



The Implications of China's BRI in Space with Dr. Fumiko Sasaki

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“If I have to choose the most important point coming out from this study I would say that the Belt and Road Initiative Spatial Information Corridor has enhanced China's global influence, and China can leverage it. Such influence and support may well allow China to lead the rulemaking in the United Nations, where the number of vote[s] matters. So, if Western countries want to avoid China from gaining influence through the provision of space-related projects, they should provide competitive alternatives (to these developing countries, instead of pressuring these developing countries to refuse to host Chinese projects).” - Dr. Fumiko Sasaki

Adriana Reinecke

Welcome to *Asia in Washington*, the podcast examining key questions animating debate in DC on the Indo-Pacific region. I'm Adri Reinecke, here with my co-host Dylan Harris, recording in Washington DC at the Edwin O. Reischauer Center for East Asian Studies at Johns Hopkins SAIS. You can find a transcript of today's episode on the Reischauer Center website at <http://www.reischauercenter.org/podcasts>.

Dylan Harris

Today we are joined by Dr. Fumiko Sasaki, lecturer on East Asian Security for the School of International and Public Affairs at Columbia University. Dr. Sasaki is also a fellow at the Edwin O. Reischauer Center for East Asian Studies at Johns Hopkins SAIS, where she also earned her MA and PhD. As a fellow, her research focuses on how space capabilities affect the geopolitics of the Indo-Pacific region. Dr. Sasaki has spent the past two years examining China's Belt and Road Initiative Spatial Information Corridor and China's space capabilities and its intentions, and has released four publications on the subject. Her current research theme is tailoring the space strategy of [the] Quad plus Taiwan to stabilize geopolitics in the Indo-Pacific region.

Adriana Reinecke

Today, we'll be speaking with Dr. Sasaki about her recent paper from Air University Press on the risk-benefit assessment of the Belt and Road Initiative Spatial Information Corridor (BRI-SCI). Dr. Sasaki, it's a pleasure to welcome you on to the podcast.

Fumiko Sasaki



Thank you so much for having me today. I'm very excited to be able to talk about my research here, particularly because the Reischauer Center supported this research. I'm deeply grateful for that. Thank you.

Adriana Reinecke

We're glad to have you. So, just to begin, before we dive into our main discussion, to start with a 30,000 foot question: why does space matter? And, more specifically, why does it matter what China, in particular, is doing in space?

Fumiko Sasaki

So, that is a great question to start this podcast. I know that I don't have to tell you how much our daily lives depend on satellite services. They include, as you know, weather forecasting, navigation, communication, location-based services, tracking, and many other services. Particularly, GPS also facilitate[s] financial systems and power grids by providing the global timing standardization service, and the technological development has helped increase the number of the satellites in orbit, and [the value] provided by satellites.

According to the US Air Force, 9,149 satellites are in orbit, as of August 18th this year [2022], with 4,995 belonging to the US, and about one tenth — 555 [satellites] — to China. And, as you can imagine, SpaceX alone already has more than 3,000 satellites in orbit, and plans to deploy, ultimately, as many as 42,000 total.

The global economy relies heavily on space-based services, and dependency is only growing faster. The global space economy generated \$469 billion last year. Also, US government-sponsored research reported [in] 2019 that GPS disruption alone was estimated to cost the US private economy \$1 billion a day. And remember that this number does not include the cost incurred on the public sector, such as defense operations. Also, this number of \$1 billion a day does not include the cost caused by the disruption of other types of satellites, such as communication or weather forecasting.

So, this reliance on space indicates that securing stable use of space is important for the global community, particularly the advanced countries. And when the US and China [are] acutely competing with each other globally in various fields, the US should understand what China is doing in space, because the US depends on space capabilities more than any other country. And it means that the US is most vulnerable to the disruption of such capabilities.

Dylan Harris

You note in your paper that China has grown to become a major space power. Can you give us a brief overview of China's space programs to date, and with that in mind, what exactly it means for China to be a great power in space?

Fumiko Sasaki

Yes, thank you. So, yes. Let me start with talking briefly about how China became a world-leading space power. China started its rocket building from the 1950s when Mao Zedong ordered [the development of]



satellites, rockets, and nuclear weapons. During the Cold War, the Space Race was between the US and the USSR, and China did not focus as much on developing space capabilities. But it is said that after the end of the Cold War and the first Gulf War in 1991, Beijing realized that the US will be its primary adversary in the future. And the Second Taiwan Strait Crisis in 1996 is also said to have made Beijing realize that depending on GPS operated by the US military was risky, and China would need its own version of GPS. Since then, Beijing has keenly developed its space capabilities.

Finally, for the first time in 2000, China released their first so-called Space White Paper. And the 2016 White Paper under Xi Jinping stated that space was, and would be, strategically important for every aspect of society, and China would aim to become a space power. Becoming a space power was also identified as a part of China's rejuvenation. Similarly, let me add that China also released a Space Infrastructure Plan in 2015 that indicated that space was critical infrastructure for China and China had to establish it. The last Five Year Plan, released last year [2021], also prioritized space as one of the most important fields in allocating national resources.

Thanks to these priorities, China has been very successful in developing space capabilities in a short amount of time. For example, let me pick up a couple of success stories. China first succeeded in its first manned spaceflight in 2003, about 20 years ago. Then [a] Chinese rover landed on the far side of the Moon in 2019, and [in] March last year [2021], China completed the global coverage of its own GNSS BeiDou system in 2020. And China will complete the construction of its own space station in a few years.

Adriana Reinecke

Thank you so much. I think that was a great comprehensive overview, and it's clear from what you've just told us that space is a priority for China. So, I guess the next question that I'd really love to ask you is, China's Belt and Road Initiative is a long-standing hot topic among both academics and practitioners, but I imagine that many of our listeners will be much less familiar with the Spatial Information Corridor component of it. So, can you maybe tell us a bit about what exactly the SIC is and how it relates to the BRI, both conceptually and physically?

Fumiko Sasaki

Yeah, thank you. So the Belt and Road Initiative Spatial Information Corridor is a project created in 2016 to promote a China-centered global market for its space industry, because China — and particularly, Xi Jinping — is so keen and enthusiastic to develop [the] Chinese economy. The ultimate goal of the Spatial Information Corridor is to accelerate Chinese economic growth, which is critical for the Chinese Communist Party to continue to rule the nation. Basically, the space industry includes all space-related activities such as manufacturing and launching satellites, [and] building ground facilities and user segments that utilize space-generated data and information.

According to the official guideline[s] of the Spatial Information Corridor, the most important principle of the project is — no surprise — to follow Xi Jinping's thoughts. That is, in practice, to promote military-civil fusion, which means that everyone has to work on this and create win-win international cooperation. So, the Guideline[s] also [say] that this Spatial Information Corridor project should be government-guided, demand-oriented, and application-focused. The Guideline[s] also [emphasize] that market forces



and commercial enterprise should drive technological innovation and resource allocation for this information corridor. In fact, I identified 108 space-related projects that will be regarded as part of this Belt and Road Initiative Spatial Information Corridor. They include projects such as building and providing satellites, ground stations, or signal receivers; sharing Chinese space-related data; creating space-related industry perks; and educational and training programs.

So, these are very, very supportive of the Belt and Road Initiative itself in three ways. First, the Chinese government sees this Spatial Information Corridor as useful to accelerate the development of other Belt and Road Initiative projects — such as construction of ports and highway[s] — because these satellite services can facilitate such [construction] by providing positioning, navigation, and timing services, as well as satellite images and communications. Second, [the Chinese space industry benefits] from becoming a part of this Belt and Road Initiative, the pet project of Xi Jinping. That means that, now, Chinese central, as well as local officials, all support [the] Chinese space industry, because if they support these space industries, that will give them credit that they're supporting Xi Jinping's project. Third, China understands the importance of information and data in today's economy. The original BRI — Belt and Road Initiative — projects are all hardware, such as natural resource mining and construction of various infrastructures. But China wants to shift its focus more to its own software industries, and particularly, information on data industries. Space provides data and information. [The] Spatial Information Corridor is the future direction of [the] Belt and Road Initiative.

Dylan Harris

So, clearly, space is a key priority for the Chinese Communist Party. Can you expand a bit about the infrastructure involved in the Spatial Information Corridor and how it ties in with the terrestrial BRI?

Fumiko Sasaki

So, I will tell you that the major and perhaps most important component of this Belt and Road Initiative Spatial Information Corridor is the BeiDou Satellite System. We call it 'BDS'. So, the BeiDou system is a Chinese version of GPS, a Global Navigation Satellite System (GNSS). It is used for both military and civilians, and is also officially operated by the Chinese National Space Administration. Its global coverage was completed in 2020, and the BDS — the BeiDou system — has 35 satellites and is the largest GNSS [constellation] to date — even more than GPS. The official Chinese document says that BDS was developed, quote, "To meet the needs of China's national security, as well as economic and social development," and "Providing continuous and stable reliable services for the global users." [quote] And, interestingly, according to Nikkei, in 2019, in 85% of the world capitals, which is 165 capitals out of 195 countries, BeiDou satellites can be seen more than the GPS satellites. So in this way, yes, the BeiDou system is very important for the Belt and Road Spatial Information Corridor.

Adriana Reinecke

Thank you so much. I guess more to that point, can you talk a little bit more about how this Beidou Satellite System is benefiting China? So, how exactly is it contributing to advancing the CCP's national security and economic agenda, and what are the key implications of that?

Fumiko Sasaki



Okay, yeah, great question to understand why this matters, right? Why [the] Beidou system matters for America and the world. So, in terms of how [the] BeiDou system benefits China, it has increased China's capability in three ways: militarily, economically, and diplomatically. First, the BeiDou system materially enhanced China's national security, which is the primary goal of BDS, the BeiDou system. China had pursued its own GNS instead of using GPS since 1994 to avoid reliance on the American-operated GPS, and China succeeded. Second, China uses [the] BeiDou system as a critical vehicle to develop its economy. A recent official document described the BeiDou system as one of the emerging industries that increased the core competitiveness of China's manufacturing. It is because the Chinese government sees data as one of the most precious capitals today, and the BeiDou system generate[s] data. Third, [the] BeiDou system provides national pride to China. President Xi emphasizes that becoming the world's leading country is the top national goal. So far, only three countries — the US, China, and Russia — have [a] global navigation system — a real global system. It's certainly enhanced China's status in the world. In sum, the key implication of China running the BeiDou system with huge cost[s] is that the system has made China more secure and more equipped to develop [a] data-driven economy.

Dylan Harris

Thank you for that explanation, Sasaki-san. For those countries in the Asia-Pacific and Africa that are accessing BDS services, does that present a potential strategic vulnerability for China? For example, theoretically, any country plugged into the BDS network should also have access to its improved GNSS services over China as well as the rest of the world. How do you think this would affect China's ability to capitalize on this opportunity without endangering its security interests?

Fumiko Sasaki

Honestly, I do not think that providing the BeiDou system — in practice, navigation and timing services — to other countries makes China vulnerable because it is a one-way provision from China to others. That is like 5G network provision. Just providing Huawei services to, for example, Kenya, does not make China more vulnerable. So, because China does not have to invest much money to host countries of BDS — the BeiDou system services — China does not have to worry about background risks, either, like China is having by providing posts and other very expensive infrastructures in the world. And this is why the US is willing to provide its GPS services to any country in the world, assuming that [there is] not much risk to doing so. So, the US knows the cost is not as much as the benefit to provide GPS services for free.

Adriana Reinecke

Thank you so much. So, it sounds like China stands to gain a lot from the BeiDou system and also just the SIC in general without too much risk to it, but I'm curious if that is true for some of its host countries. So if we could just move to talk about the impact on the countries that are receiving these services. You allude to the benefits of the BRI-SIC projects that can be provided to host countries, particularly in disaster prevention and preparedness and economic growth. What other potential benefits do recipient countries stand to gain from hosting the BRI-SIC?

Fumiko Sasaki



So, of course, depending on the project, the benefit of hosting the Belt and Road Initiative Spatial Information Corridor project differ. But, generally speaking, I will say that the benefit[s] [outweigh] the risks for the host countries. So, first of all, let me tell you that I basically identified five benefits [to] hosting the Spatial Information Corridor.

First, is that the Spatial Information Corridor — so the space-related service[s] — enable the infrastructures of the host countries. So, particularly, the positioning, navigation, and timing services, and communication and remote sensing images can facilitate the very important [infrastructure] operation[s] or maintenance. And second, is [the] commercial benefits: that the host countries can use the data or information provided by China, or the satellites provided by China to generate profits. Third, national security benefits: data from satellites are dual-use. Some can be used for the military and assist national security activities.

Fourth: human security benefits. So, let me first define what ‘human security’ means. According to the UN, ‘human security’ is “to secure the survival, livelihood, and dignity of people by responses that strengthen the protection and empowerment of all people.” So, if this is the definition of human security, some satellites can be critical for the natural disaster response. Also, some data — such as positioning, navigation, and timing and satellite images — are helpful in agriculture and fisheries, which is also providing the most important thing for human life, which is food. Lastly: technological transfer. Developing countries benefit from advanced technologies and China is sometimes willing to provide joint ventures of satellite-related business or manufacturing. So, these definitely provide technological skills and [knowledge] to the host countries.

So, I identified only two major risks existing in hosting Chinese space-related services. First, unauthorized information sharing with China. And second, and perhaps more dangerous but also less likely, that Chinese services are disrupted by China. So, based on the available information, I found that all 107 projects I examined, exhibited more potential benefits than risks. And, not only that, [but] 46 out of 107 projects exhibited no risks, and 33 out of 107 projects displayed four or five benefits. And, additionally, not all countries might be [as] concerned as the Western countries with unauthorized information sharing with China. So, I would say that, overall, most of the Belt and Road Initiative Spatial Information Corridor project[s] positively impact the host countries.

Dylan Harris

Digging a bit further into your paper, you conclude that the US should indeed be concerned with China’s space-related developments, not necessarily from a hard power perspective, but more so from a soft power point of view. As BRI-SIC seeks to provide China with new data-gathering capabilities and business opportunities, do you think the pros outweigh the cons for these countries to host these projects? In other words, is this enthusiasm we have witnessed for these projects palpable for the long-term, or will there be consequences later down the line?

Fumiko Sasaki

Okay, that is a great question to think about the long-term impact of the Belt and Road Initiative spatial part of the project. So, first of all, I think that this is important, that we need to understand that all



countries want to develop their economy, particularly because the national leaders can stay in power by economic growth and prosperity. Because this BRI Spatial Information Corridor project certainly promote[s] [the] welfare of the people, most of the leaders of developing countries welcome such projects.

It is true that Chinese provision of 5G networks or using Huawei networks have been cautioned for their possibility of unauthorized information sharing with China. Nonetheless, many developing countries are willing to host Huawei. So, because national leaders believe that the benefits of hosting Huawei — such as popular satisfaction and creation of jobs — [outweigh] the cost of unauthorized information sharing with China, and this benefits leaders with votes. So, by providing jobs and satisfactions of the people, the leaders can get the votes from the people. However bad these projects [are] in the long-term, the leaders do not care about the long-term cost to the nation, but the tangible and short-term benefit[s] for them to get votes.

Dylan Harris

Considering what we have just discussed, how would you summarize the risk-benefit analysis of China's Spatial Information Corridor? For countries that perceive China as a potential threat, which elements present the greatest risk?

Fumiko Sasaki

So, there are some risks for the Western countries who see China as a threat, but, if I have to choose only one as the most important point coming out from this study, particularly for those who see China as a threat, I would say that the Belt and Road Initiative Spatial Information Corridor has enhanced China's global influence, and China can leverage it. In the West, particularly the US under the former administration, the Belt and Road Initiative tends to be described negatively. But as far as [the] Spatial Information Corridor is concerned, this study indicates that all projects benefit the host countries. And those benefits [outweigh] the cost[s], so that all countries welcome the projects. Because the host countries cannot afford services provided by commercial enterprises other than China — like the US or Japan — they appreciate China's affordable service.

In summary, answering your question, the greatest risk the Belt and Road Initiative Spatial Information Corridor project can present to the countries who see China as a threat is not so much the hard power, but soft power. In other words, the Western countries do not have to worry so much about the project enhancing China's military capabilities. Rather, they should worry that such projects will enhance China's global influence and prestige. Such influence and support may well allow China to lead the rulemaking in the United Nations, where the number of vote[s] matters. So, if the Western countries want to avoid China from gaining influence through the provision of space-related projects, they should provide competitive alternatives to these developing countries, instead of pressuring these developing countries to refuse to host Chinese projects, as Western countries have been doing. Otherwise, the Western countries will merely lose support from many developing countries.

Adriana Reinecke



Thank you so much. I think you made several really important points there, particularly talking about how China is using the Spatial Information Corridor to leverage influence. The other factor that I think you alluded to earlier, which I think is important for us to discuss, is the fact that all of these satellites are inherently dual-use, meaning that they have both military and civil applications. Is it possible to consider the civil and military uses independently, or are they essentially indivisible from one another? And what are the implications of that?

Fumiko Sasaki

Yeah, that's a good question, because dual-use is perhaps one of the most important natures of satellite use. So, when we say that most of the satellites are dual-use, we mean that, whether a satellite is military or civil is not determined by who owns it but who use[s] the data and satellite services. A great example we are witnessing now is the war in Ukraine. Elon Musk's company provided Internet services to Ukraine when such services were disrupted by Russia. In this case, the Starlink satellites are used for the Ukraine war effort, but usually they provide internet services to civilians. Similarly, Planet, [an] American satellite remote sensing data company is selling its satellite images to Ukraine to conduct the war, but the company usually sells images to civilians. So, these examples suggest that most of the satellites a country has can be used for military purpose[s] once a war starts.

Dylan Harris

Thank you, Sasaki-san, for your explanation on the dual-use aspects of space technologies. As we're wrapping this episode up, I'd like to step back a moment to consider the bigger picture. As we mentioned at the beginning, with the end of the Cold War, space enjoyed an era largely characterized by peaceful international cooperation. The past decade, however, has seen an increasing trend towards militarization. In 2019, the United States declared space one of the newest warfighting domains and founded the US Space Force. Japan similarly just established its Space Operations Group within its Air [Self-Defense] Force in 2020. The war in Ukraine has led Russia to declare its withdrawal from the International Space Station, and both China and particularly, Russia, have drawn international criticism for the dangerous debris generated by the recent anti-satellite missile (ASAT) tests. Given this context, and what we have discussed thus far about the dual-use nature of space technologies, would you say that the era of peaceful space cooperation is coming to an end? Is cooperation still possible, if perhaps in a different, more bounded form?

Fumiko Sasaki

Thank you. This is perhaps the most important question. And the quick answer to your question is no. The era of peaceful space cooperation has not ended permanently. And such cooperation is still possible and perhaps likely in the future. I'm saying this because whether countries can cooperate in space or not, is all depending on their relationship on the ground. If two countries are hostile [to] each other, they are unlikely to cooperate in space.

For example, the first cooperation between the US and USSR in space started actually in 1978, when the Cold War was in detente, the time when the hostilities [were] easing. And the cooperation over the International Space Station you mentioned, between the US and Russia started only after the Cold War. At the time, the US saw Russia as becoming a good member of the world community. It is true that even



after the annexation of the Crimean peninsula of the Ukraine, they cooperated over the International Space Station. But in the middle of the war in Ukraine, Russia said that it would withdraw from [the] ISS in 2024.

In fact, between the US and China, since the normalization of the diplomatic relationship, the US allowed its space technology to be transferred to China because [the] US thought that technological transfer to China would counterbalance the USSR. Then, [the] Tiananmen Square massacre happened in 1989. It compelled the US Congress to put sanctions on US-China human flight cooperation. After that, the Clinton administration tried to embrace China into the global system, because the administration saw China as a potential huge market for US business, and also, the US side believed at the time that [a] richer China will be more democratic. So, the administration softened the technology export restriction[s] on China.

In 1999, however — that was the end of the Clinton administration — the Cox Report, led by the Republican Congressman, concluded that China had been stealing American technologies to develop its own military technologies and the report triggered to successfully diminish US-China cooperation over space. In 2007, the European Space Agency publicly said that it would support China joining the International Space Station. But actually, still, the Tiananmen sanctions on China-US space human flight cooperation imposed in 1989 prevented China [from joining] the International Space Station. The 2011 infamous Wolf Amendment that banned NASA [from cooperating] with China in any bilateral ways was [in response to] China's human rights record.

So, this history of space cooperation suggests that once [the] US-China relationship improves, the cooperation may come back. So, if we want such space cooperation, we need to improve the relationship on the ground first. Today, the US military and policymakers are worried that China and Russia have even more advanced anti-satellite (ASAT) technologies, while China and Russia see the US space capabilities — which is predominant currently — as [an] existential threat to their own survival. Particularly, because these US capabilities [are] very useful for nuclear deterrence. All these mutual worries are due to the adversarial relationship on the ground. Without it, any space capabilities development worries no one. After all, despite continuous effort[s] by the US to keep China from developing its own space capabilities, China has developed it anyway. I really think that the US should cooperate with China in space to assess China's real capabilities, have China share important information with the US, and avoid misunderstanding in space. I really believe that it is better that [the] US has any say [in] China's space activities by getting engaged in [them].

Adriana Reinecke

Thank you so much, Sasaki-san. This has been a real treat. I know I've personally learned a lot. I hope our listeners will have learned a lot as well. It's been a pleasure having you with us on the podcast, and we very much look forward to whatever comes next from you.

Fumiko Sasaki

Thank you very much for having me today. I really enjoyed joining you. Thank you.