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COMPLEMENTARY KEYS TO NAVAL VICTORY

BY HEIDI HOLZ

During the late 16th century, Korea relied on a tactical genius—Admiral Yi Sun-sin—who knew how to make the most of his navy's technological advantages to turn back two Japanese invasions.

A recurring theme in military history scholarship involves the relationship between technology and human genius in determining the outcome of armed conflict. While many military thinkers place significant importance on the human element, others emphasize technological advantage. The outcome of the 1592-98 Imjin War between Korea and Japan offers a compelling case study for evaluating their relative importance.

Most historians agree that the Korean Navy played a decisive role in repelling the Japanese invaders, who boasted superior forces on land. Indeed, two national naval heroes—one a genius and the other a technological innovation—emerged during the conflict: Admiral Yi Sun-sin and the kōbukşon, the legendary turtle ship. A study of the two is particularly illustrative because during nearly the entire conflict the naval technology (turtle ships) remained constant but for a period of the war Admiral Yi did not have a command. The comparison of naval battles fought under Yi's leadership and without it provides insight into his importance to Korea's success in repelling the Japanese invaders. It further demonstrates that while technology certainly plays a facilitating role in assure victory at sea, the human capacity to intelligently employ that technology is crucial.

The Imjin War

For more than a century before its invasion of Korea, Japan had been torn by internal conflict between warlords competing for power. The rise of Oda Nobunaga ended the bloody feuding and laid the groundwork for the unification of the short-lived, nation. Nobunaga's successor, Toyotomi Hideyoshi, conquered, in Shikoku and Japan, Hideyoshi be destined to rule a tended to begin Korea had the the most con the spring of Korea with the strategic asset though Japanese
China, Ming naval and ground forces eventually reinforced the struggling Korean defenders.

On land, the Japanese invaders fared quite well due in no small part to their use of muskets, which the Koreans did not have in the early years of the war. The defenders fought primarily with bows and arrows, although they did use cannon. Within 20 days of the invasion, Japanese forces had moved 250 miles inland from Pusan and captured the Korean capital of Seoul.3

Nevertheless, after seven years of conflict—comprised of two invasions separated by a 4-year hiatus in the fighting—the Japanese were repelled; Hideyoshi failed to conquer Korea, let alone China. While his death in 1598 was certainly a factor in Japan’s decision to recall its forces, it does not fully explain why the invaders’ arguably superior ground forces, which were comparable in number and boasted superior firepower to the allied Chinese and Korean forces, were unable to conquer Korea. For the answer, one has to look to the sea. While numerous factors influenced the war’s outcome, Japan’s inability to maintain control of the sea, where it suffered repeated defeats at the hands of Korean naval forces, resulted in the invaders’ inability to maintain their vital supply lines.

**Turtle Ships and Pirate Vessels**

The Korean Navy was technologically superior and better organized and manned than that of the Japanese. While the Japanese had spent decades developing their skills in land warfare through constant civil war, the Koreans and Chinese developed advanced naval defenses in response to the threat posed by Japanese pirates.

The Japanese regarded the narrow sea separating their country from Korea as a logistical problem, not a military obstacle. Thus, when Hideyoshi assembled his navy in preparation for the invasion, he requisitioned ships and mustered sailors just as he would ground troops. Each daimyō, or feudal lord, whose province had a coastline was required to provide a specific number of large ships based on revenue and ten sailors for every 100 households. The result was a navy composed of disparate vessels that, more important, were not designed for war. Many of the ships were relatively small wooden vessels, their single square sails useful only in favoring winds.4 At other times, the vessels were propelled forward by their crews laboring over ten to 20 oars.5 The Japanese Navy had a few large multideck ships, which Admiral Yi described in his war diary as being the same size—varying between 70- and 120-foot-long—as the Korean p’aelkson, board-roofed ships.6 These were seldom equipped with heavy artillery because the Japanese ships tended to be lighter, being built of softer woods, than their Korean counterparts. They were also held together with iron spikes, which corroded easily in saltwater. The Korean ships, however, used trellises—tree, or wooden, nails—which swelled in water, making joints stronger.

The Japanese vessels who received no training about fighting at sea, war at sea as an extension of land wars—man against ship. They preferred to alongside the enemy engage in close combat—sailors were primarily two-edged swords and some muskets, while each ship also carried a complement of archers.

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The genius of Korean Admiral Yi Sun-sin (right) was acknowledged by no less a sea warrior than Japanese Admiral Tōgō Heihachirō. In response to a compliment after his victory over the Russians at Tsushima Strait in 1905, he noted that next to Yi “I am little more than a petty officer.” Left: The turtle ship, a Korean source of pride, is an enigma. There are very few contemporary descriptions of the ships and even fewer images. All depictions, including this one, are conjecture.
Korea, on the other hand, had for several decades considered its navy the most critical element in its national defense. Their fleet consisted primarily of formidable p'aroksŏn warships, with heavy artillery and the fighting sailors on deck above the oarsmen, as well as, later, the legendary kôbucksŏn or geobukseon turtle ships. Moreover, all were manned by professional seamen. The warships varying in length from 50 to 110 feet were double-masted, with 20 to 30 oars. Heavy planks fitted with cannon ports, and narrow openings through which arrows could be fired covered their sides. Each vessel was impressively armed with multiple cannon as well as incendiary bombs and fire arrows. Their fore-and-aft rigs made them more maneuverable than the Japanese ships. Further, the Korean ships' hulls were basically flat-bottomed, akin to scows, resulting in the vessels' ability to turn in virtually their own lengths. Japanese hulls were v-shaped, better for cutting through waves but not as handy in maneuvering.

The turtle ships were unique to the Korean Navy. Contemporary descriptions of the ships—primarily from Admiral Yi and his nephew, Yi Pun—are sketchy and brief. The most highly regarded present-day reconstructions of the ships are still, at best, conjectural. What is known is that, although many credit Yi with inventing the turtle ship, it was a centuries-old Korean creation. The admiral simply improved the design and integrated it into his tactics.

Earlier turtle ships had a top deck of thick planking, which arched over the gundeck, completely enclosing the crew and protecting it from musket fire. Yi's turtles were further fitted with iron spikes—camouflaged during battle by mats—on the roof to discourage boarding. While Koreans have claimed for years that the kôbucksŏn were the first ironclad warships, there is some debate over whether the roof planking was also fitted with iron plates. The roof designs depicted by contemporary artists indicate the earlier versions had a roof of overlapping planks while the later had a covering of flush hexagons. But there is no contemporary evidence these were iron plates. Yi also increased the height of the bulwarks to allow additional slots for ventilation or weapons above the cannon ports. Both versions carried sails, which were lowered during combat, but while the earlier boats were propelled by 20 oars, Yi's had only 16.

At the bow of Yi's version was a dragon's head through which cannon could be fired or sulfur smoke projected. The latter no doubt added to the psychological impact the attacking turtle had on her adversaries. In addition to the bow-mounted cannon, the kôbucksŏn carried guns on both beams and the stern. Admiral Yi described his turtle ship in a memorial he sent to the court recounting the battle at Sachŏn:

> Previously foreseeing the Japanese invasion, I had a Turtle Ship specially built with a dragon's head, from whose mouth we could fire our cannon, and with iron spikes on its back to pierce the enemy's feet when they tried to board. Because it is in the shape of a turtle, our men can look out from inside, but the enemy cannot look in from outside. It moves so swiftly that it can plunge into the midst of even many hundreds of enemy vessels in any weather to attack them with cannonballs and flame-throwers.

The exact number of turtle ships built to Admiral Yi's design is unknown, but all our sources agree there were more than one.

**Admiral Yi's Victories**

The key to the Korean Navy's success in maintaining control of the surrounding seas and ultimately repelling the Japanese invaders lay not merely in superior technology...
but also in its gifted application by Admiral Yi. While the Japanese were hampered by a lack of skilled, experienced naval commanders, Yi devised cunning tactics to make the most of the advantage his ships provided.

The first three major naval engagements of the war—all within a span of less than a month—offer ample evidence of Yi's tactical genius as well as the technological superiority of the Korean Navy and its turtle ships. The first battle occurred on 7-8 May 1592 at Okp'o on the east coast of Kōje Island, southeast of Pusan.14 In a memorial to the court about the battle, Yi, as the Left Naval Commander of Cholla Province, described his fleet of "24 board-roofed ships, 15 auxiliaries, and 46 other boats" and its encounter with a Japanese fleet of more than 50 ships at anchor near the harbor of Okp'o.15 Busy plundering the port, the Japanese sailors had rushed to their ships when they caught sight of the Korean vessels. Admiral Yi spread his fleet and enveloped the Japanese, hitting them in both flanks. He maintained his distance from the enemy using his ships' cannon to prevent the Japanese from using their preferred boarding tactic. Twenty-six Japanese ships were sunk on the battle's first day.16 The next morning, 11 others were quickly destroyed. The Korean fleet suffered few losses.17

At first glance, it appears little tactical genius was involved in the battle; Yi was simply lucky enough to catch the Japanese off guard. This, however, was the admiral's first use of two tactics he would repeat in future engagements: the double envelopment, in which he hit the enemy's flanks and center, and maintenance of distance from the enemy, which denied the Japanese their favorite tactic. While the superior cannon—in terms of both quality and number—on the Korean vessels allowed them to bombard the Japanese ships from a distance, a lesser commander may not have known to keep his vessels out of range of Japanese boarders.

Barely three weeks later, on 29 May, Yi's turtle ship debuted at the Battle of Sach'on, northwest of Kōje Island. Contemporary sources indicate that only one kōbuksōn was present. After receiving reports that Japanese ships were moored in the bay of Sach'on, Yi sailed there with 26 ships.18 A high, rocky crest just beyond Sach'on's wharf offered the Japanese a highly defensible position from which they could bombard Yi's fleet. With the tide ebbing, Yi realized the danger of sailing his warships in close enough to assail the enemy with his cannon. Correctly gauging the Japanese arrogance and desire for battle, the admiral turned his fleet around and pretended to flee. The ruse worked; the Japanese gave pursuit. But then the tide—literally and figuratively—turned in the Koreans' favor. Yi turned his fleet around and attacked with the turtle ship in the van, which would become its customary position, sinking all of the 12 pursuing Japanese ships.19 While the Koreans did not lose any ships, Yi was among the casualties, with a gunshot wound in his left shoulder.20

Four days later, Admiral Yi fought his third major battle, at Tango'ŏ, off the southern coast of Mirkŏk Island. Japanese ships were once again at anchor, while soldiers looted and burned the coastal town.21 Yi deployed part of his fleet to guard against an attack from the rear and then struck at the enemy's pavilion vessel—the Japanese flagship. With turtle ships in the van, the Korean fleet rushed at the 21 enemy ships with all cannon firing, including those in the dragons' mouths. An archer on a p'anokson soon killed the Japanese fleet commander. The loss, as well as the spectacle and ferocity of the turtle ships, caused the enemy vessels to scatter in confusion. Yi's fleet sank and burned the majority of the ships.22

Three days later, on 5 June, the Korean fleet sank 26 more Japanese ships at the Battle of Tanhang'ŏ. Once again, Yi demonstrated his ability to accurately gauge his enemy. Deploying his turtle ships in his fleet's van to attack the opposing flagship maximized their shock value. The admiral also recognized that killing the Japanese fleet's commander would help to break the enemy's will.

Admiral Yi is also credited with the development of other advanced naval tactics. He developed a formation called the "stork's wing" or "crane," which evolved from his...
Japan's only naval victory of the Imjin War was the Battle of Ch'ilch'onnyang. The result was the death of the Korean commander, the near destruction of the Korean navy, and an unopposed Japanese landing on the peninsula.

early use of envelopment. The ship formation was line-abreast with the two flanks, or wings, slightly in advance of the center. Yi also communicated his intentions well. When the Ming rulers of China sent a fleet of ships commanded by Chen Lin to aid Korea during the war's second Japanese invasion, Yi cooperated with Chen so skillfully that he effectively controlled both navies with little trouble. 23

The Japanese were not blessed with a similarly talented naval commander. Their fleet was subordinate to the army, and its development had been neglected for decades. In addition, Hideyoshi never appointed a naval commander-in-chief, leaving sea operations to multiple senior officers with equal authority. They vied with one another for glory rather than working together to defeat the enemy, and their bravery did the overall war effort little good. The lack of an effective or even memorable naval commander on the Japanese side makes Admiral Yi stand in even starker relief against his contemporaries.

Removed from Command

The Korean Navy's lone defeat during the seven years of conflict with Japan, occurred during a brief period when Admiral Yi had been removed from command. Although the Japanese had begun equipping their ships with cannon after the war's first year, they still could not wrest control of the sea from the Koreans and their Ming allies. 24 Not until, that is, intrigue within the Korean court resulted in Admiral Yi's removal from command, presenting the invaders an unintended gift.

Not long before the Japanese launched the second major invasion, in 1597, Admiral Yi was accused of treason and removed from command after refusing to follow orders that he suspected were an act of deception by a Japanese double agent. Even though Yi's intuition proved correct, he was condemned for cowardice and for failing to follow his ruler's orders. 25 Early in April, he was replaced by Admiral W'on Kyun. 26 In his war diary, Yi frequently vented his frustration at what he considered W'on Kyun's verbal, cowardly, and difficult nature. 27 Yi Sŏngyong, the chief state councilor at the time, also disliked W'on. 28 Indeed, it was partially because of W'on that the Japanese had been able to make their initial landing and gain a foothold at Pusan during the first invasion. Mistaking the invading Japanese fleet for a trade mission, W'on waited until he learned that the attack on Pusan had already begun, and by then it was too late to attack. He scuttled part of his fleet and fled his station on Kôje Island with four ships. 29

W'on's tenure as commander proved short and disastrous. Ch'ilch'onnyang, in late August 1597, was the only battle fought while he was the overall commander of the Korean Navy. W'on had learned that a Japanese fleet was approaching but did not know any details about its size or location. Nevertheless, he decided to lead the entire Korean fleet out to meet it. Not far from Pusan his force encountered a Japanese armada of between 500 and 1,000 ships. Despite tired crews and an impending storm, W'on ordered his fleet to attack. The Japanese sank 30 of the Korean ships before W'on ordered a withdrawal to Kadok Island, apparently unaware that occupying Japanese forces had fortified it. The Korean fleet lost 400 men as they attempted to go ashore and search for provisions. 30

Meanwhile, the Japanese Navy brought in several hundred more ships from Pusan and then launched a night attack against the Korean fleet at Ch'ilch'onnyang. Too shocked to use their cannon, the Koreans allowed the enemy to close and board their ships. In the vicious fighting that ensued, the Japanese destroyed more than 200 Korean vessels and effectively gained control of the nation's southern coast. 31 With their supply lines secure, the Japanese invaders once again advanced on land.

W'on Kyun's brief tenure as commander of the Korean forces illustrates the fact that superior technology—the Korean fleet still boasted better vessels with better firepower and better crews—could prove useless in the hands of an
inept commander. While this comparison does nothing to prove that Admiral Yi was a tactical genius, it does show that technological superiority alone is not sufficient to determine the outcome of a conflict.

**Triumphant Return**

More than anything, Admiral Yi's reputation was cemented with his actions in the wake of Wŏn Kyun's debacle at Ch'ŏllół onnyang. Realizing its mistake after the humiliating defeat, the Korean government reinstated Yi. The Korean Navy then consisted of only the 12 ships—none of them kóbüksŏn—that had managed to escape destruction.32

Admiral Yi and his small fleet fought off several minor Japanese attacks along the coast of Cholla before he selected a secure base on Chindo Island. The island was separated from the Korean mainland by the Myōngyang, a narrow strait known as the Roaring Channel, because of its turbulence during tide changes. Only 320 yards wide at its narrowest point, the strait has a current that can run as fast as 9.5 knots. This treacherous stretch of water was the only advantage Yi had over a Japanese fleet of 133 ships.33

During the ensuing battle, Yi used the geography to strip the Japanese of their vast numerical superiority. He neutralized the size of the enemy fleet by luring it into the narrow strait. On 26 October 1597, the Korean admiral had taken up a position in the open sea to the north of the strait, drawing in the Japanese from the southern end on a favorable tide. With the enemy halfway through the strait, Yi sailed his ships in to attack with cannon while maintaining a safe distance.

At one point in the battle, the Koreans recovered the body of a high-ranking Japanese commander as it floated by. In his war diary, Yi described how he commanded his men to cut the body into pieces.34 This was not an act of revenge but rather was meant to erode Japanese morale, and according to Yi, it had the intended effect. The tide soon turned, carrying the enemy ships back through the strait with the Korean fleet hard on their sterns. According to Yi’s diary, 31 enemy ships were sunk before the Japanese force was finally clear of the strait and able to retreat.35

The Korean Navy, bolstered by Ming Chinese reinforcements and again led by Admiral Yi, regained command of the seas by early 1598. Unable to get needed supplies from Japan, the invading land forces were faced with a logistical crisis made worse by the devastation wreaked on the Korean countryside during the first invasion. By the end of year, the Japanese had retreated from the country and an armistice was signed.

While several factors likely contributed to the Japanese decision to withdraw, among them Hideyoshi’s death in 1598, the critical role played by Admiral Yi and his fleet cannot be denied. Historian Arthur J. Marder suggested that if the Japanese had secured command of the waters around Korea, they would have been able to fulfill Hideyoshi’s original goal of not only conquering Korea, but invading China as well.

While the Korean Navy throughout most of the conflict enjoyed a technological advantage over its Japanese enemy, Wŏn Kyun’s near single-handed destruction of the service demonstrates that technology is only as good the man who wields it. Admiral Yi Sun-sin possessed the genius to make the most of the technology and the forces at his disposal and, ultimately, to defeat the Japanese invaders.

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4. Marder, p. 23.
5. Marder, pp. 22-5.
7. Marder, pp. 23-4; Turnbull, p. 89; Marder, p. 24; Swope, p. 32.
8. Brown, pp. 250-1; Marder, pp. 24-5; Swope, pp. 31-2.
9. Swope, p. 32.
10. Turnbull, p. 94.
11. Swope, p. 31-2; Turnbull, p. 95; Brown, pp. 250-1; Marder, p. 26.
12. Marder, p. 25; Swope, p. 32.
15. Injin Chong'nyo: op. cit. 30-1; Marder, p. 28; Turnbull, p. 91.
16. Injin Chong'nyo: op. cit. 30-1; Jo, p. 94.
17. Turnbull, p. 91; Jo, p. 94-5; Marder, p. 27; Turnbull, p. 93.
18. Turnbull, pp. 93-6; Jo, pp. 101-2; Marder, p. 27.
19. Turnbull, p. 96; Jo, p. 103.
20. Turnbull, pp. 96-9; Jo, pp. 98-114.
22. Marder, p. 25.
23. Ibid.
27. Nadjung Ilgi, passim.
29. Turnbull, p. 84.
30. Turnbull, p. 185; Marder, p. 29.
31. Marder, p. 29; Turnbull, p. 201.
32. Turnbull, p. 201; Jo, p. 189.
33. Turnbull, p. 201; Jo, p. 194.
34. Nadjung Ilgi, p. 317.

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