Building a Rich Country and a Strong Army: A Japanese Merchant’s Suggestions on How to Achieve Wealth and Power

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INTRODUCTION

In the year following the arrival of Commodor Perry’s black ships at Urage in 1853, numerous treatises were addressed to the Tokugawa government on how to protect the country from the imminent foreign threat. It seemed obvious to most that the only way to resist Western encroachment was to achieve wealth and power, to make the country rich and the military strong (fukoku-kyōhei). However, this was as far as agreement went; if the Tokugawa leaders were hoping for a unanimous solution to their quandary, they were sorely disappointed.

Memorials written by the powerful daimyō and other members of the politically active samurai class have been the subject of many studies, as has the fate of this upper segment of Tokugawa period society. It is perhaps natural that they should catch the imagination of succeeding generations. Not only did they produce much of the source material that historians must rely on when they attempt to explain the past; they were also the class most visibly involved in and most visibly affected by the events of the next 15 years. This exaggerated attention to the thoughts and actions of the samurai is unfortunate, however, since it has lead scholars to underestimate and ignore the contributions other classes made to the history of what transformed Japan into a nation.

What light has been shed on involvement by the merchant class in the events of the mid-nineteenth century was left, until lately, to the efforts of local historians, who have generously made relevant materials available and trumpeted the achievements of their fellow-townsmen. Among the local heroes brought to the attentions of a wider audience in this way is a merchant from Ise by the name of Takegawa Chikusai. This merchant submitted two treatises to the Tokugawa government, one in 1853 and another the following year. The treatises were first made available to the wider public when the Mie-ken finan-gun Educational Society published a printed version in 1915. 1 Since then, another local historical society has published a biography of Takegawa Chikusai, 2 and a group of scholars lead by professors Asai Masahiro and Ueno Toshizo at Matsusaka University have prepared Chikusai’s extensive diaries for publication. 3 Between them, these materials describe a wealthy merchant from an area with little samurai presence. The Takegawa family emerged as one of the leading families of the area, and Chikusai took a large part in the development of local agriculture and industry.

As a young man, Chikusai had worked in Edo in the shops and money-changing booths run by the Takegawa family. During this time he would have studied economy and finance, and he would have been well advised to keep informed of politics, which were highly relevant to commerce at the level the Ise merchants were operating,
occasionally banking for the Tokugawa regime itself. Japan had a long-standing policy of limited contact with the rest of the World, but this did not reduce consciousness of the outside, and in the first half of the nineteenth century the books and information that came through the single harbor open to foreign trade, Nagasaki, were avidly sought by the educated classes. It is perhaps not so surprising that while Chikusai lived in Edo he became interested in Western science and military technology, and made a number of connexions, commercial and scholarly, which helped him keep abreast of the latest developments even after he returned to the family headquarters midways along the sea route from Edo to Osaka.

When exactly Chikusai started writing his Kaibō gokoku ron is not clear from his diary. The foreword to the treatise itself quite clearly claims the advent of the foreign ships in the Bay of Urage as its inspiration. The fact that the Tokugawa government was welcoming opinions on the matter of the foreign ships and how to respond to their requests for an opening of the country, may have been incidental to Chikusai’s original decision to start writing. He was later to submit them, however. Several diary entries mention copies of the treatise being given or shown to associates and subsequently discussed in the last to months of 1853. This may reflect a vetting and honing of the memorial in preparation to sending it off to the authorities.

While he may not have been alone in many of the suggestions he made, and while it is difficult to say whether the Tokugawa heeded his advice, or would have heeded it had it had the chance, we know that his treatises were read with interest then, as they may be now, for their pragmatic angle on the issues that confounded Japan in the middle of the nineteenth century.

LAND

Technological Advances of the Western Countries

Obvious martial defensive measures were dictated by Chikusai’s knowledge of Western military technology. When he told his readers that “in recent years the technology of the West has flourished” and warned that such technology would upset Japan’s tranquillity in the future, he had military technology in mind, more specifically guns. While Japan did have firearms of its own, the designs had hardly changed during the more than 200 years in which Japan maintained only limited contact with the West. Chikusai himself was fascinated by advances made in the West, and basing himself on Chinese and Dutch sources, he detailed at some length the different types of guns and ammunition currently in use.

More formidable than existing weaponry was the projected “steam gun” (jōki tsutsu), which would be mounted on a gun carriage and use steam power to fire bullets at a rate of 250 or even 500 every “second.” Chikusai may have misunderstood the principles behind the machine gun and grossly exaggerated its firepower, but it is certainly tempting to see one in this description. On the basis of his erroneous figures he calculated that one “steam gun” would use 281.25 kilograms (75 kamme) of gunpowder and 15,000 bullets if fired continuously for one “minute.” He also calculated that ten of these “steam guns” would be a match for 200 ordinary ones, and then ended off by dreaming up a thankfully unrealistic atrocity: “If we say that it fires 500 bullets per second, then if one in twenty finds its target, in a day it can massacre 150,000 soldiers.” However
exaggerated these figures, clearly this weapon, if realized, would tip the scales in the enemy’s favor. Where Chikusai would have found mention of such a contraption defies imagination. Not only does he anticipate the widespread use of the machine gun by at least 30 years, he was even slightly ahead of its invention (which may explain the proposed method of propulsion). He was, however, correct when he foresaw that it would change the way war was waged.

**Implementation against Japan**

Though convinced it was only a question of time before the “steam gun” would be unleashed upon Japan, Chikusai did not lose heart. In the event of an invasion with the weapons known to the enemy now, Western armies would be severely hampered by logistical problems and by lack of knowledge of the local terrain.

First, the very distance from home would prevent the enemy from bringing horses to the battlefield. “For wars in the ugly barbarians’ own countries they use [a battle formation in which] infantry [is] followed by picked cavalry, but they cannot use cavalry in lands across distant seas.” The Japanese defenders on the other hand, would have their “picked cavalry” back-up and the benefit of irregular troops, veritable commandos on horseback, armed with rifles (chōjū) and several small handguns. The Japanese troops could advance under cover of smoke from the shooting and overrun the enemy forces. Chikusai mentioned the garrison in Ōsaka as a place where such irregular troops were being trained. The future masters of this tactic were the Chōshū forces from South-western Japan; they would put their mounted corps to good use during wars with the Tokugawa army later in the 1860s. Chikusai could easily have been speaking of these future Chōshū troops when he wrote: “I hear that Western battle array is similar to this.”

Second, as Chikusai saw it, Japan had the upper hand over enemies attacking from the sea. Foreign enemies would have only inaccurate maps to guide them. It is questionable whether inland China was as well known at the time as Chikusai claims, but inland Japan was largely uncharted territory. And being so, it was Chikusai’s opinion that an invasion would be too great a risk for the foreigners to run. Chikusai was in favor of upholding the sections of Tokugawa laws that limited foreigner access to Japan to a few coastal ports. With these laws in force, it would be possible to maintain foreign ignorance. The treaty port system had recently been established in China, and hindsight might have warned Chikusai that while host countries were able to maintain nominal independence, the treaty settlements gave the foreigners a forward base from which to expand their control to the surrounding areas. For that same reason Sakuma Shōzan favored sending foreign-style ships abroad instead of permitting foreigners to settle in Japan. In theory, however, the strategy was faultless and pragmatic, containing the unavoidable foreign presence in a geographically limited space.

Chikusai also, rather more naïvely, proposed to deny the foreign ships a view of the Japanese coast from the sea by hoisting long swathes of cloth on bamboo poles. The purpose of this exercise would be to conceal the exact location of the towns and villages along the coast, or any other information useful to an invader. It seems incredible that Chikusai could have seriously entertained the idea that it would be possible to shield from prying eyes a country that rises as steeply from the coast as Japan does in many places,
not to mention keep the manpower for the attempt to shield the country whenever foreign ships arrived. Nevertheless, with a year to reconsider, he returned to this idea in his second memorial in 1854. The apparent lapse of reason may be attributed to the very little trust Chikusai put in any sort of passive defence. Convinced, as he was, that no amount of hiding and hoping would stop the foreigners from coming to Japan, he wasted little time on the practicability of such a strategy.

Revising Strategies and Military Virtues

With both horses and intimate knowledge of the countryside in their favor, the Japanese would have the upper hand in land warfare. Were it merely a question of meeting the enemy on a battlefield, Chikusai had great faith in the Japanese warrior class. In fact he considered them superior in hand-to-hand combat. It was unfortunate, then, that the foreigners might not come ashore to be defeated at all. Chikusai predicted that the military hardware that the Westerners had would prevent the samurai from getting a chance to demonstrate their courage and skill:

The barbarians have a strong point in the guns on their warships. We have a strong point in close up man-to-man combat, but we cannot fight from the start just man to man.  

Faced with an enemy who was unlikely to come ashore until the defenders had already been shelled into submission, it was time to question the fundamental samurai adage that there was nothing as glorious as dying in the service of one’s lord. In war as it had been fought in Japan, the brave disdained seeking cover, and utter disregard for one’s own life was considered manly. In modern warfare, however, this form of bravery and manliness would be costly in human lives, and, what was more to the point (since the preservation of human lives was not high on the list of priority among the samurai), would serve no useful purpose. “It is impossible for dead warriors to muster,” Chikusai observed, and a few pages further on he argued eloquently for taking cover by appealing to the warrior class’ sense of duty and asking them to put it above personal honour:

[...] when faced with imminent danger to our masters [...] one may say that even when things go against us, every day that we stay alive is a day we do our duty by putting service to our sovereign family first. Even if we make our cannon from wood, when they can be used to fire one charge, that one charge is a meritorious deed towards the country.  

Every man, every shot discharged, would make a difference in the event of a foreign invasion, and it was imperative that Japanese lives be spared for the time when enemy troops eventually landed. Before that happened, however, one could expect furious shelling of the beaches and coastal towns. Chikusai invited anybody who doubted this to consider what was already common knowledge at the time. In recent years foreign ships had approached Japan and sounded the waters along the coast. The ships that had arrived off Uraga this same year (1853) had been observed measuring the depth of the waters from Uraga past Enoshima and as far as Honmoku. The foreigners might remain ignorant of the inland areas of Japan, but with the help of these ships they would
soon have charted the coastline and gained an intimate knowledge of what was much more likely to be the battlefield of their choice.

It would appear the Japanese were going to have to put faith in their coastal batteries. Unfortunately, the foreign ships seemed not to consider anything on shore much of a threat. Chikusai gave, as an example of the lack of fear instilled in the foreigners by Japanese guns, the nonchalance of an unarmed British merchantman off Satsuma the year before. It had sailed between the gun emplacements on either side of the straits and suffered no harm at all:

[...] from what I hear that the Western barbarians have written about this, they say that they were heaven-blessed to escape the cannonballs, but that it was mainly thanks to the Japanese people's ignorance of gunnery and crudely manufactured guns and powder. 23

And this had been a peaceful, if unbidden, ship. Chikusai could not know that ten years hence, in 1863, Satsuma would indeed be the target of an attack from the sea. Though this time the batteries managed to inflict some damage, killing the captain and the second-in-command on the British flagship and about sixty others, the town of Kagoshima bore the brunt of the fighting and the gun-emplacements were destroyed. Somewhat perversely, this violent encounter was the beginning of a close relationship. It is commonly observed that after peace was restored, Satsuma rebuilt and modernized its military along Western, more specifically British, lines, and so effectively did it do so that the Satsuma navy would eventually form the backbone of the Imperial Japanese Navy. 24

This was all in the future, however. Chikusai did advocate immediate rearrangement and adoption of modern military technology along the Western lines. It was true that the samurai were brave, and there were already a fair number of fortifications built along the coast by individual daimyō ...

[...] but even with ten million brave men and strongholds, if we do not have practice in the firing of cannons, the barbarians will be at ease, and they will draw near to the coast and fire their various well-practiced guns continuously; and if they defeat our army, we shall not be able to count the casualties. 25

Clearly it was of paramount importance to the safety of the provinces along the coastline that the art of gunnery be studied and perfected.

Securing the Coastline

Chikusai had numerous suggestions for defensive measures and detailed plans for what he considered a realistic rate and volume of implementation, including several budgets. The suggestions ranged from the very specific, with proposals for the fortification of particularly vulnerable sites, to the more general, merely laying down a time schedule for the production of arms or the building of grain stores that were needed everywhere.

For the defence of the approach to Edo, where Perry would be returning in 1854, Chikusai proposed creating an underwater barrier across most of the strait into the bay of Uraga, selecting shallow parts of the seabed and filling them in with rocks. He was convinced the winning formula was to keep the foreign ships that drew fairly deeply
from entering the bay again by means of this underwater barrier. So long as one left 2 to 3 hiro (3.5 to 5.5 metres) between the barricade and the surface of the water at high tide the barricade would not hinder native fishing-boats or other small craft. The barricade should have one channel about 20 cho (two kilometres) wide for larger ships to enter and leave through, and this channel should force the ships to sail close by the island of Matsune, about four kilometres off the Sagami shore. With a gun-emplacement on Matsune the Japanese would be able to control all entry to the Edo Bay beyond the strait:

With this channel in place, if it is known that there are warships to protect it or that warships navigate the surrounding sea, even the the stubborn and crafty barbarians should not [attempt to] go through it. And furthermore, if we should want to make it completely secure, there is no reason why we should not, if we find by surveying that our own ships up to 1000 koku (145-160 tonnes) could cross this at high tide, make the channel 4 to 5 hiro (7 to 9 metres) deep, and then even without a single defender of Uraga the barbarians' big ships would not enter [...].

On the whole, though, Chikusai preferred the channel deeper because it placed fewer limitations on the development of Japanese shipping, but that is a different matter to which we shall return later.

In addition to the barrier at Uraga bay that would guard the entrance to Edo, Chikusai urged that special attention be given to part of the inland sea off the coast from Settsukuni and Wakasa-kuni, the body of water closest to Kyōto. 28 Edo was the seat of government of the Tokugawa and as such must necessarily be defended; but Kyōto was equally important. Not only was the city the spiritual capital of Japan; the legitimacy of the Tokugawa also rested squarely on its ability to serve and protect the emperor who resided there. 29 However, the importance of these two sites, not least to the prestige of the Tokugawa, did not distract Chikusai from the fact that no part of Japan would be safe if all of Japan were not so. In order to achieve true impregnability, every coastal domain without exception would have to be defended efficiently by whoever ruled it, and Chikusai had plenty of suggestions as to how that might be achieved.

Where the sea was shallow off the coast, enemy ships would not be able to draw close and there would be no point in deploying troops. Where it was deep, on the other hand, they would be able to carry their guns within range of the defending troops, and it would be of paramount importance that these be protected from the initial barrage. It is testimony to the novelty of this idea that Chikusai had to describe how one would go about digging a common trench. Alternatively, gun-emplacements could be secured by placing large baskets on either side and filling them with sand or earth to make what Chikusai called a shikansukorubu, presumably a loan from Dutch (Skansekorb? = entrenchment basket). 30 In preparation for defence, one might also fortify more permanent structures by planting reeds on the embankments, 31 or make tough and durable shelters by recycling old fishing nets and orange peel. 32 These were all inexpensive ways of preserving lives for more deserving causes and economically viable even for the poorer dai-myō, a fact that Chikusai was not slow to point out. More would be needed, however, to put up credible resistance.

Towards the end of the Kaibō gokoku ron, the first volume of the treatise written in 1853,
Chikusai put forward a suitably restrained list of the measures he considered necessary for the defence of Japan. This included those that must be implemented this year, those that must be produced yearly, those that must be produced once every ten years, and a summary of the state of defences at the end of these ten years. Unsurprisingly, amongst the suggested investments in the first year were a large number of firearms: 600 large cannon, 300 smaller cannon, and 2700 light guns. These were to be augmented within 10 years by a further 390 large cannon, 400 smaller cannon, and 10,000 light guns. Chikusai also calculated a prodigious amount of cannon balls, smaller shot and gunpowder that should be prepared annually. The projected ammunition depots at the end of the ten years suggest that he meant half of this to be spent practising. Apart from the obviously military items, which also included reclamation of 72,000 tsubo (23.8 ha.) of land for a naval base and the rudiments of a navy, the list recommended the establishment of 160 granaries, storing altogether 200,000 koku (averaging almost 120 tonnes per granary) of cereals against an emergency, and 16 offices to administer the granaries.

To Chikusai, these granaries were as important as rearmament. His novel suggestion that one needed to curb the soldiers’ distain for seeking cover in order to keep the army intact has already been described. One of his more graphic and impassioned arguments on this point was followed immediately by an exhortation to consider the more practical side of campaigning: “Moreover, when one sends forth an army, if there are no provisions it will perish. This is the most important task of the military.” Of course, logistics had been a recognised concern of warfare since Sun Tzu, who mentioned them among the five fundamental factors that one needed to appraise before going to war. Being a merchant, however, and in the business of moving large consignments of goods, Chikusai was perhaps more aware of how demanding the task was. The need to procure and transport supplies could severely hamper an army. If this were true of the defenders that were, after all, on their home turf and could to some extent live off the land, it was even more so of the attackers. Chikusai warned his readers:

Because the enemy will support himself by means of raiding parties, merchants’ houses or large amounts of provision should not be amassed on the waterfront. [...] If there is an amassing of agriculture and trade on the coast, the rice should be sold off. When the daimyo buy up this rice, they have rations for their troops, the farmers and the merchants pocket their gold and escape the distress of being plundered, and when the enemy cannot seize by force his food, he will necessarily be in difficulties.”

However, merely denying the enemy provisions would not be much use if one had no reserves of one’s own. In a country where the domestic circulation of goods was highly developed and the inhabitants of larger cities were all dependant on distant rice-farming for their daily fare, the government would do well to consider how to ensure the necessary supplies in the event of hostilities. Edo imported a substantial amount of the rice consumed from the Kansai area, several days away by ship and vulnerable to blockade. To guard against enemy ships laying such a stranglehold on Japan’s seat of power, Chikusai urged that sufficient reserves be established to last the artisan and merchant community of the city for up to a year.
Chikusai had clearly given this idea much thought. The otherwise inadequate local rice production could be stretched with the contents of the emergency stores to enable Edo to face the foreign threats with equanimity. But, merchant that he was, instead of just hoarding grain, he devised a way to make the reserves work with the economy, stabilizing prices and generating income that might justify the expense of creating a country-wide system of granaries. His instructions went into detail. Indeed, he would later name the larger cities up and down the coast of Japan where such warehouses ought to be built. Each one of the 16 granary administration offices was to be manned with one bugyō, two matsuke, 5-7 respectable, local merchants, 2 clerks, 3 servants and 6 porters. Chikusai even calculated the cost of keeping such a staff. By the time he reached the list of suggested measures at the end of the book, no reader of the *Kaibō gokoku ron* could be in any doubt that Chikusai considered granaries to be as indispensable to the coastal defences as guns.

The *Kaibō gokoku ron* was well received, and Chikusai wrote another volume, the *Kaibō gokoku kōron*, in 1854. In this second volume he explored the arguments he had originally pursued, and the above-mentioned list was subdivided and refined.

The revised plans for coastal defences called for the annual production of 150 large cannon, 75 smaller cannon, 500 light guns, 3000 large cannon-balls, 37,500 smaller cannon-balls, 100,000 bullets, and 15,000 kamme of gunpowder. Compared to the first list Chikusai had made, this schedule foresaw a slower, steady growth of coastal defences. They might not be able to turn back the enemy for a couple of years; but the pace of investments was more realistic, and eventually, after the ten years he himself had chosen as time horizon, Japan’s armoury would be comparably well-stocked. There would be more of the large cannon, less of the light guns, than was originally projected. Chikusai estimated the price of arming the coast according to the revised plan at about 70,000 kin a year for the weapons and ammunition alone.

The slower rate of investment confirmed the need to appease the foreigners. Chikusai was in favour of offering passing foreign ships a safe harbour to refuel and take in necessary supplies. In effect this was buying off the foreign threat, and as such he considered it part of the coastal defence and estimated the expense at some 10,000,000 kin (=1,000,000 ryō) annually.

Finally, Chikusai reminded his readers that the gun-emplacements along the coast, the offices set up to deal with the foreign ships at the harbors that would presently be opened, and the administration of the granaries, would all require staffing. The far-flung coastal fortifications alone would swallow 6000 men and 1200 cooks, presumably manning 1200 bunkers with a team of five soldiers and a cook; but they each of them individually came quite cheap, compared with the officials, accountants and clerks of all sorts that would staff the various offices, especially in the designated treaty ports. In addition to the men and cooks (at 50 and 10 bales of rice a year, respectively), Chikusai listed 15 different positions within the system, the number of people required in each, and the stipend they should receive, adding up the number of sacks spent on each level of the hierarchy (e.g. “8000 bales of rice: bugyō, 4 men, 2000 sacks each” o). The aggregate expense was astronomical, and Chikusai followed this budget very closely with a catalogue of ways to spare the treasury the full force of it.

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The Roles of Government and Domains in the Defence of Japan

Chikusai pointed out that the Tokugawa government already had 7200 policemen deployed throughout the country and that their job descriptions might easily be revised to include a number of functions necessary for coastal defence. He pointed out that visits by foreign ships could easily be turned into an asset and that: “Further, with the excess every year we should manufacture spare cannon for the inland sea.” 41 This he reckoned would pay for 500 large cannon plus ammunition. Chikusai suggested that the government allocate these cannon to the various domains, freeing them to concentrate their efforts on smaller and cheaper armaments.

Unlike the government, which distrusted outside initiative and was beginning to fear internal rebellion more than foreign attack, 42 Chikusai approved heartily of the individual daimyō who had been experimenting with the casting of modern guns. He especially commended the daimyō of small domains such as his native Toba who, size notwithstanding, managed to set aside money for casting cannon out of copper and iron. 43 However, the point he was trying to make was a different one.

What Chikusai was asking was that the Tokugawa government examine and eliminate a deeply held article of faith. For years the weakening Tokugawa had been trying desperately to weaken the daimyō to avoid rebellion. 44 Chikusai hinted instead that the government should appreciate the efforts individual daimyō were putting into the fortification of the coastline; in his opinion, the government would need all the help it could get from the domains, if it were to secure the country against foreign invaders. If the government could overcome its distrust, he promised that together the government and the domains could build “a huge fortress of 5000 kilometres called Japan.” 45

In his eagerness to reconcile the Tokugawa government to the idea of cooperating with the domains, Chikusai may have made the coastal defences seem impregnable; but in truth he objected to sitting back and waiting for the enemy to bring the battle to Japanese shores. In his view, it was infinitely preferable to be able to turn away foreign ships while they were still far out to sea, and in order to do that, he wanted the Tokugawa government to build a navy.

SEA

Justification

Chikusai had advocated the building of a navy in his 1853 Kaibō gokoku ron. “[I]t is important business to protect against the barbarians by navigating the ocean routinely and become accustomed to even fierce winds and raging waves.” 46 By fortifying the coastline one might experience an apparent success; but there was little merit in merely throwing back the aggressor from the shores. At best this would be a temporary victory, for as Chikusai explained:

Even if the barrage of cannon fire from the coastal defenses hit a barbarian ship, this could be by fluke, and maybe when we [fight] violently, if the barbarian ships retreat 300 to 400 chō [about 330-440 metres], troops on shore can only long for the open sea to no avail. Then the barbarians can build up their spirit and inspect their gunpowder and firearms at leisure, and, seeing our exhaustion, [they can] launch an attack. 47
The only way to deny the foreign ships this advantage would be by building a navy. A navy could support the defensive efforts of the fortifications ashore. A navy could follow the enemy as he retreated from the coastal waters, and chase him into the high seas. Aizawa Seishisai had included a similar passage in his Shinron in 1825. He too had wished for daimyō involvement in the building of a fleet, suggesting that it could be a sea-borne parallel to the public works they carried out for the government on land. 48

Perhaps because he was a merchant and could see the possibilities, Chikusai explicitly encouraged the Tokugawa to allow long-distance trading. It was rumored that some was carried on from certain domains in the West of Japan already, he wrote, and no harm had come from that. 49 He also suggested that the government lift the ban on maps of the coastal waters that was also part of the Tokugawa policy of limiting contact with the outside world. It was pointless to enforce these laws, especially with the foreigners sounding the inland sea for themselves. 50 Mostly, however, Chikusai let the overwhelming need for a navy speak for itself. There was little point in wasting many words on the inevitable, so instead he addressed questions of the type of ships needed, deployment, financing, and the uses he perceived for a fleet of large ships, not all of them martial in nature.

Western Ships

Foreign ships had repeatedly been sighted off the coast of Japan during the first half of the nineteenth century. They held great fascination for Chikusai, menacing and loaded with possibility at the same time, and yet he had probably never had a chance to see any up close himself. This did not stop him from devoting several pages at the beginning of the Kaibō gokoku ron to a description of the four black ships that Commodore Perry had sailed into the bay of Uraga that year, giving their armament and complement. 51 Formidable as these ships seemed, Chikusai hastened to add that bigger ships existed. 52 More than the sheer size of the opposition, however, Chikusai was impressed by the numerous technical innovations of the Western ships.

Chikusai knew about the sheathing of wooden hulls with iron plates. The technique was widely used at the time to give wooden ships a longer life in the taxying climate of the tropical seas; but Chikusai was under the impression that the purpose was to make the hulls of warships impenetrable in battle. As he pointed out, the material had its drawbacks: “iron abhors saltiness.” 53 He speculated that the black paint might offer some protection, but was also inclined to believe those who said that the plates were actually copper or some other metal impervious to rust. These strong hulls did reduce the vulnerability of modern warships, to shipworms as well as to the firearms Chikusai was thinking of. To confound the latter, he pointed out, there were also the smoke from the ships’ own guns and deliberate smoke screens that reduced visibility, complicating the targeting of the remaining weak spots further.

Another feature of the foreign ships that interested Chikusai profoundly was the method of propulsion. 54 According to the Chinese sources he was using to write the treatise, the steam engine had been invented in America (sic) around 1700 by the Western calendar, and originally used to pump water out of mines. By around 1800, however, the engine had been put to many other uses, among them powering the earliest steamships that ploughed the inland watercourses of America. The principles behind
the harnessing of steam are recognisable if not quite accurate in Chokusai’s description:

With regard to the rotation of this machine, the water inside the boiler is boiled by burning coal and becomes 1600 times the shape, and its elasticity is released. Because the fire does not become intense except by the use of coal, one uses coal. The coal smoke leaves through tubes of refined iron on top of the ship and disperses from these. They are the so-called chimneys and it is said that they can also be used to control [the engine].

Chokusai was impressed with the persistence of the foreigners. His awe is apparent in the description that though there were numerous accidents in which boilers burst under the immense pressure generated and people were wounded and killed, the republic had continued to develop the technology. Perseverance was rewarded with the invention of the pressure gauge, which allowed for safer steam engines, and the means of transference of power were improved. The first paddle steamers became seaworthy from around 1815. Chokusai was aware that they were, at the time of writing, still not fuel-efficient enough to be used in long-distance trade, and that presently their application was mainly military, as patrol ships and destroyers that could move fast and independently of the weather. He nonetheless saw their long-term significance clearly. Steamships were ideal in windless conditions such as encountered in equatorial waters, as well as out of the monsoon season. They could also sail up rivers without depending on favorable winds or enough width of the waterway to be able to beat up against both wind and current. Vast improvements had been made in the 50 years since paddle steamers were invented, and strategies for naval warfare would change completely as a consequence. Chokusai appreciated that something was happening and was prepared for a growing challenge in the years to come; but whether for lack of understanding or out of pragmatism, the plans he sketched for a Japanese navy were rather old-fashioned by Western standards.

Building and Deploying a Japanese Navy

A Japanese navy, even one relying on traditional ships, would be costly. In the Kaihō gokoku ron Chokusai estimated the need to be 30 sailing ships of the time-honoured frigate style and three modern steamships. Each sailing ship should carry 40 cannon, and in times of war be manned with 400-500 soldiers. Since they would be operating immediately off the Japanese coast, the ships would not need to carry provisions for more than 15 days at sea, and there should be room enough. For maneuvers in peacetime the ships should carry only 20 cannon for practice, with the additional 20 available ashore for rearmament at short notice in case of a foreign invasion. In peacetime they would be manned with 100 samurai, 40 foot soldiers and ten porters. The three fast steamships could be purchased from the foreigners, each at about ten times the price of one of the sailing ships. They should be armed with 20 large-calibre cannon and 8 smaller cannon of various descriptions mounted on swivel sticks and gun-carriages. Add to this smaller guns, bayonets, ammunition, food, and clothing. Being a merchant, Chokusai followed each item with an estimate of the expense involved and rung up a final bill for “the price of 30 (sic) ships, including big and little guns” of nearly 530,000 ryō.
The following year, Chikusai revised his estimates to show how the navy could be built by increments with an affordable annual outlay. According to the budget suggested in the 1854 Kaibō gokoku kōron, the navy would need 300 large calibre cannon, 150 medium size cannon on swivel mounts, and one thousand rifles. For ammunition they would need 6000 large cannon balls, 7500 medium size cannon balls, 200,000 rifle bullets, and 12,500 kamme (46.9 tonnes) of gunpowder, not counting wooden and clay shot. This prodigious amount of ammunition was needed partly to allow the training of 6,000 able-bodied men to fire the cannon. The fleet of thirty warships had become fifty, and Chikusai thought it could be fully formed in a matter of five years, provided keels were laid at a rate of ten a year.

Chikusai’s original plans involved the thirty sailing ships being deployed evenly throughout the coast of Japan, in groups of five with bases in Edo, Toba, Osaka, Shimonoseki/Nagasaki, Niigata/Matsumae, and Uraga. While these plans also saw the three steamships defending the Tokugawa seat of power exclusively, one belonging in Edo and two in Uraga, Chikusai was careful to stress the effect Tokugawa commitment to the defence of the rest of the country would have on morale:

> When we make all our preparations thus ready, it will not only be the key to the defense [...] of Edo. Were three to five barbarian ships to land on the shore of our country which is stretched out over 500 里, over twenty degrees of latitude and longitude, and were they to fire cannon and cause disturbance, [everybody] from the daimyō and down to the common people would stand firm [...] ⑥0

It was, in other words, important to Chikusai that the navy be a national navy rather than the private navy of the Tokugawa government. At the same time, he never questioned whether it should ultimately be under the command of the Tokugawa. Either he was not greatly concerned by the matter, or he considered the Tokugawa more likely to adopt the idea of a navy, if they were left in control of it. ⑥1

**The Limitations of Existing Shipping**

A much greater problem facing Chikusai’s plans for the development of a navy in Japan was probably the state of Japanese shipping in general at the time of writing. The limitations were multifarious, partly structural, partly political and partly economical in nature.

Chikusai’s first insistence that Japan needed ocean-going ships for protection against barbarian encroachment was followed closely by a lamentation that domestic shipping was in decline. ⑥2 The number of small cargo vessels that serviced the coastal cities along the south coast of Honshū had dwindled from some 160 in the early eighteenth century to only 35 or 37 at the beginning of the Bunka period (1804-1818), the early part of the nineteenth century. By combining their efforts in ten kumiai, Chikusai explained, the merchants had managed to turn the tide, and there were currently 70-80 ships working along the coast of Japan; but there was reason to fear that this merchant fleet would shrink again. Chikusai gave as reasons for this a general lack of seaworthiness and predation by pirates. He might have added that the government was entirely responsible for this regrettable state of affairs. Tokugawa laws limited the size and equipment of the ships, and in effect their seaworthiness; and government distrust of any
military strength outside its direct control kept the freighters unarmed and vulnerable to attack. Instead, Chikusai confined himself to suggesting that local daimyō be allowed to fit out ships to patrol their immediate coastline.

Patrolling the coastal waters would improve safety at sea, and merchants of every region would definitely be pleased. The daimyō would probably have been delighted to do so, too. Unfortunately, the initial outlay for the building and furnishing of warships would be prohibitively expensive for most domains. Even if the size and use of ships were deregulated, economic limitations would hamper the growth of a decentralized navy. Chikusai, however, had a solution to this problem that foreshadowed the ideas of financing that we shall examine in more depth later. To defray the cost of sea-borne coastal defenses, the domains could build armed transport ships:

By hiring existing ships from other domains and loading cargo [on them], and loading it on ships of its own and its kinsmen’s, and by automatically gathering the produce of other provinces to its harbour, a domain may also reach affluence. 63)

This approach would strengthen the individual coastal domain militarily as well as earn them the funds to make the substantial investments. The drawback to this was that the government might have misgivings. Domestic politics were acrimonious enough to prevent the Tokugawa from wanting to rely on the daimyō, and Chikusai surely realized that.

No matter what the reservations the Tokugawa had about accepting assistance from outside the government, many structural obstacles had to be overcome. The investments needed were huge. As for the government raising the necessary funds on its own to keep complete control of activities, it was impossible. Nor was the “armed transport ship” model that Chikusai had suggested for the domains an option. A country-wide implementation would not only require a prohibitively expensive down payment. Out of respect for the livelihoods of merchants and shippers all over the country the government could not go into the transport business. 64) Chikusai was faced with the question of how to finance shipbuilding, the government’s or any other, at the furious rate necessary. He looked to the local merchants and shippers for the answer.

The Merchant Marine

Maybe Chikusai realized that a transport fleet-cum-navy built by merchants for material gain would be more likely to meet with Tokugawa approval than one under politically questionable daimyō leadership. He certainly spent more time exploring the possibilities of the former. Among the ideas was one that involved an organisation similar to the ten kumi of merchants, which had pooled their resources for the rebuilding of the merchant marine in the early years of the nineteenth century.

The original initiative had begun with a different agenda. Under the direction of five merchants whom Chikusai introduced by name to his readers, the many Edo ton'ya had formed ten kumi holding 1,995 kabu. This organisation collected myōga, a form of forced contribution ordinarily exacted in exchange for privileges by the local ruler, which in the case of Edo was the Tokugawa government. The merchant houses could collect 10,200 kin among themselves in one year, and with this money they had rebuilt three bridges in Edo. 65) After the initial purpose had been achieved, however, there was the
question what to do with the rest of the funds, whether to discontinue the collections or not. In Chikusai’s interpretation, shipping offered itself as the natural extension of the interest in infrastructure that had prompted the original appeal.

Coastal shipping was important to the highly developed exchange of goods between the larger cities, not to mention the only way to transport anything in bulk in a country where few roads would accommodate even the smallest cart. Chikusai described how the small, vulnerable freight ships were lost to shipwreck by the hundreds every year, and how the value of their cargoes added to the cost of repairing and refitting the ships that could be salvaged was counted in hundred thousands of kin. To illustrate his point, he quoted a detailed account of the value of cargo damaged in transit from Osaka to Edo in the summer of 1809. Seven ships carrying miscellaneous goods had sunk and one had taken in water, destroying altogether more than 45,000 ryō worth of cargo. Five ships carrying cotton goods had sunk, five more jettisoned their cargoes, loosing their owners 33,000 ryō. Ships carrying barrels of sake had fared even worse, twelve sinking and ten arriving with goods that were destroyed by the salt water, at a cost of 42,000 ryō. The sum total loss was 120,000 ryō. Using these figures, Chikusai went on to estimate the average economical loss in one shipwreck, including both the cargo and the ship itself, at altogether 4,000 ryō. 66

Assuming there were about three hundred shipwrecks on various trade routes all over the country, that made an aggregate waste of 300,000 kin a year. And these were just the material losses. Chikusai reminded his readers of the human beings that had “[…] become ‘water junk’ at the bottom of the sea and are buried in the bellies of fish.” 67 Dwelling on the tens and hundreds of unknown men who still lost their lives off the coast of Japan annually he confessed that: “As I write this my tears spread to wet the paper.” 68

Cry he might, but Chikusai’s views on a desirable solution to the matter were clear. If the problem was the size of the vessels and their lack of defenses, then the merchant kumi should be allowed, perhaps even compelled, to channel their communal funds into larger ships, preferably adequately armed.

Models of Financing Involving Merchants

Chikusai reminded his readers that there was a historical precedent for the building and sailing of larger vessels in Japan. The merchants and shippers in the period before the Tokugawa regime had been faced with problems of available funds not dissimilar to those facing the government in the 1850s, and the well-developed economical structures for underwriting the ships then were worth considering even today:

It is well known that in the old days they built big ships. To build a ship carrying about 1,000 koku (180 cubic metres or 94 tons of rice) there would be expenses of 1,000 ryō, or they would gather 100 kin or 200 kin from three to five or even up to ten people, and they would call these people “subscription holders” and with this money they would build ships and with the fees from the freight charges of voyages every month they would meet general expenses, and the surplus money they would distribute in proportion to the capital. For example, if a 1,000 kin ship goes to Edo and back, when it makes more than 2 kamme (7.5 kilograms) of gold, a person who
put down 100 kin receives 200 momme (750 grams). Assuming this ship is not destroyed in a storm, it can earn the capital that was invested in a matter of five to six years, and henceforth the ship will make a fortune by earning more money with every return trip until it is lost to decay. 69

This system of shareholding could easily be modified to suit the government’s purpose. To save the initial outlay, ships would be built with money from the coffers of the merchant houses. They would nominally belong to the shareholders and under peaceful conditions they would be gainfully employed in the transport of goods in the coastal trade. In case of invasion, however, they would be at the command of the government.

Of course, even with the shareholder system there was always the risk that an individual ship might run at a loss or suffer a shipwreck. In the “old days,” Chikusai warned, bad luck had caused family fortunes to dwindle and the threat of bankruptcy to be imminent. While this was a calculated risk, the price one payed for the chance of acquiring wealth in pre-Tokugawa Japan, it was hardly fair to imperil capital that merchants might have had to put down against their better financial judgement. The price for merchant support for this plan could be guaranteeing a certain return on the forced investments. Chikusai advised the government to collect more than 500,000 kin under such terms from merchants: “[…] they will not suffer the loss of their capital and the bakuju will not be troubled to lay out money, one might say it will be to their mutual advantage […].” 76 The contours of a fleet of large, sea-worthy ships, paid for by private money, and administrated by the government as a combination navy and shipping line were beginning to show. It was defense and business in one irresistible package, a merchant’s solution to the need for strong military and rich country.

The Self-Financing Navy

Deeply integrated with the suggestions Chikusai made for the build-up of a navy were ideas for turning this huge investment to profit. In fact, forgetting for a moment his scruples over the livelihoods of merchants and shippers, he suggested that it would make an excellent source of revenue for the government. The safety and dependability of the new ships would halve the cost of transport in the future, and Chikusai was confident merchants would not grudge paying transport duties of up to one percent of the value of the cargo. 77 In the end it can be quite difficult to see who Chikusai thought would benefit more of the implementation of his plans, the government or the merchants:

[…] when we ship it using a strong warship, […] we escape the concern that it will sink in the middle of the sea, and when moreover there are soldiers aboard the ship to protect it and so there will be no loss of effects, it will be the same as if ten years and 3,000,000 kin worth of worldly goods welled up from the bottom of the sea. 78

In another discussion of the earning potential of the navy, one that recognised that it would take years to construct so many ships, Chikusai just assumed that the necessary funds would be found somehow, it was not really that important where. Rather, the important point was the rate of growth once the building of the fleet was set in motion.
Already in the first year ten ships would generate an income from freight of about 13,440 ryō after expenses for administrators, shipping offices, and extra porters were deducted. In the second year 20 ships would earn twice that sum, and from the sixth year the navy would be fully developed and the annual income would be 67,200 [ryō]. This income could be used to fund gunnery practice and fill the emergency granaries. 270

Once this programme of shipbuilding was up and running, it would feed itself and make a significant contribution to the enrichment of the country and the strengthening of the army.

**Trade**

Another significant contribution would come from the government-controlled foreign trade already described, or so Chokusai hoped. To guide the efforts of the trading offices he proposed, he wrote a veritable catalogue of Japanese produce and an evaluation of the marketability of every item. 271

Some of the verdicts are very shrewd. Top of the list is the unparalleled Japanese rice, and Chokusai’s discussion of the pros and cons of exporting rice stretches over three pages. He begged his readers to consider that the foreigners were not used to eating rice and that they did not rely on it for their daily survival. He pointed out that exporting excess rice from the home market would raise prices and was preferable to shovelling the grain into the sea, as had been done on occasion in the past. By and large, however, he was rather in favor of stockpiling rice in times of plenty, and using the emergency granaries to regulate the amounts available on the market. This way one could keep the prices high enough to encourage farmers to irrigate more land, without risking the food supply for the common people. Second on the list was sake, which is really just rice in another form. Chokusai thought the production ought to be banned as a waste of grain; but he was wise enough to know that it would be impossible to uphold the ban in distant areas. He objected to its export on the same grounds as for rice, but did not think there would be a market abroad for something so perishable, anyway. He saw greater promise in destilled spirits, presumably made from something other than rice. His optimism on behalf of miso paste and soy sauce were a bit misplaced; but since his brother Takeguchi owned a soy mill, 275 one can hardly blame him for hoping. Tea on the other hand, he was right to value highly as an export. Within a decade of opening, Japan had taken over a substantial part of the Chinese market. 261 Chokusai was particularly pleased that tea would grow in sandy and stony earth and encouraged the reclamation of land in remote mountain areas. Clothes and fabrics were on Chokusai’s list, including cottons and silks, though he could not possibly have foreseen how the silkworm blight in Europe would play into Japan’s hands in the mid-1860s, or how the quality of Japanese silk would improve to meet the high demands of the export market. 277 He was proud of Japanese paper, which he knew to be unique in the World, but not sure it would sell. The barbarians might not be able to appreciate it. And while he knew for a fact that lacquerware would sell, Japan did not at present have enough trees to make it for export. He warned enterprising samurai (lacquerware was a skilled job, suitable for samurai who had fallen on bad times) 276 that the foreigners were spoilt by the excellent lacquerware sold in China. He also mentioned ceramics, though he suspected that they would only be bought for their novelty. The last big item on the list was coal, which Chokusai rightly
predicted the foreigners would need more and more of with the advent of the steamships.

Chikusai suggested that the government handle trade through agencies in the treaty ports. It would in fact attempt to regulate the exchange of some commodities; but when the ports were finally opened in 1859, the integration and efficiency of the domestic market soon had its way with any restrictions. What sounded like a good idea had become an embarrassment under the quickly changing circumstances.

**CONCLUSION**

It is easy to find fault with Chikusai’s suggestions. Circumstances changed so rapidly in the nineteenth century that the reasons behind his proposals were lost, and it is difficult to know whether any of his long-term strategies for independence would have worked, or indeed whether political leaders attempted to follow them or adapt them to later developments.

However, it is an irrefutable fact that the merchant with his knowledge of commerce and financing offered a much-needed pragmatic approach to a field clamoring for expulsion of the barbarians no matter the consequences. Pointing out the technological gap between the West and Japan, he not only described the fortifications and arms the government must have to keep the foreigners at bay, but also applied himself to the question of logistics, reminding everybody that even the bravest warriors must eat. Also, he not only offered his estimate of what expenses were needful for any effective resistance, but also showed how they might be met without bankrupting the government, or maybe even enriching it in the process.

Small wonder then that Takegawa Chikusai would later, in 1866, as the loyal servant of the government, be asked to Edo for consultations when the Tokugawa treasurer was considering the importation of rice from abroad and needed to pick his brains regarding the markets in goods and transport. During this visit Chikusai made the journey down to Yokohama, presumably on an unofficial errand to the British Ambassador, where he finally had the chance to inspect one of the formidable British steamships in person.

**Notes**

5. *Chikusai nikki kō* VI (1995); pp. 264 (1/11/1853) and 266 (8/12/1853).
7. Ibid., pp. 23-24 and 32.
8. Ibid., p. 39. The concept of seconds (byō) was still new to Japan (the word originally meant ‘a tiny bit,’ ‘a little’) so Chikusai has to define them in an aside. He describes an hour as having 6400 seconds, one hour being divided into 120 minutes (Japanese hours were twice as long as Western ones) and every minute being divided into 60 seconds. This makes 7200 seconds, however, this miscalculation is not in itself enough to explain the supernatural efficiency of the ‘steam guns,’ and the misunderstanding is more likely to have arisen somewhere in the translation of Chikusai’s sources.
9. Ibid., p. 39. With fewer, say 250 bullets a minute, he added, it would be about 45,000 soldiers in a day.
Some of the earliest machine guns were used in the American Civil War (1861–1865), but the first reliable one was not developed until in 1884 when Hiram S. Maxim patented the machine gun that became known by his last name. The Maxim guns were able to fire 11 bullets per second. Not until the 1890s would the machine gun be an indispensable part of the military equipment of any Western army. Headrick, Daniel R., *The Tools of Empire – Technology and Imperialism in the Nineteenth Century*, New York/Oxford: Oxford University Press, 1981; pp. 100-101.

Kaihō gokoku ron, p. 56.

Nihon-shi Kō-jiten Henshū Inkai Hen, *Nihon-shi kō-jiten*, Tōkyō: Yamakawa Shuppansha, 1997; p. 596. The kihei in Chōshū would be ‘irregular’ in more than one meaning of the word. Not only did their equipment mix cavalry and infantry; they also allowed non-warrior class soldiers.

Kaihō gokoku ron, p. 56.

Ibid., pp. 32-33.


Kaihō gokoku ron, pp. 41-42.

Kaihō gokoku kōron, p. 173.

Kaihō gokoku ron, pp. 31-32.

See Headrick (1981), pp. 117-122, for the great part machine guns played in the defeat of armies with similar ideas during the colonial wars in Africa in the late nineteenth century. One particularly famous example is the battle of Omdurman, which played a key role in the British conquest of the Sudan under General Kitchener in 1898. The battle pitched state-of-the-art equipment, including breech-loading and repeating rifles, Maxim guns and field artillery, against an army of 40,000 Dervishes who charged the British lines bravely in the traditional manner: head-on. As Headrick laconically states: “After five hours of fighting, 20 Britons, 20 of their Egyptian allies and 11,000 Dervishes lay dead.” (p. 118)

Kaihō gokoku ron, p. 41.

Ibid., p. 52.

Ibid., pp. 37-38.

Ibid., p. 33.


Kaihō gokoku ron, pp. 31-32.

The koku is a measure of volume, popularly described as the amount of rice eaten by one man in one year. The unit was used to measure land, indicating the amount of rice that could be harvested from it, and as a measure of the displacement, or more properly the carrying capacity of ships. Assuming the cargo in question is rice, one koku at 180 litres would weigh about 94 kilograms and a ship carrying 1000 koku would be stowing 94 tonnes in its hold. Relations between volume and weight taken from Wigen, Kären, *The Making of a Japanese Periphery, 1750–1920*, U.S.A.: University of California Press, 1995, p. 6.

Kaihō gokoku ron, p. 86.


Kaihō gokoku ron, pp. 48-49.

Ibid., p. 78.

Ibid., pp. 67 and 76, and Kaihō gokoku kōron, p. 170.

Kaihō gokoku ron, pp. 92-95.

Ibid., pp. 41.


Kaihō gokoku ron, p. 41.

Ibid., p. 60.
38) Ibid., pp. 78-79.
40) Ibid., p. 131.
41) Ibid., p. 133.
43) *Kaihō gokoku kōron*, pp. 50-52.
45) *Kaihō gokoku kōron*, p. 133.
46) *Kaihō gokoku kōron*, p. 47.
47) Ibid., p. 49.
49) *Kaihō gokoku kōron*, p. 77.
50) Ibid., p. 82.
51) Ibid., p. 20.
52) Ibid., p. 21.
53) Ibid.
54) The following, all in *Kaihō gokoku kōron*, pp. 21-22.
55) Ibid., p. 22.
56) Ibid.
57) Ibid., p. 66.
58) Ibid., p. 67.
59) *Kaihō gokoku kōron*, pp. 127-128.
60) *Kaihō gokoku kōron*, p. 71.
62) *Kaihō gokoku kōron*, p. 47.
63) Ibid.
64) Ibid., p. 88.
65) Ibid., p. 57.
66) Ibid., p. 58.
67) Ibid.
68) Ibid.
69) Ibid., pp. 88-89.
70) Ibid., p. 89.
71) *Kaihō gokoku kōron*, p. 59.
72) Ibid.
73) *Kaihō gokoku kōron*, p. 129.
74) Ibid., pp. 137ff.
75) Transpires regularly from entries in Chikusai’s diary.
77) Ibid., p. 340.
78) So was paper, see Wigen (1995), pp. 86-88.