2001, pp. 35–36.

⁸⁸ XZZTJCB 158.3832.

⁸⁹ 帝嘗遣使問邊事，德用曰：“咸平景德中，賜諸將陣圖，人皆死守戰法，緩急不相救，以至于屢敗。誠願不以陣圖賜諸將，使得應變出奇，自立異效。”帝以為然。SS 278.9468–9469; XZZTJCB 158.3832.

⁹⁰ XZZTJCB 237.5775.

formations, and the military officials who presented diagrams to the emperor often received a reward or promotion. In 1075, Shenzong had to complain about the excessive number of diagrams and their insufficient quality.⁹¹ This suggests that by the time, military officials were encouraged to produce *zhentu* and a more open and relaxed dynamic had been developed between the military officials and the emperor. By the end of Shenzong's reign, diagrams of troop formations were no longer restricted knowledge, but constituted a form of public knowledge shared among the professional military officials.

Although diagrams were ruled out as a device to control military officials at Shenzong's court, topographical maps of the military frontier regions that combined military strategies were still considered as sensitive knowledge. An edict in 1081 granted the access of *Xiaguo, Jingyuan, Huanqing, Xihe lu duijing tu* 夏國、涇原、環慶、熙河路對境圖 (The Map of the Frontier Regions in Xi Xia and the Circuits of Jingyuan, Huanqing, and Xihe) alongside its explanation to the officials of the Secretariat-Chancellery and the Bureau of Military Affairs in the hope that they would stay informed of the topography of enemy territory. After the viewing, the maps would be taken away by the bureau.⁹² And yet, the out-of-date and false information in the map misled the court in decision making. In the following year, Shenzong acknowledged the mistake and ordered that the map should be remade. This time, the court edict demanded every frontier circuit to involve envoys and frontier officials who were familiar with foreign territory. These officials were asked to work together with scrupulous craftsmen to rectify the locations and place names of mountains, rivers, garrisons, and military settlements. Each circuit on the redrawn maps should be differentiated from others with color. After being submitted to the Bureau of Military Affairs and being compared with their previous versions and earlier reports on military movements, these maps would finally be made into *Wulu du duijing tu* 五路都對境圖 (The Map of the Frontier Regions in Five Circuits).⁹³ As Fang Chen-hua convincingly shows, the glitches in the process of information collecting and mapmaking proved that the centrally controlled military maneuvers was inefficient and ineffective, and therefore, towards the end of Shenzong's reign, this practice declined precipitously.⁹⁴

Nonetheless, it is worth noting that *zhentu* and topographical maps continued to be made for the rest of the Song by both the court and field commanders for the purpose of training and campaigns. For example, in the early Southern Song, military generals such as Yue Fei 岳飛 (1103–1142) and Wu Lin 吳玠 (1102–1167) made more innovative, flexible strategies and diagrams in response to the Jurchen cavalry.⁹⁵

CONCLUSIONS

The early Northern Song witnessed the shifting identities of *zhentu* in the context of Tang–Song transition. With the increasingly institutionalized control of military

⁹¹ SS 195.4866–4867.

⁹² 上批：“《夏國、涇原、環慶、熙河路對境圖》并說語付中書、樞密院，庶知賊中地形曲折，覽畢可復進入。”XZZTJCB 314.7602.

⁹³ 可令逐路選委昨出界熟知賊境次第使臣、蕃官，差精切畫工，同指說山川堡寨、應西賊聚兵處地名，畫對境地圖，以色別之。上樞密院取到舊對境地圖及軍興奏報文字，比對考校，繪為《五路都對境圖》。XZZTJCB 327.7876.

⁹⁴ Fang Chen-hua 2020, pp. 25–27.

⁹⁵ SS 365.11375–11390, 366.11414–11424.

generals in the new dynasty, diagrams of troop formations were no more secret knowledge owned by military generals with aristocratic backgrounds; rather, they became specialized knowledge owned by the court and were made accessible to a restricted circle of military generals. This knowledge as well as that in other fields such as geography and astronomy was appropriated and monopolized by the state. In the meantime, as the status of civil officials was elevated, the diagrams also became a means by which the emperor and the court exercised and negotiated their power with the officials. Such a practice did not simply fit the conventional understanding of the court policy of “prioritize the civil” and “restrain the military,” as the civil officials sided with military officials in proactively voicing their opposition against the practice of the central control of diagrams. This could be explained by the fact that after the 990s, the concerns about powerful regional warlords were replaced by the pressing threats of the northern superpowers. As a result, the diagrams for campaigns arose from collective decisions by the emperor, the ministers in his close circle, and the military officials from the frontiers. Therefore, blaming the malfunctioning Song military policy should not be the only approach to understanding the use of the diagrams of troop formations; their changed roles in the first century of the Northern Song could also be seen as part of the processes of exploring and adjusting the power configuration. By Shenzong’s era, *zhentu*, as a form of knowledge, were incorporated into the imperial knowledge system and institutions.

The so-called *zhentu* could have referred to two different material forms: the diagrams used for military training and the diagrams used for military campaigns. As a result, they were related to different senses of locality: relative positions in the former case and geophysical positions in the latter. Yet these two types of diagrams are interrelated, as the training diagrams provided the diagrammatic literacy for the use of the latter on battlefields. Using diagrams on battlefields required that military generals were equipped with knowledge about geography, topography, and other relevant fields.

By Emperor Shenzong’s reign, the generals were gradually being granted autonomy in making and using diagrams. This does not mean the court had lost grip on control, but *zhentu* were no longer to play the role of leverage between the court and military officials. They still remained a significant part of the knowledge system of the military professionals both in campaigns, training, and eventually it entered into the public realm of knowledge. Although not comparable to the catalog of the imperial library, military texts containing *zhentu* were collected in private libraries in the Southern Song and were prolifically reprinted in the Ming encyclopedias, such as *Wubei zhi* 武備志 (Treatise on Military Preparations). Meanwhile, military formations and their diagrams were mystified in popular culture in the coming centuries and fascinated the urbanites. In scholar Zhang Dai’s 張岱 (1597–1684) memory, the military drill in Yanzhou 兗州 (in present-day Shandong) in the late Ming comprised more than ten formations of 3,000 cavalrymen and 7,000 infantrymen. It was not just a military manoeuvre, but also an entertaining display of riding skills and musical performance.⁹⁶ In the Ming literature, such as *Shuihu zhuan* 水滸傳 (Water Margin) and novels surrounding the Northern Song general Yang Ye 楊業 (929–986) and his family, military formations were often foregrounded in the

⁹⁶ Tao’an mengyi 31.

narrative as secret yet powerful knowledge.⁹⁷ By this time, *zhentu* that had been set out to be sensitive knowledge were liberated from their political and institutional constraints and gained miraculous power in the popular imagination.

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⁹⁷ Yu Jiaxi 1945; Gu Xinyi 1992.

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CHINESE ABSTRACT

知識、權力與技術——北宋早期軍事史中的陣圖

本文在前人研究基礎上再度探討北宋初年有關陣圖的概念與實踐。在朝廷的控制下，陣圖被納入帝國的軍事知識系統的體系之內。根據其不同形式與功能，可將陣圖劃分為兩類：一類用於軍事演習，一類用於實戰之中。前者因此涉及的是相對位置，而後者則使用諸多歷史信息。對陣圖的使用與流通凸顯了皇帝、文官與武官之間錯綜複雜而又不斷變化的權力關係。

關鍵詞：陣圖、軍事史、《武經總要》

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