

AVI PERSPECTIVE

Cambodia | 14th August 2020

Submarine Cable Geopolitics

*CHHEM Rethy**,

*TRIPATHI Geeta***,

and *GILBERG Trond****

Executive Summary

- ❖ This article starts with a brief review of the history of submarine telecommunication cables. The data show that the Western world has dominated this technology for more than a century. This monopoly has recently been challenged by the emergence of new economic powers such as China, India and Brazil.
- ❖ Because controlling submarine optical cables technology is essential for both socio-economic and military power, some Western countries and the US still aim at maintaining their historical global leadership and dominance. While those powers still hold a quasi-monopoly of laying and operating those cables, new investments come now from the emerging markets, with Southeast Asia as the region with the highest growth rate. This increasing competition is essential for the strategic control of the cyberspace, where submarine cables are the foundational infrastructure.
- ❖ This article looks into the geopolitics of telecommunication technologies including 5G mobile networks and the Internet that underline the global power race to dominate both the submarine space and the cyberspace. Finally, it examines the 5G and cyber technology dimensions in order to enrich our understanding of the current dynamics of China-US nationalistic rivalry and their race to lead telecommunication technologies.

***CHHEM Rethy** is an Honourary Distinguished Fellow at the Asian Vision Institute (AVI).

****TRIPATHI Geeta** is a Research Fellow at the Centre for Inclusive Digital Economy (CIDE) of the Asian Vision Institute (AVI).

*****GILBERG Trond** is Dean of the Faculty of Social Sciences and International Relations at the Pannasastra University of Cambodia. He is also an Advisor to the Centre for Inclusive Digital Economy (CIDE) at the Asian Vision Institute (AVI).

សេចក្តីសង្ខេបអត្ថបទ

- ❖ អត្ថបទនេះរៀបរាប់ត្រួសៗអំពីប្រវត្តិនៃខ្សែកាបទូរគមនាគមន៍ក្រោមទឹក។ ទិន្នន័យបានបង្ហាញថា ប្រទេសលោកខាងលិចបានគ្រប់គ្រងបច្ចេកវិទ្យានេះអស់ជាងមួយសតវត្សទៅហើយ។ ភាពផ្តាច់មុខនេះ ត្រូវបានប្រកួតប្រជែងដោយការលេចឡើងនូវមហាអំណាចសេដ្ឋកិច្ចថ្មីៗដូចជា ចិន ឥណ្ឌា និងប្រេស៊ីល។
- ❖ ដោយសារតែការគ្រប់គ្រងបច្ចេកវិទ្យាខ្សែកាបអុបទិកក្រោមទឹកមានសារៈសំខាន់សម្រាប់សេដ្ឋកិច្ចសង្គម និងអំណាចយោធា ប្រទេសលោកខាងលិចមួយចំនួនរួមទាំងសហរដ្ឋអាមេរិកផងដែរ នៅតែមានបំណងចង់រក្សាតំណែងជាអ្នកដឹកនាំពិភពលោក និងឥទ្ធិពលដ៏យូរលង់របស់ពួកគេ។ ខណៈពេលដែលប្រទេសមហាអំណាចទាំងនោះស្ទើរតែកាន់កាប់ផ្តាច់មុខក្នុងការពង្រាយ និងដំណើរការប្រព័ន្ធខ្សែកាបទាំងនោះ ការវិនិយោគថ្មីៗបានលេចឡើងមកពីទីផ្សារថ្មីនៅអាស៊ាន ដែលជាតំបន់មួយមានអត្រាកំណើនខ្ពស់។ កំណើននៃការប្រកួតប្រជែងនេះ គឺមានសារៈសំខាន់ណាស់សម្រាប់ការគ្រប់គ្រងយុទ្ធសាស្ត្រនៃសន្តិសុខបច្ចេកវិទ្យាគមនាគមន៍ដែលមានខ្សែកាបក្រោមទឹកជាហេដ្ឋារចនាសម្ព័ន្ធគ្រឹះ។
- ❖ អត្ថបទនេះពិនិត្យមើលទៅលើភូមិសាស្ត្រនយោបាយនៃបច្ចេកវិទ្យាទូរគមនាគមន៍ ដែលរួមមាន 5G បណ្តាញទូរស័ព្ទចល័ត និងអ៊ិនធើណែតដែលគូសបញ្ជាក់អំពីការប្រកួតប្រជែងអំណាចជា សកលដើម្បីគ្រប់គ្រងលំហសមុទ្រ និងលំហបច្ចេកវិទ្យាគមនាគមន៍។ ចុងបញ្ចប់យើងពិនិត្យមើលអំពីទិដ្ឋភាព 5G និងបច្ចេកវិទ្យាគមនាគមន៍ ដើម្បីបង្កើនការយល់ដឹងរបស់យើងអំពី សក្តានុពលនៃជម្លោះបែបជាតិនិយមរវាងចិន និងអាមេរិក និងការប្រកួតប្រជែងរបស់ពួកគេដើម្បីភាពឈានមុខផ្នែកបច្ចេកវិទ្យាទូរគមនាគមន៍។

Introduction

The cyberspace has become an absolute necessity for mankind to be connected globally. It has become the new ‘home of the mind’ and has placed an unprecedented demand on communication networks. Cyberspace, in this emerging new world order, has to play a crucial role in both socio-economic situations for sustainable development and military communications. The world economy and security are highly dependent on submarine communication cables because they are the only path for telecom and internet communications. By holding the monopoly (more than 90%) of telecommunication data of the world, maintaining the dominance over the control of submarine optical cables is paramount for established powers of the 20th century. The recent emergence of China and India in the submarine cables and telecommunication industries is perceived as a threat to Western hegemony over the rest of the world because it is causing a shift in global geopolitical balance. The recent China-US trade war, the 5G paranoid narrative and more recently the politicisation of the COVID-19 pandemic are symptoms of this global power shift.

Brief History of Submarine Sea Cables

Designing the transoceanic submarine cables has been a quest for more than 160 years. The redundancies it can offer give it a geo-strategic importance since the submarine cables were born in 1820. The British first used telegraphy technology to consolidate their imperialistic expansion across the globe. Following the two World Wars, the US exerted their hegemony during the telephony era (1950s to 1980s). That period saw the technological transition from copper cables to fiber optic cables. Starting from the late 1980s, the rise of BRIC nations (Brazil, China, Russia and India) changed the dynamics of power struggle for the dominance of submarine cable era. The monopoly of Europe-US in laying submarine cables was fiercely challenged by those emerging technology powers (UNEP 2009).

Western Dominance Over Submarine Telecommunication and the Rise of the Rest

The Internet as we see today grew out of an American military project called DARPA net or ARPANET (Advanced Research Projects Agency Network), which was founded in the 1960s with the goal to enhance intelligence activities during the Vietnam War. It is the first computer network that was born in the context of military intelligence. The Internet was a tool to collect intelligence abroad and at home, and “so the computer networks, which became the Internet, functioned as sensors in society in order to monitor unrests and demands.” (Jutel and Levine 2018, 3). Hence, the Internet is a surveillance weapon that was used for decades by many countries, whether they are democratic or authoritarian. Jutel and Levine (2018, 6) wrote, “To sell the Internet as a technology of democracy when it’s owned by giant corporations is ridiculous.”

In the last four decades, the Internet has been used increasingly in banking, insurance, e-commerce platforms (Alibaba, Amazon, etc.), socialising (Facebook, WeChat, etc.), and searching for things (Google, Baidu, etc.) creating its own world in cyberspace and accelerating internet economies. The importance of cyberspace does have the global implication of power and gives a new paradigm to the changing dynamics of conflicts among nations. The cyberspace is part of the “Anti Access/Area Denial” or A2/AD strategy (Russell 2017, 3–6).

As we examine the cyberspace, analysing its infrastructure becomes very critical as it makes the internet work, like DNS (Domain Name Service), ISP’s (Internet Service Provider) and ICANN (Internet Corporation for Assigned Names and Numbers) (ICANN 2020).

The physical layer of cyberspace comprises of submarine optical fiber cable, cell towers, satellites, servers and computers for voice and data communication. The submarine cable is carrying more than 99% of the voice and data traffic of the entire world, while satellites carry only 1% of the data with a speed that is 5 times slower. The cable landing station (CLS) is where submarine cable connects with terrestrial networks through a backhaul system. Submarine cable has the capability to meet the demand of the bandwidth hungry technologies like Internet of things (IoT), virtual reality and cloud computing. The cable landing station is a critical component of a submarine cable system contributing towards the geo-strategy and geo-economic influence for competing nations.

The current traffic indicates towards higher network bandwidth demands in the near future. Here various global players are competing for equipment or components inside cable landing stations. As of now in 2020, our ocean floor has 406 active submarine optical cables stretching over 1.2 million km in service globally. Amazon, Facebook, Google, and Microsoft own or lease more than 50% of global submarine cable capacity. These cables allow US\$10 trillion in transactions every day while the Internet bandwidths are distributed unevenly globally. It is worth noting that there are around 100 cable breaks per year due to natural disaster. The ever-increasing maritime conflict further adds threats to our cyberspace and can be a disaster to macroeconomic development of emerging nations.

In the past few years, the submarine cable investments have shifted towards emerging markets with ASEAN as the highest growth rate region in the world. There is a strong correlation between bandwidth and GDP per capita, and a weak submarine connectivity is an obstacle to sustainable human development and keeps countries detaching from efficiencies of being part of the global digital economy moving towards Industry 4.0 or Globalisation 4.0 (World Development Report 2016).

In the last decade, the submarine cable has shifted towards emerging markets (Mordor Intelligence 2020). The surge in demands for submarine cables has led countries like the US, China, Russia and a few others to seek to control or wield their influence over the global networks under the ocean delivering the Internet, especially in the Asia Pacific region.

According to the British Think Tank Policy Exchange's 2017 Report, the power of submarine cables enabled 15 million financial transactions per day and US\$10 trillion financial transfer per day. This think tank raised some essential questions. Why are cables so vital to national and global security? Why are cables essential to the global economy? What are the threats to submarine cables? Is the international law adequate to protect submarine cables?

If we look at the length of the cables from both the users' and suppliers' perspectives, Huawei looks pale compared with American, French and Japanese firms. From the users' side, in 2016, Google owned 112,000 Km, Facebook 91,859 Km, Microsoft 6,605 Km, and Amazon 30,557 km. From the suppliers' side (2015–2020), SubCom laid 100,000 Km of cables, NEC 68,000 Km, ASN 49,000 Km and Huawei 6000 Km (TeleGeography 2020; Submarine Telecoms Forum 2020; Broad Band Now 2020; Huawei Marine 2020).

The race to control the submarine cables and the sea above have further added tension to the current geopolitical crisis of seeking to control the market and governance of submarine cables and subsequently the dominance of the cyberspace. All the considerations mentioned above raised crucial geopolitical questions about these cables that represent the vital infrastructure that fundamentally support not only the Internet economy but all the security challenges that are inevitable in this era of cyberspace (Policy Exchange 2017; United Nations 2020; UNCLOS 2020).

Geopolitics of Submarine Cables

The discussion above has amply demonstrated the essential functions of submarine cables in national and global economies in the era of globalisation of communication that we live in today. But this is not an entirely new phenomenon. As discussed above, even in the 19th century it was understood that socio-economic and commercial development required a communications system that was relatively secure and to a large extent unhindered by national borders. Already then it was clear that improved communication would be essential for development. It would also become an object of rivalry between states, and that those who were strongest in technological and military terms would most likely dominate the field of communications as well, leading to a sharp division between the haves and the have-nots.

Submarine cables became an essential feature of hard power, the capabilities of states to use communications as part of the components of power traditionally understood in international relations and foreign policy, such as military capability, hardware (tanks, planes, artillery) and human assets (the public and private as well as specialists in communications). Communications became increasingly crucial elements in soft power as well, through imaging, transmission of intelligence, entertainment, propaganda, and the escalating contest over how others perceive you and your country's achievements. The importance of both hard and soft power was discussed by major analysts decades ago (Nye Jr. 2009, 160–163). And, given a variety of factors including some discussed above, the US became the dominant player in the

soft power competition. One of the reasons for this was the near dominance of the US in the development of the Internet and telephone communications. A crucial aspect of this dominance was the advantage the US and its allies had in the construction and maintenance of submarine cables.

Several factors have combined together to change this landscape of near American dominance. First of all, the explosive development of China as an economic, military and technological superpower has begun to challenge the US hegemony in all areas of power, be they hard or soft. In fact, in some areas China is ahead of the US technologically. Secondly, the Chinese state view power as a composite and drive their development forward through smart policies, which at least at this time appear to have an advantage over the sometimes chaotic and competitive policies found in more open societies.

While it is possible that the creative forces unleashed by such a competition will prove superior to the more directed policies of the Chinese, this is by now by no means certain, a fact that explains the near panic in the US over the Chinese advances in 5G technology, as evidenced by the frantic efforts by Washington to bar others from buying into Huawei and other Chinese developers. This 5G pivotal juncture is another Sputnik moment for the US (Atlantic Council 2019). This multifaceted revolution has enabled the Chinese to go on the offensive campaign in many areas of technology. And in order to compete successfully, the Chinese leadership knows that the control over, or at least more influence in the management of the nexus of communication, namely submarine cables, is necessary.

A final factor in this complex development is the decline of the US as a global power, as discussed by many analysts. This decline may be explained by the cycle of history notion (that states grow and then decline, like the human body) or by, certainly in the last three or four years, a US foreign policy that has focused on isolationism and conflicts with presumptive or real allies and its disastrous approach to China, which has resulted in a trade war and open verbal confrontation, mostly in a cynical display of opportunism rather than of a strategic policy based on the facts of life in international relations. Under these circumstances, there is no incentive for China to cooperate with the US in a crucial field such as telecommunications.

It should be made clear that Beijing has a strategy of its own and that the Chinese actions in the competition for the nexus of communication, especially submarine cables, are part of a long-term and overall quest for China to be a competitor with the US for global influence. Other parts of this strategy are the Belt and Road Initiative (BRI), the increased involvement with less developed countries in economic terms, and as a promoter and protector of major international organisations such as the World Health Organization (WHO) during the COVID-19 pandemic. Against this, the Trump Administration offers a sharp and opposing narrative based on exceptionalism and protectionism while disengaging from many multilateral organisations or international agreements. At least for now, there can be little doubt as to who

is winning in this geopolitical competition and the crucial battleground to maintain the current US dominance over the submarine cable system.

The US's near monopoly in cable construction and management is being challenged not only by China, but also by Brazil, Russia, India, and members of ASEAN. Still, it is the challenge from Beijing that worries Washington the most (South China Morning Post 2019). Against this US quasi monopoly over the submarine cables, Huawei together with Unicom, China Telecom, and the China Ministry of Industry & Information Technology have recently submitted a revolutionary standard for network technology to the International Telecommunication Union (ITU). This transformative approach to the "New IP" (Internet Protocol) proposed by China has won the support of Russia. This alliance will certainly create a new geopolitical landscape for the global battle to control the fundamental infrastructure of the Internet. The RIPE/EU have already expressed a clear opposition to China's proposal for a new IP system. The EU is of the opinion that the establishment of Internet standards should be the prerogative of the Internet Engineering Task Force (IETF) rather than of the ITU/UN where political influence prevails over technical evidence (Belt and Road News, 2020).

There is abundant literature on this subject. Malecki and Hu (2009) provided a comprehensive overview of this competition in the Annals of the Association of American Geographers. Rishi Sunir also discusses the essential insecurity of submarine cables in Policy Exchange (Malecki and Hu 2009). Winseck (2017) examined the issue of cables in The Geopolitical Economy of the Global Internet Infrastructure. More articles can also be found in various media publications, such as in (South China Morning Post 2019), Japan Times (The Japan Times 2019) and The Wall Street Journal (The Wall Street Journal 2019). The conclusion of all these pieces of research is that the geopolitics of cyber conflict is increasingly playing out in the case of submarine cables, the life nodes of communication and commerce in the globalised world in which we live. This is an epic struggle that will have to be resolved through compromise and cooperation, not trade wars and confrontation. For now, the Chinese challenge to earlier US dominance is a crucial aspect of submarine cable geopolitics.

The opinions expressed are the author's own and do not reflect the views of the Asian Vision Institute.

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