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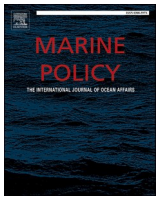

# Undersea cables and the extension of empire: The rise of Britain, Japan, and the United States and the competition to connect Hawai'i

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ABSTRACT

This article examines the history of undersea cables from the mid-19th century to the mid-20th century. How did geopolitics affect cable construction historically? What parallels exist in the present day? Drawing on new archival data and Japanese-language sources, the article examines case studies of Britain, Japan, and the United States to demonstrate how the construction of cable networks was historically shaped by rising powers seeking to connect their territories and colonies for strategic purposes, which sometimes put small island nations such as Hawai'i at the center of competition over connectivity. Geopolitics influenced the structure of cable networks during this period; connections tended to proliferate among countries that shared colonial links, while tensions and distrust among countries stopped potential construction projects. When countries came into conflict with one another, cable networks were disrupted due to intentional sabotage, or they were allowed to fall into disuse in some cases. This article contributes to the existing literature by incorporating data that has previously received little attention into discussions about the history of undersea cables and by bringing the cases of the United Kingdom, Japan, and the United States into dialogue with one another. This historical approach to analyzing the hegemonic activities of three imperial powers through the lens of submarine cables yields findings that have implications for contemporary policy, despite changes in technology and legal frameworks over the years.

## 1. Introduction

Undersea cables—also known as submarine cables or subsea cables—are part of the critical infrastructure that underpins the functioning of society. Like other forms of critical infrastructure such as electricity, water, and public transportation, undersea cables are often taken for granted and their significance is usually forgotten. However, they are vital to the prosperity and security of countries, so their construction and maintenance has been a matter of concern for governments since the beginnings of telegraph cable networks in the 1840s. As Daqing Yang puts it, "the geographical limits of empires were determined by the possibilities for effective communication" [1], which meant that undersea cables were intertwined with the foreign policies of countries such as the United Kingdom, Japan, and the United States who controlled territories far from their home shores. These cables link marine policy with policies related to telecommunications, economics, and security, and as a result they have been politicized at times of geopolitical tension, both historically and in the present as strategic competition has intensified between the United States and China [2].

This article examines the history of undersea cables from the mid-19th century to the mid-20th century. How did geopolitics affect cable construction historically? What parallels exist in the present day? The article examines case studies of Britain, Japan, and the United States to demonstrate how the construction of cable networks was historically shaped by rising powers seeking to connect their territories and colonies for strategic purposes, which sometimes put small island nations such as Hawai'i at the center of competition over connectivity. Geopolitics influenced the structure of cable networks during this period; connections tended to proliferate among countries that shared colonial links, while tensions and distrust among countries stopped potential construction projects. When countries came into conflict with one another, cable networks were disrupted due to intentional sabotage, or they were allowed to fall into disuse in some cases. These findings have parallels in the present.

This article focuses predominantly on cables in times of war and conflict. Although undersea cables were regulated under the Convention for the Protection of Submarine Telegraph Cables in 1884, they were targeted for attack historically because they were used not only for

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civilian communications but also for military communications. In recent years, the definition of conflict has expanded to include "gray zone" situations involving conflict short of war [3], which highlights the possibility that intentional destruction of undersea cables is being carried out under the guise of accidents. Consequently, the history of cables in times of conflict—and when such conflict has been anticipated by governments—is helpful in considering and preparing for current challenges.

This article contributes to the existing literature in several ways. First, it incorporates new archival data and Japanese-language sources that have previously received little attention into the discussions about the historical politics of undersea cables. In particular, it draws on important materials collected at the Historical Resources Archive of Submarine Cables (Kaiteisen Shiryokan), which is maintained by NTT World Engineering Marine Corporation in Nagasaki, Japan. Second, this article brings the historical cases of the UK, Japan, and the US into dialogue with one another, which has rarely been done in the existing literature. Much research has focused on the undersea cables and telegraph networks of the British Empire in the 19th century [4–12], but relatively less attention has been paid to the historical networks of Japan [1,13,14] and the United States [15]. Third, the article aims to derive lessons that are relevant to the present through use of historical comparative analysis, examining the hegemonic activities of three imperial powers through the lens of submarine cables. This historical analysis can be built upon by other scholars who are working from the perspectives of international relations, political economy, global governance, international security, and other fields.

Overall, this article seeks to shed light on the complex dynamics between undersea cables, communication, and empire, demonstrating the ways that undersea cables played an essential role in the geopolitical ambitions of rising powers. It is important to understand the historical context of undersea cables and the lessons that history may hold for the present in order formulate policies for potential contingencies. The article begins by examining the role of cables in the extension of the spheres of influence controlled by the United Kingdom, Japan, and the United States. It then examines the competition to connect undersea cables to Hawai'i in the late 1800s and early 1900s. The article concludes with a summary of the findings and implications for contemporary policy.

## 2. Communication and colonization under the United Kingdom, Japan, and the United States

Historically, changes in transportation and communication technology have facilitated the extension of empires [9]. The hegemonic powers of international politics in each period have been deeply involved in the construction of these networks, beginning with the telegraph and the British Empire from the mid-19th century. Since it was necessary to cross oceans to enable global communication, undersea cables were indispensable to the infrastructure of this telegraph network. As Headrick (1981) notes, "Cables were an essential part of the new imperialism" [16]. This section briefly analyzes the ways that undersea cables were intertwined with the geopolitical ambitions of three rising powers: the United Kingdom, Japan, and the United States. In each case, as the government of each country sought to increase its territorial holdings, it also sought to connect to these new geographic locations using undersea cables to gain economic and security benefits. In situations of tension and conflict, these cable connections were sometimes destroyed for tactical purposes. After their destruction, they were rebuilt via different routes to better fit new strategic interests in some cases or, in other cases, they were left in disrepair.

### 2.1. United Kingdom

During the 100 years between the mid-19th and mid-20th centuries, the telegraph network became geopolitically significant. The first practical application of telegraph technology was made in England in 1837 by W. F. Cooke and Charles Wheatstone [5]. By 1855, a domestic telegraph network had developed in each of the United Kingdom and the United States. The telegraph was revolutionary for its time; the ability to connect armies fighting in distant lands with their home countries and diplomatic missions with their home countries greatly changed the nature of warfare and diplomacy. The United Kingdom was the first to put telegraph and submarine cables to practical use and to successfully deploy them globally.

The main architect of the project to lay submarine cables across the Atlantic Ocean was an American, Cyrus W. Field, who, after repeated failures, succeeded in laying an intact submarine cable in 1866 [17]. The next target of the British was India, their colonial base. Although a land line had already connected Britain and India in 1860, a submarine cable was drawn from the Strait of Gibraltar into the Mediterranean Sea, through Malta, through the Suez Canal, out of the Red Sea into the Indian Ocean, and on to Bombay. Later, the British used submarine cables to connect their colonies around the world, conveying London's directives throughout the empire in a short time and stimulating trade. In Asia, the British network connected as far as Hong Kong and Shanghai. The British insurance industry used the telegraph network to exchange information on weather and shipping routes that would lead to the safety of ships, as well as information on at which ports their cargo could demand a higher price. Wireless and wired telegraph networks became indispensable technologies for the governance of the British Empire, including for suppressing rebellions in colonies far from London.

As a result of these aggressive measures, the British government controlled 66.3 percent of the world's telegraph network in 1892 and 56.2 percent in 1908 (see Table 1). By the late nineteenth century, telegraph cables from Britain stretched to all corners of the globe forming a massive international communications network of around 100,000 miles of undersea cables that was referred to as the "All-Red Line" due to the red color used to indicate British territories and colonies on maps of the time (see Fig. 1).

During times of conflict, enemy cable networks became targets of destruction. At the outbreak of World War I, one of the first acts by the British was to send out ships with orders to destroy and divert undersea cables, which limited Germany's long-distance communication. Germany also attacked British cables, cutting them in many places and rendering them unusable [21]. However, despite such attacks, the strength of the British telegraph network was maintained during World War I and World War II.

### 2.2. Japan

During the expansion of the Japanese Empire in the late 19th and early 20th centuries, its leaders pursued the acquisition of colonies; part of this process was the construction of undersea cables to connect these areas. A map titled "'Secret' List of Japanese and Nearby Submarine Cables" was drawn by the Submarine Line Construction Office in

**Table 1**
Telegraphic Networks in the World (1892–1908) [10,18,19].

| | 1892 | | 1908 | | Change Over Time | |
|---|---|---|---|---|---|---|
| | km | % | km | % | km | % |
| United Kingdom | 163,619 | 66.3 | 265,971 | 56.2 | 102,352 | 45.2 |
| United States | 38,986 | 15.8 | 92,434 | 19.5 | 53,448 | 23.6 |
| France | 21,859 | 8.9 | 44,543 | 9.4 | 22,684 | 10.0 |
| Denmark | 13,201 | 5.3 | 17,768 | 3.8 | 4567 | 2.0 |
| Germany and Netherlands | 4583 | 1.9 | 33,984 | 7.2 | 29,401 | 13.0 |
| Others | 4628 | 1.9 | 18,408 | 3.9 | 13,780 | 6.1 |
| Total | 246,876 | 100.0 | 473,108 | 100.0 | 226,232 | 100.0 |

Note: Of the 19,401 km of German and Dutch cables in 1908, 5,328 belonged to a joint venture in the Pacific.

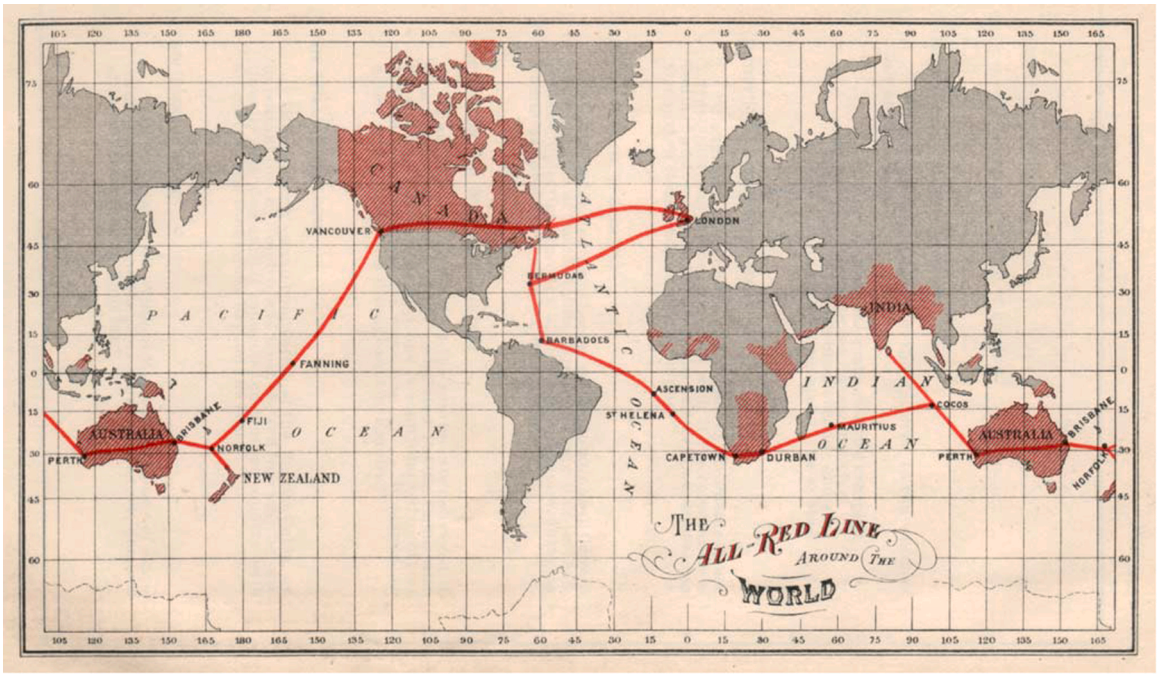


**Fig. 1.** Britain's "All-Red Line" (1902) [20].

November 1942 during World War II (see Fig. 2). This map, drawn just before the end of World War II, shows how Japan expanded its network of submarine cables after the late 19th century. It shows that cables connected not only the Japanese four major islands of Hokkaido, Honshu, Shikoku, and Kyushu, but also the islands of Sado, the Ogasawara Islands, Oki, Tsushima, Goto, Tanegashima, Yakushima, Amami Oshima, Tokunoshima, Okinawa, Miyako, Ishigaki, and Iriomote.

Undersea cables were also connected from Japan to islands that are

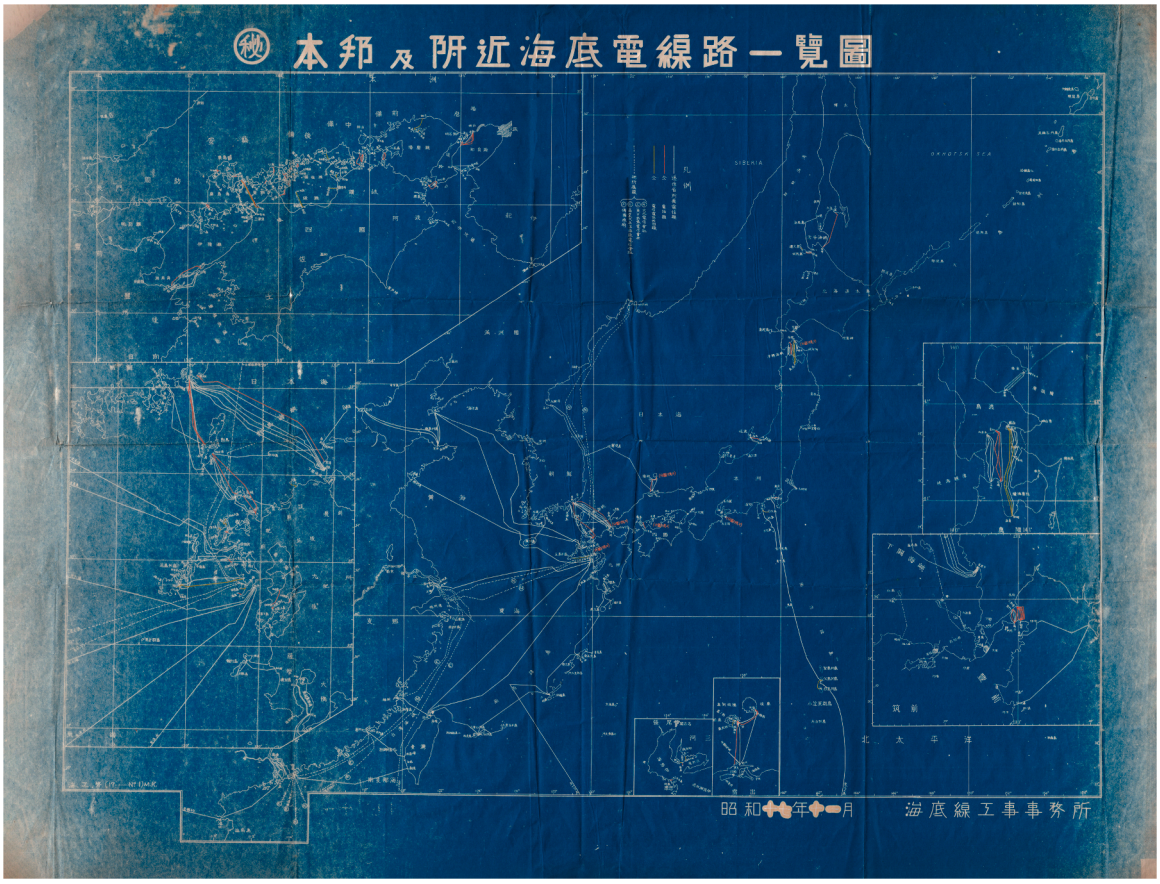


**Fig. 2.** Japanese Submarine Cable Networks in 1942 [22].

now foreign territories or controlled by foreign countries, such as Sakhalin, Kunashiri Island, Ulleungdo, the Korean Peninsula, Dalian and Qingdao on the Chinese mainland, Shanghai, Yap Island, and Taiwan. There was also a submarine line from Kaohsiung, Taiwan to Hong Kong, and from Budaizui on the west coast of Taiwan to Xiamen on the Chinese mainland via the Penghu archipelago. From the Ogasawara Islands, it led to the US territory of Guam, and from there to the west coast of the United States via Hawai'i. Fig. 2 shows that most of the submarine cables at that time were mainly routes connecting Shimonoseki to the Korean Peninsula and Nagasaki to mainland China and Taiwan, indicating that Japan was a country that was largely connected to Asia. No submarine cables could cross the Pacific Ocean with the technology of the time, and the connection to the US had to go through Guam, as will be discussed below.

The first undersea telegraph cable in Japan connected Nagasaki to Shanghai in August 1871, and another cable connected Nagasaki to Vladivostok in November of the same year [23]. The *Nagasaki Nichinichi Shimbun*, a local newspaper which was published from 1911 to 1941, reveals that the telegraph played an indispensable role in keeping abreast of international affairs at the time. The Vladivostok line, together with the Shanghai line, was used as a route from Japan to Europe, but communication ceased on January 3, 1942, due to Japan's involvement in the Pacific War following the attack on Pearl Harbor. Telegraphs first arrived in Hokkaido in 1874 when a submarine cable was laid across the Tsugaru Strait between Hokkaido and Aomori. Another route connected Nemuro to the Northern Territories (Kuril Islands) in 1897, then the remote islands of Rishiri Island and Rebun Island in the north were connected in 1903. Undersea cables also connected South Sakhalin (Karafuto), which became part of Japan after the 1904–1905 Russo-Japanese War [23]. However, after the end of the war in 1945, the submarine cable between Nemuro and Shana on Etorofu Island was intentionally cut from the Nemuro cable depot and abandoned under the sea, as it was feared that it could be used for espionage or for redaction operations by the Communist Party [24].

As Japan turned its attention toward the Korean Peninsula, it began to consider telecommunications connections as early as 1875 [23,25]. However, due to financial constraints, no cables were laid until 1882, when the Gyeongseong Incidents—two anti-Japanese riots in what is now Seoul—demonstrated the necessity of telegraph communication. In 1883, Great Northern Telegraph Company, a Danish company, was commissioned to construct a line from Yobiko in Kyushu, Japan, via Iki Island and Tsushima Island to Busan on the Korean Peninsula. In 1890, the Japanese government purchased the submarine cable between Yobuko, Iki, and Tsushima (Izuhara) from Great Northern. After the 1894–1895 Sino-Japanese War, the operation of the facilities on the Korean peninsula was entrusted to the Japan government. Following the annexation of Japan and Korea in 1910, the Japanese government decided to purchase the submarine cable between Tsushima and Busan in 1911 [23]. In the second half of the 19th century, only a handful of European companies had the ability to lay submarine cables, and none of them existed in Japan. Telecommunications in Japan began as a public service under the government's Ministry of Public Works in 1871, the year the first submarine cable was connected to Nagasaki. European companies such as Denmark's Great Northern, Britain's Eastern Telegraph Company and German-Netherlands Cable Company also operated with close ties to the government.

Japan also connected itself to Taiwan via undersea cables as its territorial reach expanded. After the Sino-Japanese War, Japan took possession of Taiwan in 1895. It became necessary to lay a submarine cable between Taiwan and the Japanese mainland, and there was also a petition to connect a submarine cable to Okinawa, which lies between them. In October 1896, public communications began using submarine cables laid for military use between Okinawa and Kagoshima, a mainland part of Japan. Furthermore, in 1897, this cable was connected to Keelung in Taiwan via Ishigaki Island in Okinawa. Landing on the main island of Okinawa took place at Toguchi Beach in Yomitan Village, and from there in 1905 it was connected to Yap Island in the Pacific Ocean. However, facilities related to these submarine cables were destroyed during World War II [26].

Until World War I, the submarine cables that connected Japan to the islands in the South Pacific were owned by the German-Netherlands Cable Company, connecting Yap and Guam, Yap and Shanghai, and Yap and Manado (now Indonesia). Yap was considered an important relay point. In 1916, the line between Yap and Shanghai was landed at Naha, Okinawa, and the Naha-Yap line was constructed [23]. After World War I, Yap became a Japanese-mandated territory. In February 1942, between Palau and Yap the Yap-Manado line off the coast of Palau's Angaur Island was raised and cut. The two sides of the cables in both directions were landed on Palau's Koror Island. For a time, this line went out of use, but it came back into use in May 1944 after World War II broke out. However, problems arose that summer, and repairs were abandoned due to the worsening war situation. In September, Palau's main communication buildings were destroyed, and the war ended the following year. The line that connected Palau and Manado was also discontinued due to problems in May 1944 [23].

Unlike the United Kingdom and the United States, which will be examined next, the historical record does not provide evidence that Japanese military forces cut foreign cables as part of their operations. However, Japan's ability to protect its own cable network or fix damaged cables declined during the course of the war as its military logistics deteriorated. Not only military ships but also civilian ships were lost, and there was a shortage of fuel to move ships, making it difficult to deliver food and other necessary supplies to overseas territories. Therefore, Japan had limited ability to protect or repair its own cable infrastructure.

### 2.3. United States

In the United States, Samuel Morse experimented with the telegraph in 1837, and the first practical land telegraph line was built between Washington, DC and Baltimore in 1844. Land-based telegraph networks quickly spread across the continental United States. However, the challenge was communication with overseas countries, and as mentioned earlier, the first successful submarine cable connecting the Atlantic Ocean was achieved in 1866.

The Spanish-American War of 1898 brought Spain's colonial empire in the Western hemisphere to an end, and it also secured the position of the US as a Pacific power. The US was aware of the strategic importance of undersea cables during the conflict; it cut cables connected to the Philippines, Puerto Rico, and Cuba during the war as a means of disrupting Spain's ability to command and control its forces [27]. George O. Squier, later in charge of wiretapping for the US Army, claimed that the Spanish-American War was "largely a 'story of coal and cables'," due to the "dominating influence" of submarine cable communications in the conflict [28]. After the end of the war, the Philippines, Puerto Rico, and Guam were ceded to the US. Separately, the US also formally annexed Hawai'i in 1898, after a long internal struggle between native Hawaiians and resident American businessmen for control of the Hawaiian government.

Consequently, the experience of the US in the Spanish-American War highlighted to the US government the importance of securing submarine cables within one's own country [29]. With the acquisition of these new territories, the United States began to consider connectivity to the Pacific Ocean. It inherited some cables after the conflict, and it also began to think about the advantages of building its own connections. Cables were completed linking the US mainland to Hawai'i in 1902 and linking Guam to the Philippines in 1903. The proportion of the world's telegraph cables controlled by the US increased from 15.8 percent in 1892–19.5 percent in 1908, as shown in Table 1. Over the same time period, the relative share controlled by the British declined from 66.3 percent to 56.2 percent. The construction of the American Pacific cable also facilitated the shift of the locus of world news gathering from

English to the United States by allowing transmissions to travel to New York without passing through London first [30].

In the late 19th century, the United States was a relatively quiet actor in the world of submarine cables. However, this changed with the Spanish-American War and the competition over the submarine cable connection to Hawai'i, which evolved contemporaneously with the US conflict with Spain. The case of Hawai'i is examined in further detail in the next section.

## 3. Competition to connect Hawai'i

This section examines the interactions among the US, Japan, the UK, and Hawai'i as the UK and the US both sought to lay undersea cables across the Pacific Ocean, focusing specifically on the competition to connect Hawai'i. As early as 1870, the need for an undersea cable connecting the West Coast of the United States to Hawai'i had been pointed out. One of the first people to suggest it was Admiral David D. Porter, a Civil War hero who later served as president of the Naval Academy [32]. In 1879, Cyrus Field, famous for his success with the Atlantic cable, acquired the rights to the Pacific cable, but he was unable to raise sufficient funds and his rights expired [32]. Secretary of State Thomas F. Bayard also expressed interest, but did not commit any state funds [16,33].

Anglo-American relations in the Pacific at the end of the 19th century were at a delicate juncture, and both the UK and the US were interested in connecting the Pacific Ocean with undersea cables. The British Empire had bases in the Pacific Ocean and was also interested in Hawai'i; England and Canada sought to lay cables to Australia and New Zealand. At the same time, US political ambitions in the Pacific were also growing, and it sought to connect cables to Hawai'i and the Philippines, as well as to its trading partners, Japan and China.

The situation within the Kingdom of Hawai'i was rapidly evolving during this time. King Kalākaua had modernized the country with the help of the British and the Americans. In the 1870s, it had a 90 percent literacy rate and a thriving indigenous press [30]. However, it was at risk of annexation by the United States because Americans who settled in Hawai'i believed that this was the best way to expand and protect their interests. In 1887, they staged a coup d'état, forcing King Kalakaua to sign a draft constitution that weakened his royal power [34]. To maintain his country's independence, King Kalakaua tried to strengthen ties with Japan, which was emerging as a world power at the time, as well as with Britain. In 1881, King Kalākaua visited Japan to meet the Emperor Meiji and specifically requested a submarine cable between the two countries, which reveals the importance of this infrastructure to his country at the time. However, his request was declined by Japanese foreign minister Kaoru Inoue due to turmoil associated with 1881 (Meiji 14) political crisis in Japan [35]. However, after Kalākaua's death, another coup d'état was carried out in 1893 against his successor Queen Liliuokalani by pro-American actors who established the Republic of Hawai'i. The queen resisted and she was imprisoned before being forced to abdicate in 1895, formally ending the Hawaiian monarchy.

American strategists outside Hawai'i were also thinking about its potential value to the US at this time. In 1893, the year of the coup d'état, Alfred T. Mahan, known for his theories on sea power, published a paper entitled "Hawaii and Our Future Sea Power" [36]. In it, Mahan wrote that Hawai'i was important not only for its inherent commercial value but also for its desirable location for maritime and military control. But he also warned that, like Fanning Island (now Tavuaeran, Kiribati) and Christmas Island (also part of Kiribati), it could end up in British possession within a few years because Hawai'i was on the route from British Columbia in Canada to New Zealand and Australia.

On January 9, 1895, President Grover Cleveland sent a message to Congress regarding submarine cables, saying the UK government had asked the Hawaiian government to lease an uninhabited Hawaiian island as a relay point for Britain's undersea cable connecting Canada and Australia [37]. The British sought uninhabited islands, such as Necker Island, French Frigate Shoals Atoll, or Bird (also known as Nihoa) Island, all of which were located northwest of the Hawaiian Islands. From there, the British planned to extend a branch line to Honolulu, and they also planned to connect Hawai'i to the rest of the world via an undersea cable. The United Kingdom made this request because, while there were many British islands in the South Pacific, there were very few in the North Pacific.

Due to the treaty of reciprocity between Hawai'i and the United States that had been signed in 1875, the lease could not be granted without the consent of the United States. Negotiations were held between the British and American governments, a draft agreement was drawn up, and President Cleveland asked the US Congress to approve it. However, the US Congress rejected this British proposal. Because of Hawai'i's strategic importance, many members of Congress insisted that the United States should build its own submarine cable to Hawai'i, to prevent the United Kingdom, which controlled the world's telegraph cables at the time, from controlling Hawai'i. There was concern that if the cables passed through the UK, they would be censored there, and if something went wrong, the message itself could be stopped or altered. Communication via submarine cables was also used to report the movements of foreign ships, so it was strategically essential to control submarine cables.

Despite the fact that the UK government had made this request, there was internal disagreement within the UK about whether the cable should be connected to Hawai'i due to similar security concerns. Voices of support came from the British Parliament, but some in the government were insistent on a purely British government-controlled cable consistent with the "All-Red Line" (Fig. 1). According to this logic, since Hawai'i was not a British colony, a cable should not be landed there. An alternative idea proposed by Sir John Pender, president of the Eastern Telegraph Company, was a route that would cross St. Helena Island and Africa by land, passing through Mauritius and Cocos Island in the Indian Ocean, and Perth and Adelaide in Australia. In other words, the idea was to connect to Australia without having to cross the Pacific Ocean. However, this was strongly opposed by Canada, which thought the Pacific route would be more secure in times of war. In addition, the Pacific Cable Board was established, consisting of representatives from the United Kingdom, Canada, New South Wales, Victoria, Queensland, and New Zealand. As a result, Britain built a cable connection point in 1902 on Fanning Island, which it had occupied since 1888, and created a route through Fiji and Norfolk Island to New Zealand (Fig. 3) [29]. Their cable was completed six months before the American one.

Although Britain's request to connect to Hawai'i was rejected, this incident stirred up debate within the United States over submarine cables to Hawai'i. In 1896, two companies competed over Hawai'i's submarine cable. The Pacific Cable Company of New Jersey, led by Zephaniah S. Spalding, who was a lieutenant colonel in the Union Army during the Civil War and later ran a plantation business in Hawai'i. The Pacific Cable Company of New York was headed by James A. Scrymser, who was known for his cable business. Sir John Pender, head of Britain's Eastern Group and the architect of the British side of the Atlantic submarine cable, supported Spalding's company, and American telegraph company Western Union had a working relationship with Scrymser [32].

Both sides also lobbied the US Congress. Bills supporting each were introduced, with the Senate Foreign Relations Committee supporting the Pacific Cable Company and the House Interstate and Foreign Commerce Committee supporting Britain's Eastern Group [31]. As many as 18 bills were introduced in Congress [16,33]. On April 1, 1896, the two sides confronted each other directly at a public hearing in Congress, demanding that their company install the line [39,40]. However, it remained difficult to reach a conclusion.

Republican William McKinley, Jr. became president in 1897. On February 15, 1898, the U.S. Navy battleship USS Maine (ACR-1) exploded in Havana Bay, Cuba, which led to the start of the Spanish-American War in April, which was discussed in Section 2.3. Shortly after the outbreak of the war, Hawai'i was separately annexed to the

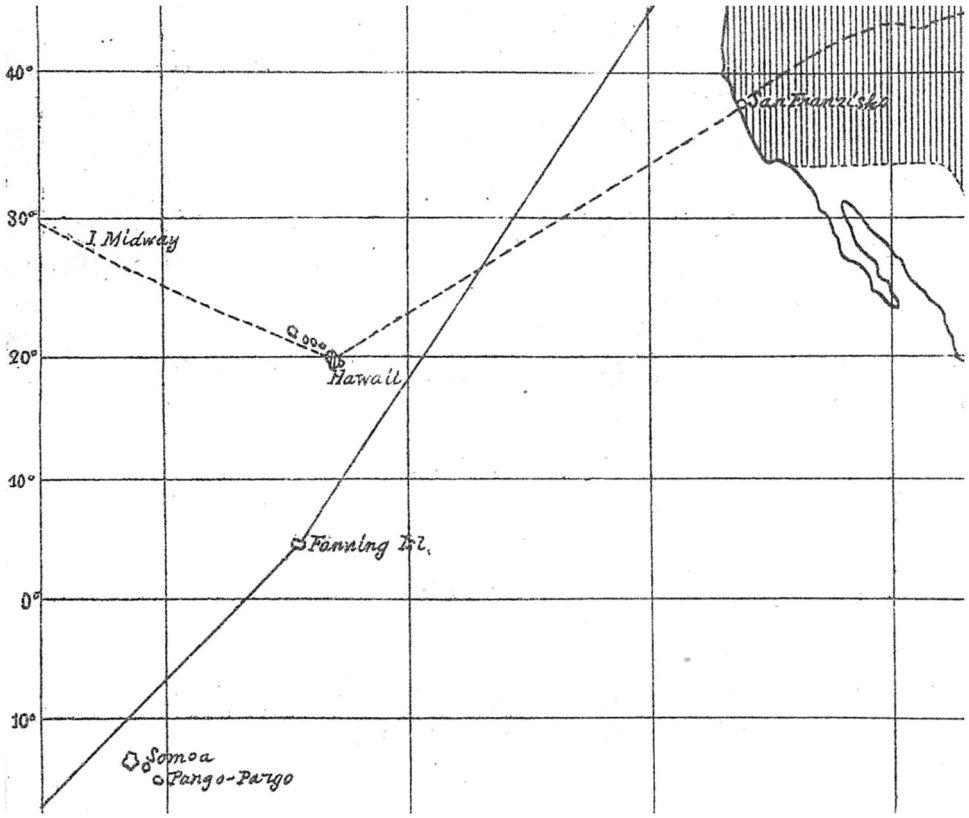


**Fig. 3.** British and American Routes Crossing the Pacific [38]. Note: The solid line is the UK route, and the dashed line is the US route.

United States. The Spanish-American War ended on December 10, 1898, and the US acquisition of the Philippines, Puerto Rico, and Guam after the conclusion of the war only increased the strategic value of Hawai'i. On February 10, 1899, Republican President McKinley sent a message to Congress regarding the construction of an undersea cable with Hawai'i in the wake of the prospect of ratification of the Spanish-American War peace treaty with Spain and the increasing importance of Hawai'i in securing sea routes and communication routes with the Philippines [41].

On April 11, 1900, the Senate passed a bill authorizing the construction of submarine cables to Hawai'i at US government expense and sent it to the House of Representatives. However, the House Interstate and Foreign Commerce Committee did not approve of this, and instead passed a bill that would provide Scrimser's company with an annual subsidy of $300,000 for 20 years. The two chambers were unable to reconcile the differences between the bills, and the undersea cable to Hawai'i was once again delayed [42].

If Cyrus Field was the hero of the Atlantic cable, the hero of the Pacific cable was John W. Mackay, an Irish immigrant known for his investments in mining and telecommunications [43]. He founded the Commercial Pacific Cable Company to lay the first Pacific cable. Mackay's concept differed from the two companies before the Spanish-American War in that he proposed building a Pacific cable without government subsidies. Seeing that both Spalding and Scrimser had failed to secure funding for cable construction, Mackay wrote to Secretary of State John Hay on August 22, 1901. He said he would not ask for subsidies and would run a cable between the West Coast and Hawai'i by September 1902. He also added that he would offer cables to the Philippines, Japan, and China and offer lower rates if they were willing to extend cables to anywhere under U.S. influence. Mackay's concept surprised those involved in the cable in Hawai'i [42].

Although John Mackay died the following year, his dream was carried on by his son, Clarence H. Mackay. The first submarine cable was raised to Sans Souci Beach in Honolulu on December 28, 1902. The submarine cable began service from San Francisco to Hawai'i on January 2, 1903. On May 24 of that year, the cable-laying ship Anglia set sail east from Manila, Philippines, connecting Guam and the Midway Islands with a cable. Hawai'i was connected to San Francisco on January 2, 1903, which was proclaimed "Cable Day" in Hawai'i and greetings were sent from Henry Cooper, secretary of Hawai'i, to President Theodore Roosevelt [30]. On July 4, 1903, the Manila cable was spliced into the Pacific cable in Hawai'i, and President Theodore Roosevelt, who was at his home in Oyster Bay, New York, sent the first message to William H. Taft in the Philippines.

In 1906, Mackay's company ran an undersea cable from Manila to Shanghai. Shanghai is home to the British Empire's undersea cables and connects to the British Empire's telegraph cable network. Furthermore, a branch line was built from Guam to the Ogasawara Islands, where it was connected to Japan's submarine cable. In 1905, a cable was laid from Ogasawara Chichijima to the north by Japan, and from Chichijima to the south from Guam Island by the US, according to a 1905 agreement between the Japanese government and the US Commercial Pacific Submarine Telegraph Company. The signatories to this agreement were Kogoro Takahira, Japanese Minister Plenipotentiary to the United States, on the Japanese side, and Clarence H. Mackay, President of the Commercial Pacific Submarine Telegraph Company, on the American side [44]. On June 29, 1906, congratulatory telegrams were exchanged between the Japanese emperor and the US president, and official public communications began on August 1 of that year [44]. Japan's victory in the Russo-Japanese War in 1905 was a major factor in enabling the establishment of these cable connections [32].

To summarize this case study of the competition to connect Hawai'i, although the UK requested a connection to Hawai'i, its request was rejected because the US wanted to maintain control of the cables for security purposes and had stronger relations with Hawai'i. Attempts by the Hawaiian government to request a cable connection from Japan failed. The US eventually formally annexed Hawai'i, which facilitated its

use of Hawai'i as a telecommunication steppingstone to its other newly acquired American territories in the Pacific. The UK instead pursued the construction of an alternative cable route through Fiji and Norfolk Island to New Zealand. Competition also occurred between two American private companies who sought US government subsidies for cable construction, but the US Congress could not come to a decision between them; the cable was eventually built by a third company that could do so without government subsidies. Japan was not involved in discussions about Hawai'i with the UK and US, but the Japanese government sought cable connections to the United States directly through the Pacific, rather than going west through Europe [31]; Japan eventually connected to the Pacific cable via Guam and Hawai'i.

In 1928, after World War I, Mackay sold his telegraph business to ITT (International Telephone and Telegraph) because the development of wireless telecommunications had made the submarine cable business relatively expensive. Countries rushed to adopt wireless communications with the aim of breaking away from the British Empire's domination of submarine cables [45]. Then, World War II dealt a devastating blow to the submarine cable business. Cables connecting Japan and China were severed and were never repaired. ITT's market share on the routes that connected the West Coast to Hawai'i and Manila began to dwindle, and the business was no longer profitable. The cable remained in use until 1962, but it has since sunk to the bottom of the ocean, unused.

## 4. Conclusion and implications for contemporary policy

This article has examined how submarine cables were laid historically and how competition to connect the Pacific evolved from the mid-19th century to the mid-20th century. Submarine cables were already an important political and economic infrastructure 100 years ago, and they remain so today even though the cables themselves have evolved from telegraph cables to analog coaxial copper cables to fiber-optic cables over time. The British use of telegraphic networks for imperial rule, combined with logistical networks has much in common with the combination of the Internet and logistical networks by the United States. Consequently, the findings from the historical case studies in this article have potential implications for contemporary marine policy related to cables today.

First, the historical case studies show how geopolitics has driven the construction of undersea cables networks, specifically the desire of hegemonic, colonial powers to connect their territories as seen in the cases of the expansion of Britain, Japan, and the United States abroad. These historical interconnections had both economic and security benefits, as well as vulnerabilities, so states sought to keep them under national control or in the hands of their colonies and territories. In some cases, this led to the fragmentation of cable networks and the construction of separate routes, as in the case of the American and British Pacific cables. In the contemporary period, China's interest in undersea cables has grown in tandem with its economic rise, and cables have been incorporated into its Digital Silk Road initiative. In response, concerns about Chinese involvement have driven the proliferation of undersea cable projects among "like-minded" partners and the abandonment of connections with others [2]. For example, since the intensification of competition between the US and China, there has been a sharp fall in the construction of new undersea cables linking China with the rest of the world, even as other projects have proliferated, suggesting that cable networks are once again becoming fragmented [46]. Historically and today, geopolitics is shaping the form of this critical infrastructure.

Second, as great powers compete, other countries have historically found themselves at the center of battles over connectivity. In the case of Hawai'i, its strategic location led both the UK and the US to seek cable connections. However, the Hawaiian Kingdom was constrained in its ability to make independent decisions about potential connections, first due to its reciprocity agreement with the US and later due to its annexation by the US. In the contemporary period, countries with similarly strategic locations are finding themselves in the midst of similar competitive dynamics between the US and China, as the case of the Pacific Islands region. For example, after a Chinese company proposed building a new cable connecting Australia with the Solomon Islands and Papua New Guinea, the Australian government announced in 2018 that it would instead provide funding for the cable; this announcement was triggered by the government's security concerns that the involvement of a Chinese company might allow the Chinese government to access Australian data. Australia, Japan, and the US have since announced several joint projects in the Pacific Islands region for similar strategic reasons [47].

Third, as the construction of these cable networks is influenced by geopolitics so too is their destruction. Cable network connections have been intentionally severed during conflict as seen in the case studies of the UK and the US, and, in some cases, they are never rebuilt, as seen in the case study of Japan. This article has tried to consider the possibility of submarine cable destruction in the 21st century based on cases from the 19th and 20th centuries. In times of war, submarine cables are obvious targets for attack by enemy countries, as has occurred many times historically. However, the Cold War and the 1990s were a relatively peaceful era for submarine cables with few cases of intentional destruction. Communication capacity expanded significantly in the 1980s with the introduction of new fiber-optic submarine cables, and commercial use of the Internet expanded from the mid-1990s onwards. The United Nations Convention on the Law of the Sea (UNCLOS), which came into force in 1994, contains provisions for the protection of submarine cables, which was an important step, but weaknesses and gaps remain, and state enforcement of undersea cable protection remains uneven [48]. Moreover, the maritime legal order itself is currently a matter of contestation, with actors such as China actively seeking to reshape its rules and norms [49].

As a result. intentional destruction of cables is still a concern today, and cables are once again being discussed in the context of geopolitics and geoeconomics [2]. Concerns have been particularly heightened recently due to a series of high-profile cable disruption incidents. In February 2023, submarine cables connecting Taiwan's Matsu Archipelago and Taiwan's main island were severed, and it was suspected that a Chinese ship was involved. In March 2024, rebel groups attacking ships in the Red Sea indirectly damaged cables belonging to four major telecoms after a listing vessel dragged its anchor, disrupting telecommunications networks and forcing providers to reroute as much as a quarter of traffic between Asia, Europe and the Middle East. In November 2024, two submarine cables were severed by a dragged anchor in the Baltic Sea, and analysts suggested that the cables were intentionally cut by a Chinese-flagged cargo ship. Undersea power and communications cables were once again severed in the Baltic Sea in December 2024, and the *Eagle S*, an oil tanker registered in the Cook Islands in the South Pacific with potential ties to Russia, was suspected to be involved. The threat of a similar disruption during a Taiwan contingency has also been the subject of much discussion. The importance of protecting submarine cables in difficult situations known as the so-called gray zone, which is neither peacetime nor wartime, is recognized as a policy issue. The historical examples in this article show that submarine cables are highly vulnerable infrastructures that can be easily drawn into great power competition.

Fourth, the dynamics of construction and governance of cable networks are now much more complicated because of ownership and sovereignty. The 19th-century style of colonial acquisition and governance has been gradually ending since the end of World War II in 1945. It is no longer possible for one country to completely control the undersea cable network, and private companies also play an important role. In some cases, this may prove advantageous, as private sector ownership may make it more difficult for countries to weaponize undersea cable networks [50]. However, in other cases, this more market-based ownership structure may be disadvantageous in laying submarine cables. Smaller island nations have smaller populations and smaller economies, making

it less likely that submarine cable installations will be commercially successful. For example, before World War II, Palau was connected to submarine cables that were first laid by Germany and inherited by Japan during World War I, but they were destroyed in World War II. A modern submarine cable did not reach Palau until 2017, and financing of a second spur cable to the country by Australia, Japan, and the US was announced in 2020, partly due to these countries' strategic concerns vis-à-vis China. Therefore, in some cases, geopolitical competition may end up providing small countries with connectivity opportunities that the market would not, if they are seen as strategically important. Regardless, the modern geopolitics of undersea cables involves a much larger number of stakeholders who are motivated by diverse market-based or political incentives, which makes the situation much more complex to navigate.

Undersea cables have continued to be important ever since their invention, and they are indispensable in today's information society. These undersea cable networks are critical infrastructure, and as such, they must be protected to ensure the stable functioning of society. However, submarine cables are not just communications infrastructure; they are also a means for hegemonic powers to exercise power. If a hegemonic power wants to exert influence globally, it needs to build and maintain a secure communications network for itself. As new powers such as China rise, history shows that they will seek communication networks that are easier for them to control, and established powers will try to resist these attempts to reshape existing infrastructure. However, modern fiber-optic cable networks exist in an ecosystem of various technologies, making it increasingly difficult for one country to maintain a technology supply chain alone. In the future, cables will continue be strategically valuable, and countries will need to find ways to balance security risks and commercial imperatives as they seek to pursue their national interests.

## CRediT authorship contribution statement

**Kristi Govella:** Writing – review & editing, Writing – original draft, Project administration, Funding acquisition, Formal analysis, Conceptualization. **Motohiro Tsuchiya:** Writing – original draft, Investigation, Writing – review & editing, Formal analysis, Conceptualization.

## Declaration of Competing Interest

The authors declare no potential conflict of interest.

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## Data availability

Data will be made available upon request.

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