Chinese Aerospace Along the Belt and Road

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Introduction

One of Xi Jinping's global projects to make the China Dream a reality is the "一带一路/ One-Belt One-Road" project, since rebranded in English as the Belt and Road Initiative (BRI). This initiative has evolved from a trade and infrastructure plan involving a handful of countries residing along ancient and modern trade routes to a multi-trillion-dollar global enterprise with more than 150 governments and organizations participating. The social and economic impact of this project affects, in some way, nearly two-thirds of the earth's population. As the BRI evolves, key industries, such as the aerospace sector, have found an ever-expanding set of opportunities to connect China with the international community and for China's People's Liberation Army (PLA) to reach further and further outside their defensive periphery. Key BRI partners, such as Pakistan, will continue to emulate the perception of a positive model for the rest of the developing world and illustrate how cooperating with China in the civil, military, and space domains can develop a "win-win" relationship and further promote Chinese influence abroad.

This paper examines some of China's aerospace components within the context of the Belt and Road Initiative to discover how the BRI enables these components, if at all, and how China might leverage the BRI to increase PLA overseas presence.

The Belt and Road Initiative

In September 2013, General Secretary of the Communist Party of China Xi Jinping, announced a major foreign policy program that would both reinvigorate and revolutionize

China's foreign trade and infrastructure strategy, the 一带一路, originally simply translated into English as the "One Belt One Road", initiative. Based on the ancient Silk Road, which established routes connecting China with West Asia, East Africa, and Southern Europe, Xi's new plan aims to connect and expand China's overland and maritime trading routes in such a way as to reclaim China's place as the "Middle Kingdom" (中国) and establish itself as a new global trading superpower. This ambitious foreign policy is now more formally referred to in English as the "Silk Road Economic Belt and the 21st Century Maritime Silk Road" (丝周之路经济带和 21 世纪海上丝周之路) or more commonly known today as the Belt and Road Initiative (BRI).

In antiquity, the China Silk Road opened avenues of trade that linked, many for the first time, cultures and continents. It opened the door to a whole world of opportunity and possibility. Today, the Belt and Road Initiative seeks a similar outcome, albeit on a grander scale. as China's influence and reach has expanded over the past half century. General Secretary Xi has promised that through his Belt and Road Initiative China can "embark on a path leading to friendship, shared development, peace, harmony and a better future" and transform international relationships "featuring win-win cooperation" in an effort to create a "community of common destiny".[1]

At the time the BRI concept was originally introduced in Kazakhstan in 2013, the initiative focused primarily on the building of infrastructure to promote trade and cooperation along the overland "belt" and the maritime "road" with just a handful of willing partner countries. In just over 6 years the BRI has expanded into nearly every business sector on the globe, and even into outer space, officially bringing together over 150 countries and international organizations.[2] BRI touches 4.4 billion people, the majority of whom are in developing countries, roughly 62% of the global population.[3]

To complement the Silk Road Economic Belt and the 21st Century Maritime Silk Road, there now exist many specific areas of enterprise and cooperation, namely: The Digital Silk Road (数字丝绸之路), the Arctic Silk Road (北极丝绸之路), the Air Silk Road (空中丝绸之路) and the Space Silk Road or the Spatial Information Corridor (空间信息走廊), just to name a few. Of all that falls under the umbrella of the BRI, it could be easily argued that the aerospace

component of the silk road, in particular the space domain, represents the largest part, especially in terms of its broad application and ability to reach out and touch the global community.

PLA Aerospace Power Along the Belt and Road

Dissecting the BRI in order to discern those specific areas and projects that could have potential military application for China is extremely difficult for a variety of reasons. First, China has always officially held to the standard that the BRI has never, and will never, have any military application. The BRI has always been sold to the world as a commercial and economic venture to bring peace and harmony to willing participants. China claims the BRI and has no relation to alliances in the geo-political or military realms (“不是搞地缘政治联盟或军事同盟”). [4] This policy was further reinforced in a May 2017 Ministry of National Defense (MND) press briefing when a reporter requested clarification after stating that public opinion reflected a fear of Chinese military expansion via the BRI, to which the MOD spokesman replied that the fears were unfounded and that the BRI has no military or geo-strategic intent (“一带一路合作倡议没有军事和地缘战略意图”).[5] For this reason it is likely that any official statement indicating a BRI-PLA relationship will be forthcoming.

Second, as the BRI has expanded over the past several years, the lines have been blurred as to what actually constitutes an official BRI project. Jonathan Hillman, Senior Fellow, Simon Chair in Political Economy, and Director, Reconnecting Asia Project at the Center for Strategic and International Studies (CSIS), put it this way:

> “The BRI is also breathtakingly ambiguous. There is no official definition for what qualifies as a BRI project. There are Chinese-funded projects in countries not participating in the BRI that share many of the same characteristics. The BRI was officially launched in 2013, but projects started years earlier are often counted. The BRI brand has been extended to fashion shows, art exhibits, marathons, domestic flights, dentistry, and other unrelated activities. The BRI’s loose, ever-expanding nature, and a lack of project transparency, have led many observers to exaggerate its size. When

assessing the BRI, there is always a risk of imposing order where, by design, it does not exist."[6]

Understanding these two points is essential when attempting to decipher the relationship between the PLA and China's growing influence along the Belt and Road. While not the driving force, it is clear that there is a role for PLA to play. The 2019 white paper, entitled "China's National Defense in the New Era" outlines these roles:

> "Overseas interests are a crucial part of China's national interests. One of the missions of China's armed forces is to effectively protect the security and legitimate rights and interests of overseas Chinese people, organizations, and institutions. The PLA actively promotes international security and military cooperation and refines relevant mechanisms for protecting China's overseas interests. To address deficiencies in overseas operations and support, it builds far seas forces, develops overseas logistical facilities, and enhances capabilities in accomplishing diversified military tasks. The PLA conducts vessel protection operations, maintains the security of strategic SLOCs, and carries out overseas evacuation and maritime rights protection operations".[7]

The PLA logistical support base established in Djibouti in 2017 is a good example of this type of support function. PLA operations from this location include providing maintenance and other logistical assistance to escort task groups providing needed security for China's critical trade routes in that region. They also conduct HA/DR and anti-piracy missions. If any growth in strength of PLA assets abroad were to occur, it would likely serve a support function similar to what we see in East Africa. Despite their continuing struggle to redefine their operational mission set,[8] it is unlikely that the PLA Air Force (PLAAF) will have a major role, these types of operations will likely continue to fall under the PLAN's jurisdiction, protecting trade routes to ensure unimpeded access to the critical natural resources that China depends on. As important as the overland "belt" is to China, the waterways and trade routes making up the Maritime Silk Road are of paramount concern as 80% of the world's shipping takes place over the oceans, ensuring a lasting need for PLA Navy participation. It is this relationship between the BRI and the PLA, specifically the Navy, that will likely continue to expand if the Belt and Road continues to attract more international partners. However, this is not to say that the PLAAF does not also contribute; aerospace-related activities in Pakistan illustrate this point.

Pakistan is a great model for how future PLAAF collaboration can strengthen partners' relationships and even greater reliance on Beijing. The China-Pakistan Economic Corridor (CPEC/中国-巴基斯坦经济走廊) has, since the beginning, been the flagship for China/BRI cooperation. To date, Pakistan has secured over $60 billion in infrastructure-funded projects from China and is already feeling the pinch as some of the payments on these loans become due. But beyond the peace-promising projects along CPEC, a growing military industrial alliance is working to produce Chinese-designed next-generation jet fighters. Although Pakistan has already been producing the Chinese JF-17, a newly negotiated deal that falls under the Belt and Road Initiative seeks to expand this alliance to include navigation and radar systems as well as onboard weapons.[9] Likely the most troubling aspect of this deal is that it exposes, for the first time, a specifically military component of the Belt and Road, very much unlike that which has been sold to the world as a peaceful policy to bring about the often-touted "community of common destiny". To add an even more worrisome aspect of this relationship: Pakistan has been given access to the sector of China's satellite network that provides military services to the PLA, i.e., guidance systems for weapons, aircraft, ships, etc. The Pakistan model is a success story for China, and illustrates to other countries in the region what an alternative to reliance on American weapons could look like. China and Pakistan have been eagerly proselytizing the sale of the JF-17 to several African countries as well as Iran, Turkey, Venezuela and others.[10]

Aerospace Related Foreign Military Arms Sales

According to research conducted by the Stockholm International Peace Research Institute (SIPRI), China is the global leader in the export of combat unmanned aerial vehicles (CUAV) and UAVs, such as the Wing Loong I and II.[11] These CUAV/UAVs, largely produced by the Aviation Industry Corporation of China (AVIC), are primarily used for Intelligence, Surveillance, and Reconnaissance missions and have strike capability. Historically, these types of sales have been offered in Asia, primarily to Pakistan, Myanmar and Bangladesh. However, recently sales of these systems have found their way into various parts of the Middle East, Africa and even Latin America. What's interesting about the SIPRI report is that China became the leading exporter in the period extending from 2014-2018, precisely the time the Belt and Road was gaining steam in these regions. By way of comparison, in the period of 2009-2013 China

only exported 10 CUAVs to 2 countries. Then, after the announcement of the BRI, China exported 153 CUAVs to 13 countries. Again, it is worth reiterating that it is difficult to associate these sales specifically to Belt and Road contracts, but the numbers seem to suggest that there is some correlation.

The Space Silk Road or Spatial Information Corridor – 空间丝绸之路/空间信息走廊

Another aerospace component linked to the Belt and Road falls in the domain of space. China is not alone in acknowledging the importance of space as a critical domain relative to national security and economic dominance. The vastness of this domain and the unknown possibilities that wait in this frontier cannot be underestimated. The United States can expect more intense competition from China and Russia, and will need to seek a more aggressive approach in this area of global competition. A recent Air Force Space Command report put it this way: "China is executing a long-term civil, commercial, and military strategy to explore and economically develop the cislunar domain with the explicit aim of displacing the U.S. as the leading space power."[12] Indeed, China has not been idle with regard to their ambitions in space.

China has been accelerating their focus and development on space programs at an unprecedented rate, achieving milestones and completing technological firsts unlike any other space-peer in the world. The 2019 landing of the Chinese robotic lunar probe, the Chang'e 4 on the far, or dark-side of the moon illustrates such a "first" and was an amazing technological feat considering that China had only succeeded in sending a man into space for the first time 16 years ago. This accomplishment was groundbreaking for a number of reasons. Prior to the Chang'e 4 launch China had to position a communications relay satellite above the dark side with line of sight to receiving stations on earth in order to transmit data and communicate with the YuTu 2 rover. They also had to consider the long and cold, two-week lunar nights and the impact it would have on the solar powered rover. To even further illustrate the point of their proactive approach, China has already laid out plans for a lunar base and subsequent missions to Mars, although no Chinese taikonaut (Chinese term for astronaut) has yet to have stepped foot on the moon. Truly China has set for themselves far reaching goals to take advantage of this important domain. With regard to China's goal to land a man on the moon, their primary obstacle was the lack of heavy launch capability. In January of 2020 this obstacle was finally removed with the

successful launch of the Long March-5 rocket, setting the stage for manned missions to the lunar surface, and beyond.

In a 2016 white paper on their space activities, China laid out their vision to "promote strong and sustained economic and social development, to effectively and reliably guarantee national security, to exercise sound and efficient governance, *and to carry out mutually beneficial international exchanges and cooperation*" and further "to provide strong support for the realization of the Chinese Dream of the renewal of the Chinese nation, and make positive contributions to human civilization and progress."[13] From this statement it is clear that China not only sees their goals in space as vital to national pride but also an essential part of promoting international (BRI) cooperation, hence the unveiling of the Space Silk Road, or The Belt and Road Spatial Information Corridor. Of all that President Xi Jinping's Belt and Road Initiative encompasses, no other Chinese enterprise has the capacity to link the Middle-Kingdom with the global community like the applications and opportunities available under the umbrella of the Spatial Information Corridor (SIC), including their own soon-to-be-completed Beidou Navigation Satellite System (北斗卫星导航系统) or BDS.

In 2016, the National Development and Reform Commission and the State Administration of Science, Technology and Industry for National Defense (SASTIND) issued guidance relevant to the application of the SIC and its implementation within the Belt and Road Initiative.[14] Primarily, the purposes of the SIC would be to provide market-oriented services to BRI countries. These services would include communications, imaging, and broadcasting technology. China seeks BRI-partner governments to play a role by purchasing more spatial data, thus augmenting existing projects under BRI as well as providing these services under public-private partnerships, or PPP. Obviously Chinese companies, such as the state-owned China Great Wall Industry Corporation (CGWIC) have much to gain by such partnerships by providing launch services, satellite construction, and other logistical services to these countries, who otherwise, would have few options for getting into space. Some examples of these types of partnerships are not difficult to find. Cambodia, Laos, Indonesia and even the Belarusian State University have all signed agreements for CGWIC to build and launch satellites. Gwadar Port in Pakistan signed a service agreement for satellite communications to provide round-the-clock communications services for domestic use and for communicating on infrastructure and other

BRI projects with Beijing.[15] China Satcom has upgraded communication services, to include video conferencing and internet access to businesses in Ethiopia. The list goes on. The National Development and Reform Commission has listed at least 30 countries with space cooperation agreements with China though not all involve the building and launching of satellites (see appendix for list of countries for which China has launched satellites).[16]

In related agreements, China is collaborating, and transferring space technologies to countries like Egypt in an effort to expand their relationship. On Saturday, 7 September 2019, a ceremony was held to begin the implementation phase of an agreement, signed in January of 2019 between China and Egypt to cooperate on the Egyptian MisrSat II satellite project during the China-Arab States Expo in Yunchuan, Ningxia, China.[17] China is not only granting funding worth $72 million for the high-resolution remote sensing satellite but Chinese experts will be working with Egyptian teams to work collaboratively on the project which is expected to take about 3 years to complete. Although the design phase will be carried out in both countries, manufacturing and assembly of the satellite will take place at the Egyptian Satellite Assembly, Integration and Test Center. As part of this BRI agreement, Shi Pinguan, Senior Vice President of the China Academy of Space Technology,[18] pointed out that Chinese experts will also train Egyptian counterparts in the areas of space science and technology.[19]

Despite the popularity and general acclaim that the spatial information corridor has received, there does appear to be a potential downside for participating countries. Partnering with China's space-based networks will provide needed communications and spatial data to needy countries, but this data can, and likely will, also be used by China for their own purposes. This isn't to say that China has nefarious intentions in all cases, but it will likely find beneficial uses for the shared spatial data that might result from that relationship. China also benefits from these networks as they spread across the globe, expanding channels and providing venues through which China's official news agencies, like Xinhua News, can "tell Chinese stories", "spread Chinese voice", and "interpret Chinese characteristics".[20] As has been foretold, China will be much more able and effective, using their technological expertise and global exposure, to influence current partner nations and potentially new ones, in an effort to realize Xi's goal of the China Dream of National Rejuvenation. Despite these potential downsides, China's dream to become a space superpower does offer developing countries opportunities to develop a space program that otherwise would be nearly impossible for them to do. With China's help, countries

like Sudan can have their own satellites, conduct experiments and eventually even send Sudanese astronauts into space, at a price of course.

Beidou Satellite Navigation System – 北斗卫星导航系统

The Beidou Satellite Navigation System (BDS) is China's newest space asset. Once complete, most estimates say by the end of 2020, the BDS will be a powerful addition to China's space portfolio. Currently consisting of a constellation of 50+ satellites, the BDS has been described by some as being able to provide improved positioning accuracy over that of the U.S. Air Force's GPS, Russia's GLONASS, or the European Galileo systems. Countries along the Belt and Road are eager to sign up for its services, and many already have. A diminished version, able to cover just portions of Asia, has already been operational for several years. Like other operational GPS services, Beidou has a lot to offer by way of humanitarian and disaster assistance, agriculture, weather prediction, aircraft, auto and ship navigation, etc. These services provide a huge opportunity in revenue for China, who estimates that the total market for satellite and telecommunications services will be worth about $60 billion in the coming years.[21]

In addition to the vast economic value attached to the civilian services of the BDS, there is a military application perhaps even more lucrative. One of the primary differences between the two lies in the degree of accuracy that the military side would provide. "The free civilian service has a 10-meter location-tracking accuracy, synchronizes clocks with an accuracy of 10 nanoseconds, and measures speeds to within 0.2 m/s. The restricted military service has a location accuracy of 10 centimeters, can be used for communication, and will supply information about the system status to the user."[22] Of course the difference in accuracy can be critical in warfighting environments, making the 10-centimeter claim a very big deal for potential BRI partners with military aspirations. As has already been mentioned, so far only the Pakistani Air Force has been provided access to Beidou's military applications.

The BDS, an integral part of the spatial information corridor will likely attract significantly more attention as it nears completion. As more countries sign up for its services, and 3rd world militaries make deals with China for access to its high-tech applications, China's influence will expand on a global level, shifting the space-based security environment more in China's favor.

Conclusion

Although the Belt and Road has grown in size and scope since its announcement by Xi Jinping in late 2013, little has happened to indicate a military motive behind the initiative as some worry. China continues to use the PLA in a support role, to protect their infrastructure, citizens, and interests abroad. This will likely continue as the BRI progresses.

BRI partners, such as Pakistan, should be watched carefully as they interact with China and sign up for more military/aerospace-related products, such as Beidou's military applications and the growing import of Chinese aerospace products. The Belt and Road Initiative has morphed significantly since its debut in 2013, given more time, it is possible that the BRI could take on a more military flavor.

Appendix: Satellites launched by China for Foreign Countries Since 2012

Country	Satellite	Builder	Launch Date	Cost	Funding
Sri Lanka	Supreme Sat-1/China-Sat-12	Thales Alenia Space	Nov. 2012	$100 million	
Bolivia	Tupac Katari-1	CGWIC	Dec. 2013	$302 million	85% China Development Bank
Laos	Laosat-1	CGWIC	Nov. 2015	$259 million	China EXIM Bank
Belarus	Belintersat-1	CGWIC	Jan. 2016	$281 million	China EXIM Bank
Venezuela	VRSS-2	CAST	Oct. 2017		
Algeria	Alcomsat-1	CAST	Dec. 2017	$260 million	Algerian Space Agency
Pakistan	PRSS-1	DFH Satellite Co. Ltd.	Jul. 2018	$200 million	30% Pakistan 70% China loan
France	CFOSAT	CAST and French National Centre for Space Studies	Oct. 2018		
Saudi Arabia	SaudiSat 5A & 5B	King Abdulaziz City for Science and Technology	Dec. 2018		
Thailand	High-throughput satellite	CGWIC	Est late 2019	$208 million	

Sudan	SRSS-1	Shenzhen Aerospace Oriental Red Sea Satellite Co.	Nov. 2019		
Argentina	Nusat 7 & 8	Satellogic	Jan. 2020		
Indonesia	Paluapa-N1/Nusantara Satu-2	CGWIC	Est. 2020	$220 million	
Nigeria	NigComSat-2; NigComSat-3	CGWIC	Est. 2021	$700 million	China EXIM Bank

Endnotes

[1] http://www.xinhuanet.com/english/2017-05/14/c_136282982.htm
[2] http://www.beltandroadforum.org/english/n100/2019/0426/c22-1266.html
[3] https://chinapower.csis.org/china-belt-and-road-initiative/#
[4] http://www.xinhuanet.com/2019-04/22/c_1124400071.htm
[5] http://www.mod.gov.cn/info/2017-05/25/content_4781369.htm
[6] https://www.csis.org/analysis/chinas-belt-and-road-full-holes
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[14] http://www.ndrc.gov.cn/zcfb/zcfbqt/201611/t20161123_827548.html (Chinese version)
[15] http://tbar.casicloud.com/way/application/applicationItem/detail.ht?id=10000000040002
[16] http://www.ndrc.gov.cn/zcfb/zcfbqt/201611/t20161123_827548.html
[17] https://eng.yidaiyilu.gov.cn/qwyw/rdxw/102705.htm
[18] China Academy of Space Technology-中国空间技术研究院; zhōngguó kōngjiān jìshù yán jiù yuan: a Chinese state-owned organization with over 27,000 employees and established in 1968; designs and manufactures various space “systems” covering remote sensing, telecommunications, manned spaceflight and space exploration; http://www.cast.cn/Item/list.asp?id=1665
[19] https://www.egypttoday.com/Article/3/74570/Egypt-Sat-2-launched-during-China-Arab-States-Expo
[20] Ibid.
[21] https://blogs.wsj.com/chinarealtime/2016/12/28/chinas-one-belt-one-road-takes-to-space/
[22] https://pdfs.semanticscholar.org/a85c/0f833516801a47f06f6de343e3e7e1d24540.pdf