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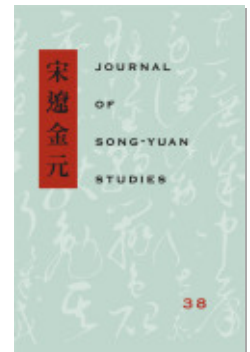
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“GOOSE FILE” FORMATION: WHAT DOES IT LOOK LIKE?

Tsang Shui-lung

Preface

Despite growing interest in Chinese military history in recent years, very little has been written in Western languages regarding battle formations in ancient and imperial China. This is perhaps because, when compared with subjects such as grand strategy, military institutions, civil-military relations, and the impact of war on society, they might seem to be a relatively trivial matter—suitable for amateur enthusiasts but not necessarily meriting the attention of serious scholars. This view is mistaken, for several reasons.

First and most obviously, the marshaling of combatants into closely-packed ranks and files and their articulation into a number of separate units capable of cooperating with one another or maneuvering independently on the battlefield was an essential prerequisite for organized, effective tactical combat in most times and places prior to the advent of telecommunications. This was especially true of the infantry-based armies of China from the Warring States period onward. The teachings of the Chinese military classics are predicated on the assumption of drilled, disciplined formations capable of responding promptly to the will of the army's commander as expressed through auditory and visual signaling by such means as drums, bells, and waving flags. The ancient Chinese understanding of the importance of organized formations is perhaps best expressed in the seventh chapter (*jun zheng pian* 軍爭篇) of *Sunzi bingfa* 孫子兵法, which states that signals must be used to focus the attention of the troops and achieve the unity and coordination that prevents the brave from advancing alone and the less brave from removing themselves from the battlefield. As Mark Edward Lewis pointed out in his *Sanctioned Violence in Early China* (1990), the significance of these developments was not confined to military tactics; the regimentation of the armies also provided

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a working model for the transformation of the various warring states (and their unified imperial successor) along more rigidly authoritarian lines.

In addition to its ties to political theory, the ancient Chinese science of military formations also came to be intimately bound up with cosmological beliefs based on the notion that patterns immanent in nature can be discerned by humans and exploited or manipulated for advantage. Particular formations were identified with one or another of the Eight Trigrams and the Five Phases, and stories proliferated that this esoteric military knowledge was the product of supernatural or even divine revelation. Instead of being regarded as mundane battlefield deployments, formations could acquire a magical aura.

They certainly loomed large in the Chinese imagination of war, and nowhere is this more evident than in the *Romance of the Three Kingdoms* (*San Guo yanyi* 三國演義). To take only one example, consider the battle of the Qishan Hills 祁山 fought between Deng Ai 鄧艾 of Wei and Jiang Wei 姜維 of Shu, as represented in chapter 113. There both generals employ a set repertoire of formations based on the Eight Trigrams, and the use of an unfamiliar and unexpected battle order (called “Serpent Coiled on the Ground”) by Jiang Wei is sufficient to cause the panic and defeat of his opponent—although General Deng himself is able to avoid capture thanks to the timely intervention of a subordinate commander whose earlier studies enabled him to identify the sole weak point of the coiled-serpent array. One formation can be played against another rather like a hand of cards, or a game of scissors-paper-stone. The battle portrayed here is more an intellectual struggle than a physical one, and the science of formations certainly resonated with the idea that successful military leadership sprang from intellectual mastery and the study of written texts.

There is ample evidence that formations were of interest not only to the writers and consumers of popular fiction, but also to practical statesmen and military leaders. The bibliographical chapters of the dynastic histories list many works purporting to detail the Eight Formations (*ba zhen* 八陣) variously attributed to the Three Kingdoms strategist Zhuge Liang 諸葛亮 or even the Yellow Emperor, and surviving military encyclopedias such as the *Taibai yinjing* 太白陰經 of Li Quan 李筌 (mid-eighth century CE) and the *Wujing zongyao* 武經總要 (mid-eleventh century) devote considerable space to descriptions and even diagrams of standard formations. In the 1070s, one component of the military reforms pursued by Shenzong was a serious effort to recover the “six-petal” (or seven army) deployment of the early Tang

general Li Jing 李靖 and teach it to the Song armies. Sadly, this initiative produced only disorderly snarls on the parade ground, and the Song military instead eventually adopted a five-army deployment.

The significance of the present study, within this larger context, is that it reconstructs the appearance of one specific formation, the “goose file,” that appears on most of the standard lists, and it also demonstrates the stability or consistency of this formation’s description in texts over the space of more than a thousand years. The implication is that this formation was no mere literary fantasy, but practical knowledge that was carefully transmitted over the centuries and may actually have been applied on the battlefield. Of particular interest for students of Song history, the evidence gathered in this article also testifies to the reliability of the *Wujing zongyao* as a source for the military practice of the period.

The author of this paper, Tsang Shui-lung 曾瑞龍, was associate professor of history at the Chinese University of Hong Kong and the author of books on the Song-Liao conflict of 979–986 and the Song-Xi Xia wars, as well as numerous articles on Song military history. Born in Hong Kong in 1960, Professor Tsang received his B.A. and M.Phil. degrees from the Chinese University of Hong Kong. He went on to receive his Ph.D. in 1997 from the University of Arizona, where he wrote his dissertation on “War and Peace in Northern Sung China: Violence and Strategy in Flux” under the supervision of Professor Tao Jing-shen. Professor Tsang’s research interests included not only the Song-Liao War, the Song-Xia War, and the broader military history and foreign relations of the Tang and Song dynasties, but also extended to comparative strategy and strategic cultures. His work combined the best traditions of Chinese textual scholarship with sensitivity to the latest theories and methodologies from the social sciences. Before his untimely death on May 5, 2003, Professor Tsang had published one book and eleven articles; two more books and several articles have appeared posthumously. A complete list of Professor Tsang’s publications is appended below.

The paper printed here is the last work that Professor Tsang produced before his death, and was to have been presented at the conference of the Chinese Military History Society, held at Marist College in Poughkeepsie, New York, on May 10, 2003. It is published here as a research report with only minor corrections and emendations.

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THE “GOOSE FILE” FORMATION

It has long been debated whether the descriptions of battle formations in premodern Chinese literature reflect mere rhetoric or have had tactical implications in actual combat situations. In this literature mysterious symbolism is filled with great ambiguity, where the means by which victory was secured is never boasted about. Many formations were likened to animals, where animal figures were used symbolically in ancient mysticism. The literary marvels depicting the Eight Battle Formations have been regarded as preserving the great secrets of the most ancient faiths, but the extent to which they could be utilized in a real battle continues to be an intractable question. The efforts of Chinese historians during the second millennium, which celebrated these symbols as being in accordance with the ancient Chinese art of war, proved to be premature.

This paper does not claim to solve this problem, and in addition, points to an even more complicated question. Most battle formation diagrams, or *zhentu* 陣圖, describe an “embryo” stage before actual combat was initiated, rather than being at the stage of achieving tactical implementation. From the shape of the initial stage it is, therefore, hard to conceive the key to victory. One example from Western history was when Hannibal met Varro at Cannae in 216 B.C., he had his vanguard march forward to form a “crescent-moon-shaped convexity” bowing out toward the Romans, and then he conducted a gradual withdrawal and enveloped the enemy with the two wings.¹ At first glance it is difficult to anticipate that Hannibal’s aim was to encircle. The case of Cannae exemplifies the difference between the tactical deployment of the initial stage and the decisive moment. Being aware of this distinction is methodologically essential to comprehending the precise but abstruse data of the ancient period.

“Goose file” formation or *yanhang zhen* 鴈行陣, one of the ancient Eight Formations, is a controversial case. Lan Yongwei’s depiction of the “goose file”

1. Livy, *The War with Hannibal* (New York: Penguin Books, 1977), 145–149. Hans Delbrück, *Warfare in Antiquity, History of the Art of War* v. 1 (Lincoln and London: University of Nebraska Press, 1990), 315–324. Victor Davis Hanson, *Carnage and Culture: Landmark Battles in the Rise of Western Power* (New York: Doubleday, 2001), 107–108.

as a “crescent with horns” protruding toward the enemy may be valid in that it describes the moment at which a tactical decision was achieved.² Nonetheless, his refutation of the reliability of the Northern Song military encyclopedia *Wujing zongyao* is perhaps premature, because he does not inform his conclusions with sources that refute his position. This paper suggests that, despite the fact that it was compiled much later, *Wujing zongyao* still accurately described the shape of the battle formation during the early stage of combat. The purpose here, however, is not to get caught up in semantics. It is not only methodologically justifiable to distinguish between the different shapes the formation took in its initial stage and the moment tactical decision was achieved, but it is also crucial to reinstate the reliability of *Wujing zongyao*, the military encyclopedia of eleventh-century China, as well. Research in premodern Chinese military history relies heavily on this source.

The ‘Crescent with horns’ hypothesis

Lan’s interpretation of the “goose file,” taking a V-shape, is not based on any battle formation handed down from the ancient period. Indeed, this would have been impossible as every description of ancient battle formation is supported solely by text, except that of the terracotta warriors found in the First Emperor’s tomb. The majority of evidence on “goose file” comes from Sun Bin’s 孫臏 *Military Methods* (*Bingfa* 兵法) which includes two passages in particular in the section entitled “Ten Formations” that are relevant here. Sun Bin indicates that, “The wild geese [goose file] formation is for a rapid-release archer assault” (鴈行之陳者，所以接射也).³ In another passage in the “Ten Formations,” Sun Bin provides a further hint as to what the formation looked like: “The front ranks should be like a baboon, the rear ranks should be like a wildcat” (前行若有獼，後列若狸).⁴ Lan translates *yong* as “bull”

2. Lan Yongwei 藍永蔚, *Chunqiu shiqi de bubing* 春秋時期的步兵 (Beijing: Zhonghua shuju, 1979), 191–196, with a diagram on page 193.

3. D. C. Lau and Roger T. Ames, *Sun Pin: The Art of Warfare* (New York: Ballantine Books, 1996), 195. Zhang Zhenze 張震澤, *Sun Bin bingfa jiaoli* 孫臏兵法校理 (Beijing: Zhonghua shuju, 1984), 129 and 135 (note 11). Ralph Sawyer translated this line as: “Deployment into the Wild Geese Formation is for exchanging archery fire” (*The Art of the Warrior: Leadership and Strategy from the Chinese Military Classics*, ed. Ralph D. Sawyer [Boston: Shambhala Publications, 1996], 260).

4. Sawyer, 262; Zhang, 130, 244.

rather than baboon.⁵ A further clue appears in a dialogue between Sun Bin and Tian Ji 田忌, a general of the Qi 齊 state and an enthusiastic patron of the great master. When the master is asked to comment on the “goose file” formation, he replies: “The Wild Geese Formation is the means by which to abruptly assault the enemy’s flanks and respond to changes.” (鴈行者所以觸廁應□□).⁶ Scholars have considered the missing characters in this sentence to be *bian* 變 or “change.”⁷ Based on such source materials, Lan visualized the “goose file” formation as taking the form of a V-shape or a crescent with horns protruding toward the enemy, with the purpose of maximizing the crossfire of the archers on both wings.

Despite the scarcity and obscurity of the sources, there is still some agreement to be reached based on the above passages. First, the design of the formation provides visual insight, if not an exact simulation, of the movement of the animals. Some confusion is caused by the unusual aggregation of goose, baboon, and wildcat, making it hard to imagine how the combination of these three animals would look (and perhaps causing our imagination to think unrealistically about a world where griffins soar). No matter how vague the analogy is, however, the maneuverability of the battle formation was considered comparable to that of the aforesaid animals. Second, it was a formation that facilitated a tactical offensive, by whatever means. It could have been to the advantage of the archers to take up better positions to catch the enemy in the crossfire, or it could have involved an outflanking maneuver. If Lan Yongwei’s translation of bull is accurate, it connotes the formation sharing the characteristics of energy, agility and aggression. Third, a high degree of flexibility seems to be attributed to the tactical significance of “goose file,” where it holds a favorable position in order to conduct its attack on the enemy’s front line as well as its flanks. It is quite clear that the wildcat is a rapid hunter, making the analogy close to another description of the purpose of “goose file”: “abruptly assault the enemy’s flanks and respond to changes.”⁸

The above provides the main evidence, but none directly mentions what

5. Lan, 194.

6. Sawyer, 259; Zhang, 28.

7. Lan, 194. Lau and Ames translate this line as: “The wild geese formation is for attacking the enemy’s flanks and engaging [the rear guard]” (Lau and Ames, 140).

8. Sun Bin; see note 6 above.

the formation actually looked like. What led Lan to the conclusion that the “goose file” took the form of a crescent with horns was the assumption that a V-shaped tactical deployment was the most favorable way to catch the enemy in crossfire. It is important to note that the purpose here is not to question this assumption in a tactical sense, nor to suggest any need for historical research to avoid this assumption. It is necessary to form certain assumptions about how things operate even where many sources are available, and so pointing out that Lan makes them is not a criticism. The criticism is that he does not state that his conclusion depends on this assumption.

Lan’s assumption played a crucial role in a macroscopic explanation for the significance of the replacement of chariots with infantry, an evolutionary process that was a landmark transition in Chinese military history during the Spring and Autumn period. Warfare for feudal lords involving combat between charioteers, which demanded extensive training and the use of relatively heavy equipment, came to an end, with remnants surviving only in court ritual. Infantrymen, originally slave-warriors who played a supplementary role to the chariots, became dominant on the battlefield. Such a tactical transformation was of strategic significance, as infantry units could be equipped more easily and did not involve complicated techniques to control wagons, making the mobilization of a mass army possible. The impact of this change affected the entire system of logistical and military mobilization, and finally constituted the great historic evolution from a “slave” society to a “feudal” society, as the mainstream of Mainland Chinese historians claimed during the Cultural Revolution.

An important element of this explanation views “goose file” as a transitional form of tactic from when the Zhou armies relied on longitudinal rows to those of the Warring States fighting in columns. The key argument is that “goose file” inherited the significance of the “crescent of horns” of the late Spring and Autumn, which facilitated simultaneous archery salvos from both wings when pursuing the enemy. Lan states that basic military units in the Spring and Autumn period were mainly made up of chariots and were organized in two prongs providing cover for each other. Rather than pursuing the enemy directly from the rear, they aimed to divide and attack the enemy on two flanks. This tactical practice, which Lan suggests implicitly, survived the Spring and Autumn to Warring States transformation and remained as the “goose file” battle formation.

What does “goose file” look like?
An alternative interpretation

To some extent, the function of “goose file” in the chariot-infantry transition is similar to that of archaeopteryx making the transition from dinosaur to bird. Just how archaeopteryx took flight is a puzzling question, and there is much debate between the “soaring down from a tree” and “taking off from the ground” hypotheses. Similarly whether “goose file” was a “crescent of horns” writ large is still obscure. The main point of this paper is to assert that “goose file” was not V-shaped but wedge-shaped (an inverted V).

A number of birds migrate in flocks and fly in formation, including geese, cranes, swans and pelicans. Formation is used as a laborsaving device, as the up draught of air from a bird’s wings has a lifting effect on its neighbors. As many as 40 percent of flocks of geese form an oblique line, while most others fly in formations with acute angles, usually between 27 and 44 degrees. A study on Canada geese, however, suggests that sometimes the angles vary between 38 and 124 degrees. It is necessary to note that in academic literature about bird migration the term “V-type” is used to refer to a formation with a leading bird and two echeloning wings. Although in this formation the leader has to flap harder, it pays off in the advantage on energy saved for the whole flock.⁹ The formation of the flock is not that of two horns protruding, as this would not be energy saving. If there is any hint that the battle formation was named after the flock with regard to its shape, it is highly probable that the tactical deployment is progressing with a powerful vanguard with covered sides. The “crescent with horns” theory probably came about by overlooking how geese fly, as well as misreading the formation diagram in *Wujing zongyao*. Lan quotes this book three times, but does not comment on the formation diagram attached. The following passages are descriptions of “goose file” from *Wujing zongyao*:

1. “It is not to the favor of the ‘goose file’ that it may be cut-off when over extending obliquely. Hence it [the “rabbit nets”, *fou jie* 罟置] could overcome the goose file.” (鴈行延斜，惡其斷絕，故可以勝鴈行).¹⁰

9. Thomas Alerstam, *Bird Migration* (Cambridge: Cambridge University Press, 1990), 257, 269. Robert Burton, *Bird Migration* (London: Aurum Press, 1992), 95.

10. Zeng Gongliang 曾公亮, *Wujing zongyao* 武經總要, in *Zhongguo bingshu jicheng* 中國兵書集成 (Beijing: People’s Liberation Army Press, 1988), v. 3: 7.303.

2. “On the right it is the ‘goose file’ formation, equating with the ‘Heaven’ of the Three Powers [Heaven, Earth, and Man] formations of [Jiang] Taigong, the ‘goose file’ of Sunzi, Employ this formation when backed by a walled city and facing an enemy that can be outmaneuvered. [‘Goose file’] can overcome the square formation. Having a sharpened vanguard and extended rearguards, moving in oblique order, ‘goose file’ favors [outflanking] on the left and right and is comfortable in alignment. The Classic states: ‘Those substantial and upright are formidable.’¹¹ To deal with it, attack its two flanks with picked men. Hence the ‘goose file’ overcomes the square formation” (右鴈行陣，即太公三才之天陣，孫子之鴈行，……背城南(向)敵，易斷繞人，則利爲鴈行。可以勝方陣。鴈行前銳後張，延斜而行，便于左右，利於周旋。經曰：厚而正者堅。當選勇力脅其兩傍，故鴈行勝方陣也).¹²
3. “Goose file formation equates with the ‘heaven’ of the Three Power formations of [Jiang] Taigong, . . . the ‘goose file’ of Sunzi, the goose-crane formation of Wu Qi, and the ‘steelyard’ formation of Zhuge Liang, as it takes well-connected shape as a steelyard.” (鴈行陣者乃太公三才之天陣，……則孫子之鴈行陣，吳起之鵝鵠陣，諸葛亮之衡陣，以其連接如秤衡也).¹³

Before scrutinizing the tactical significance of “goose file” emerging from these passages, it must be noted that two problems cannot be resolved here. One is the problem of nomenclature. During the period of the Hundred Schools, no consensus on military terminology existed. As different authors might name the same formation differently, an enormous effort was involved in clarifying the equivalents of a formation across various sources, and it is unlikely that this study could comment on the relationship between the “goose file” and the “heaven formation.” This problem is further complicated by the unexplained use of the number eight. Why did the upper limit for battle formations have to be capped at eight? Why could it not be nine? In fact Sun Bin listed ten formations but this was not adopted, partially because of the loss of his book after the Han dynasty. Since then eight became the standard number of battle formations that a commander had to learn.

Another almost intractable problem here is the cycle of one formation superceding another. Why did “rabbit nets” replace “goose file” and “goose

11. The source of this quotation is not readily identifiable.

12. *Wujing zongyao*, 7.307.

13. *Wujing zongyao*, 8.366.

file” replace “square”? Despite the fact that the authors of *Wujing zongyao* seem to have done their best to explain things tactically, this is nonetheless a manifestation of the paradigm of the *yin-yang* five-phase theory, in which metal overcomes wood, wood overcomes earth, earth overcomes water, water overcomes fire, and fire overcomes wood. Whether the cycle of overcoming in the eight formations was rooted in some particular tactical rationale that has not yet been expounded, or whether it merely reflected the symbolism of mutual overcoming in the Five Phases, is unclear.

Leaving these two questions aside, it is still possible to make some preliminary remarks on the above passages. One that particularly disadvantages the “crescent with horns” theory is where the shape of the “goose file” is described as having a “sharpened vanguard and extended rearguards.” This passage suggests that the “goose file” has a thin and sharp point in the front ranks, which may be referring to elite troops, while the extending two wings are echeloned to the rear. In other words, it would be better described as a wedge-shape instead of a V-shape. This is also supported by the analogy of a steelyard, where there is always a beam on one side with a weight, and on the other the object to be weighed, balancing the two wings.

There is yet another passage in *Wujing zongyao* which mentions the shape of “goose file.” Why Lan chose to omit this passage is unknown, as it is found on the same page next to the one describing the formation of the steelyard. More importantly, it provides the most detailed information yet:

4. “On the process of transforming a ‘square’ to a ‘goose file’ formation, the method is the following. Raise the eagle banner and beat the eight drums. The Forward Regiment of the Central Division advances, taking a front ranking position, and next to it is the Posterior Regiment [of the Central Division], and then the Forward Regiment of the Forward Division and the Forward Regiment of the Posterior Division marching forward. Extending to its left there is the Posterior Regiment of the Forward Division taking an oblique order, with all units following one another; and extending to its right there is the Posterior Regiment of the Posterior Division taking an oblique order, with all units following one another. The Right Division holds the position next to the Posterior Division, with the regiments in oblique order and all units following one another. The Left Division holds the position next to the Forward Division, with the regiments in oblique order and all units following one another. The Commander and his staff are positioned behind the divisions. [The vicinity of a] walled city is to the advantage of the ‘goose file,’

because the ‘goose file’ performs well in outmaneuvering” (右以方陣爲鴈行陣。法曰：舉鴈旗，聞八鼓音，中部前曲進，前出爲首，其後曲次之，與前部前曲，後部前曲並前。前部後曲左斜，官曲相隨；後部後曲右斜，官曲相隨。右部卻次後部，曲皆右斜，亦官曲相隨；左部卻次前部，曲皆左斜，亦官曲相隨。校尉司馬部後居地如法。城丘利鴈行，鴈行利繞也).¹⁴

The vocabulary employed in this passage exhibits some profound characteristics of medieval Chinese society, in keeping with *Wujing zongyao* as a military encyclopedia of the Song dynasty, which is regarded as the beginning of early modern China. *Buqu* 部曲 literally means “divisions and regiments” but more frequently refers to near-slave dependents and usually the inheritable private retainer-soldiers of local leaders, while at the same time constituting the main body of provincial military forces from the Later Han (25–220) to the Six Dynasties (317–589).¹⁵ The clientship embedded in this system and the stability of these armed forces depended not on the loyalty of a servant to a despotic ruler, but on the relationship between master and retainer. *Buqu* as a military system fell out of favor with the decline of feudal estates and the rise of the professional army after the eighth century. According to Miyazaki Ichisada, the term rarely appears in documents of the Song period, where there are no references to serf-like tenants or to a private retainer corps.¹⁶ It is, however, fair to say that not everything in *Wujing zongyao* was up-to-date. The appearance of the term *buqu* in this military encyclopedia may reflect an attempt to reconstruct knowledge from ancient military classics into a larger framework and in doing so may have caused duplication, conscious or not. As there are some passages on the principles of conducting war taken selectively from Sunzi,¹⁷ it is equally probable that the passage mentioning “divisions and regiments” had its origins in earlier works. Pei Xu 裴緒, an author around the eighth to ninth century, was probably the original author

14. *Wujing zongyao*, 8.366.

15. Denis Twitchett and Michael Loewe, eds., *The Cambridge History of China*, vol. 1: *The Ch'in and Han Empires*, 221 B.C.–A.D. 220 (Cambridge: Cambridge University Press, 1986), 525. David A. Graff, *Medieval Chinese Warfare, 300–900* (London and New York: Routledge, 2002), 38.

16. Miyazaki Ichisada 宮崎市定, “Bukyoku kara tenko e” 部曲から佃戸へ, in *Miyazaki Ichisada zenshū* 宮崎市定全集 (Tokyo: Iwanami shoten, 1992), v. 11: 3–80, especially 44–46 and 65.

17. *Wujing zongyao*, 3.109–113.

of this passage. The above passage is taken from a section in *Wujing zongyao* entitled *Peizi fa* 裴子法.¹⁸

Despite the relatively confusing naming system of units, the organizational principle of the military hierarchy was simple. The key to the system was two. A unit was divided into two parts, namely, the “forward” and the “posterior.” “One hundred soldiers form a company (*dui* 隊). Two companies form a battalion (*guan* 官). Two battalions form a regiment (*qu* 曲). Two regiments form a division (*bu* 部).”¹⁹ The only exception was at the highest level, where five divisions constituted an army corps.

Because the “goose file” of Pei Xu did not stray seriously from its origins, with military vocabulary that can be traced to the Later Han period, it makes the shape of the battle formation worthy of a second consideration. According to Lan Yongwei, the center of the formation is placed at the bottom, while the two wings protrude like big horns. On the contrary, this passage, probably handed down from Pei Xu, describes a protruding center made up of the entire Central Division. To its left the Forward Division and the Left Division composed the left wing. To its right the Posterior Division and Right Division made up the right wing. Both wings being deployed in oblique order, this is again a wedge-shaped formation.

Two formation diagrams

After textual scrutiny, the wedge-shaped “goose file” formation is not considered to be unfounded, yet the reliability of *Wujing zongyao* is often said to have been like “seizing the wind or grasping a shadow,”²⁰ owing to the increasingly prophetic symbolism of the Eight Formations and the beliefs that the mere presence of these formation diagrams seem to have engendered. Two possibilities exist. The first possibility, a pessimistic one, is that the knowledge of ancient battle formations had been lost and that the formation diagrams which evolved in the Tang and Song periods had nothing to do with these earlier versions. Another, more optimistic, possibility is to suggest that there are links between the earlier diagrams of ancient China and their descendants

18. *Wujing zongyao*, 8.335.

19. *Wujing zongyao*, 8.336.

20. Lan, 195.

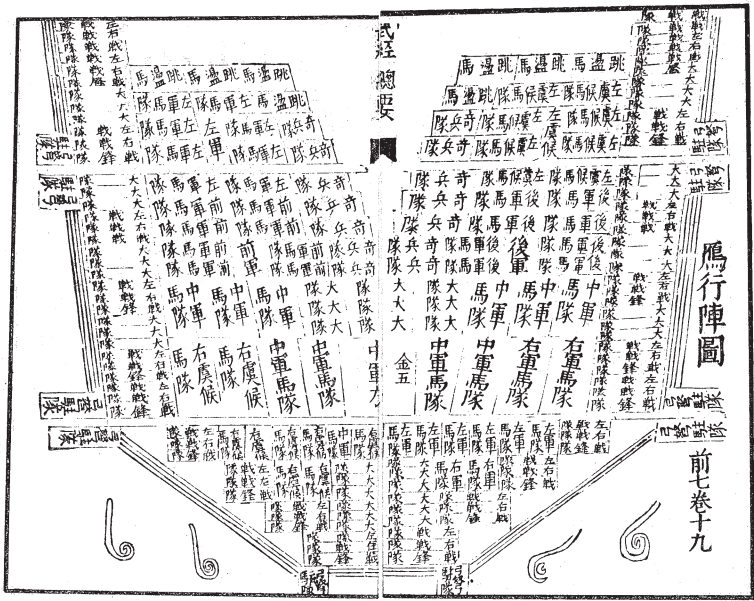


Figure 1 Goose File Formation from *Wujing zongyao* (Ming Wanli Jinling shulin 金陵書林 ed.), 7.19a–b; reprinted in *Zhongguo bingshu jicheng*, v. 3: 7.305–306.

reproduced in the Tang and Song periods. Lan fails to comment on the second possibility and favors the first possibility without any effort to reconcile the discrepancies between the two formations.

The two “goose file” formation diagrams are drawn on different perspectives, which might lead to some confusion. One difficulty that has to be dealt with in scrutinizing these diagrams is the direction of engagement. Few diagrams of this sort indicate where the enemy was to be engaged. Was the enemy supposed to be at twelve o’clock or six o’clock? An erroneous answer to this question would cause everything to go wrong from the outset. In addition, three o’clock or nine o’clock positions are not out of the question.

Let us look at the first set of battle formation diagrams entitled “Eight Formation Method of the Prevailing Dynasty,” of which only seven survive, including “square,” “male,” “female,” “dash-square,” “wagon-wheel,” “rabbit net” and “goose file” (the missing one being “round”). Figure 1 shows the one entitled “goose file” taking a wedge-shape with a concentrated force at the bottom and

one wing pointing to two and the other to ten o'clock.²¹ This soundly supports the evidence for the "crescent with horns" theory, but relies heavily on an ingrained assumption that the enemy is approaching from twelve o'clock. Is such an assumption compelling? As mentioned above, a five-army-formation was formed by the Forward, Posterior, Left, Right and Central divisions, while a seven-army-formation consisted of two more portions, the Left and Right *Yuhou* divisions 左右虞候軍. One essential question concerns the position of the Forward Army, or Forward Division in smaller units, which should indicate the direction of engagement. At no point, however, do the seven diagrams indicate the Forward position to be at the top, which is in contrast to predictions. The results are almost evenly divided. The Forwards are positioned at six o'clock in the cases of "male," "female" and "dash-square," and in the nine o'clock position in the cases of "wagon-wheel," "rabbit-net," "square" and "goose file." Hence the probability that the enemy would engage from a twelve o'clock direction is minimized.

It is doubtful however, that the position of the Forward unit is effective at indicating the tactical front of the army. Rather, the position of the Right *Yuhou* Division is more significant. According to Li Jing 李靖 (571–649), the Right *Yuhou* Division was the actual vanguard of the formation. Whenever an army set out in column, the Right *Yuhou* moved first, and then the Right, the Forward, the Central, the Posterior, the Left and finally the Left *Yuhou*. Such a battle formation may have been designed to cause confusion in a deliberate attempt to retain the initiative. It may also have allowed for better column alignment. Even if the Right *Yuhou* Division is taken as the indicator of the position of the front line, this does not favor the "crescent with horns" theory as it was located around six to seven o'clock. In other words, if there is any correlation between the tactical position of the vanguard of a battle group and its direction in terms of engaging the enemy, there is a strong suggestion that the bottom of the diagram was the front line. Considered in the light of the direction of the enemy's approach being from a twelve o'clock direction, the formation ought to be viewed as a large "V" upside down.

The above counterproof might not be regarded as sufficient because the formation of the "goose file" is quite unique and corresponds to its highly

21. *Wujing zongyao*, 7.305–306.

specific tactical function, where the position of the Right *Yuhou* Army might be exempt from usual practice. This plausible explanation does not fit reality, however. In all seven formation diagrams the Right *Yuhou* is consistently positioned in the six to seven o'clock direction. If twelve o'clock and not six o'clock had been the direction of approach of the enemy, it would be extremely hard to explain why in all cases the vanguard would turn to the rear guard, keeping a distance from the enemy. Tactical deployment points to the same problem. Archers should enjoy a clear view and their positions should be an indicator of the source of threat. Certainly, lines composed solely of archers were vulnerable before the charge of heavy cavalry and they had to be covered by infantry soldiers. The mixture of different types of soldiers may have blunted the specialties of the units to the extent that any analysis on their tactical positioning is no longer significant. Nevertheless, according to Li Jing the archers and crossbowmen of the Tang dynasty were infantrymen equipped with long blades and staffs. This two-in-one unit would abandon bow and arrow to form the front line and engage in hand-to-hand combat when the enemy came close.²² The Song crossbowmen were quite different, retaining shoot-and-reload positions even as the enemy approached to within a striking distance of five feet.²³ If it is accepted that the side on which the archers and crossbowmen were positioned denotes the most probable direction of engagement, then it is again very likely that the six o'clock position was where the enemy would be located. In fact, all archer and crossbow units were deployed along the outer edge from the three o'clock through to the nine o'clock positions. None of them was situated on the extremes of the two wings, as the “crescent with horns” theory might suggest. If the target were expected to approach from twelve o'clock, the archers and crossbowmen would have been placed on the inner edges of the two wings in order to meet the enemy with crossfire. In this case, however, these positions are occupied by the cavalry and reserves (*qi bing* 奇兵), units that were not supposed to engage in the early stages of battle. According to the teaching of Li Jing, the cavalry was prohibited from riding on horseback before the enemy was defeated, but had to fight on foot until they were ordered to pursue.²⁴ Where cavalry and

22. Deng Zezong 鄧澤宗, *Li Jing bingfa jiben zhuyi* 李靖兵法輯本註譯 (Beijing: People's Liberation Army Press, 1990), 105.

23. *Wujing zongyao*, 2.103.

24. Deng, 105.

reserve units were placed was not where preliminary combat would have been initiated.

The above observation is supported by another set of diagrams entitled “Eight Battle Formations of ancient times,” believed to have been generated by Pei Xu (although there is no direct evidence for this). These diagrams are less confusing as on each one the vanguard units are located at the top, facing twelve o’clock, and the headquarters are at the bottom. While these diagrams show some distortion, probably due to the need to fit them on a rectangular page, and do not show a “sharpened center,” they clearly show that the “goose file” more closely approximated a wedge- rather than a V-shape, with the two wings deeply echeloned, and not protruding (see Figure 2).²⁵

Return to Sun Bin

The two diagrams dating from the Tang and Song dynasties may not be sufficient to base the argument for a wedge-shaped formation on, so this section returns to the texts and examines whether the wedge-shape hypothesis contradicts the passages in Sun Bin’s *Military Methods*.

First let us look at the sentence about the “goose file” front lines being like a baboon and the rear like a wildcat, which engendered the interpretation that the formation approximated a crescent with horns, facing the enemy. Even though the image of a baboon is positively linked with horns, this does not explain why its rear is compared to a wildcat. The Λ -shape hypothesis seems to provide more comprehensive explanatory elements. Baboon refers to the sharpened point comprising the central guard, and the wildcat refers to the two wings with their echelons in depth. Probably consisting of heavier armored units, infantry or cavalry, the central guard would have initiated the attack like a baboon charging, while the rear guard, formed by light cavalry, archers, crossbowmen, and perhaps chariots in earlier times, would have marched forward slowly at first, and then would have speeded up suddenly, eventually outflanking the enemy.

It is worth noting that after this sentence in the text, there is an almost unreadable sentence on a broken bamboo slip: “Three . . . escape from net to preserve.” (三 . . . 。闕羅以自存) Sawyer reconstructs this as follows:

25. *Wujing zongyao*, 8.365–366.

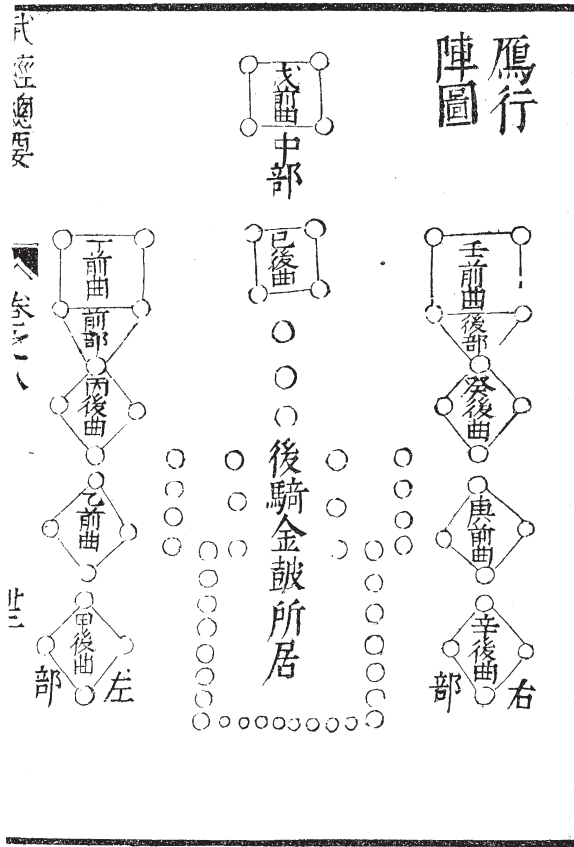


Figure 2 Pei Xu's Goose File Formation from *Wujing zongyao* (Jinling shulin ed.), 8.23a; reprinted in *Zhongguo bingshu jicheng*, v. 3: 8.365.

“Attack from three sides, not letting the enemy escape your net to preserve themselves.”²⁶ Among Chinese commentators, Deng Zezong 鄧澤宗 provided an interpretation in the 1980's that may have led to Sawyer's translation.²⁷ Lau and Ames translate the line differently: “. . . assuring your own survival

26. Sawyer, 262; Zhang, 130–131.

27. *Sun Pin Military Methods*, trans. Ralph D. Sawyer (Boulder, CO: Westview Press, 1995), 162–163, 323 (note 28). Deng Zezong, *Sun Bin bingfa zhuyi* 孫臏兵法註譯 (Beijing: People's Liberation Army Press, 1986), 69.

by cutting through the enemy's net."²⁸ Lau and Ames certainly exhibit more caution, but Deng and Sawyer's interpretation seems to lend itself more readily to tactical deployment. All evidence so far suggests that "goose file" was an offensive formation, while such phrases as "assuring your own survival" suggest it was a defensive formation, making the precise meaning difficult to uncover.

Similarity between the "awl formation" 錐行之陣 and "goose file" formation in the dialogue between Tian Ji and Sun Bin is worthy of further attention. "The Awl Formation is the means by which to penetrate solid formations and destroy elite units. The Wild Geese Formation is the means by which to abruptly assault the enemy's flanks and respond to changes."²⁹ Here we see that the two formations are curiously comparable, and it may not be a coincidence that Tian Ji couples them together. If there is a similarity in their appearance, then this easily explains why they are juxtaposed. Considering the possibility that the two formations share certain features in the initial stage, this might lead to confusion as to their different functions. If this was the case, it might well explain why Sun Bin emphasized that the aim of the "awl formation" was to penetrate at the center, a more inside-out approach, while the "goose file" was to outflank, a more outside-in approach.

Sun Bin's description, however, does not concentrate on the appearance of the "goose file" formation at the initial stage, except to describe the front rank as like a baboon and the rear ranks as like a wildcat. His observations are mainly about its tactical function up to the point of achieving tactical decision, including outflanking by both wings and rapid exchange of archery fire. The descriptions in *Wujing Zongyao* and Sun Bin are not mutually exclusive, particularly in terms of the two formation diagrams which delineate the tactical deployment at the initial stage. On the contrary, the two sources support one another, as both mention an advancing foremost rank and the outflanking movement by two wings. Therefore, it is likely that the appearance and tactical function of the "goose file" formation in ancient and medieval China did not experience the drastic change that scholars have suggested.

28. Lau and Ames, 198.

29. Sawyer, 269.

Conclusion

Based on the limited available references, this paper has found no fundamental contradiction between *Sun Bin bingfa* and *Wujing zongyao*. They are mutually referenced, indicating the tactical function of the “goose file” to be a significant battle formation handed down from ancient China. One reason for rejecting *Wujing zongyao* was probably because of the ambiguous nature of the battle formation diagrams, where the direction of engagement is absent. After scrutinizing the tactical components such as the position of the vanguard and archers and crossbowmen, it becomes clear that the six o’clock position was where the enemy was engaged. Thus, the traditional view on the V-shaped “goose file” formation ought to be inverted.

This paper suggests that because the function of the “goose file” formation included tactical outflanking, facilitating favorable archery crossfire, as well as the opportunity for attacking the enemy from three directions, the formation at the initial point of engagement was wedge- rather than V-shaped. The component which moved forward first was the central guard, which was followed by the two wings in echelon. Later, the two wings extended in oblique order to cover both flanks. They might outflank the enemy eventually, but the “crescent with horns” does not seem to appear until the decisive moment—otherwise the intention would be exposed too early and the contingent rearrangement of the enemy’s battle lines might complicate the situation.

The conclusion of this paper does not challenge the validity of Lan Yongwei’s macro-explanation for the replacement of chariots by infantry. On the contrary, it reinforces it in the sense that the tactical efficacy of the “goose file” depends on more sophisticated maneuvering and closer coordination among troop types. It suggests more specific tactical roles for the various types of unit. Heavier units are covered by lighter units, and the rapid outflanking movement of the two wings might provide opportunities for launching an attack on three fronts, or at least catching the enemy in crossfire. The feasibility of this tactic hinged on the coordination between infantry and chariot/cavalry units. The tactical significance of “goose file” shows that since the Warring States period battles were no longer fought among charioteers and that the various types of soldiers must have worked together as an integrated company. This military doctrine has endured and re-emerged across millennia of vicissitudes, when the dynastic empire was under threat of the nomads as well as subject to internal perplexity.

*Appendix: Published Writings of
Professor Tsang Shui-lung*

BOOKS

- Song chao shi lun* 宋朝史論 [Studies in Song History]. Hong Kong: Qiangji chuban, 1989.
- Jinglue You-Yan* (979–987): *Song Liao zhanzheng junshi zainan de zhanlue fenxi* 經略幽燕 (979–987): 宋遼戰爭軍事災難的戰略分析 [The Irredentist You-Yan Campaign: A Strategic Analysis of the Catastrophic Failure in the Song-Liao War]. Hong Kong: Zhongwen daxue chubanshe, 2003.
- Tuobian xibei: Bei Song zhong hou qi dui Xia zhanzheng yanjiu* 拓邊西北: 北宋中後期對夏戰爭研究 [Territorial Expansion in the Northwest: Researches on the Wars against Xixia in Middle and Late Northern Song]. Hong Kong: Zhonghua shuju, 2006.

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