

Going beyond the world. China reaches for outer space.

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Space dreams

China's self-proclaimed dream is clear cut; it "aspires to become a major space power".ⁱ China's drive to become a major "space power" (taikong lilian) is the latest development in China's rise as a terrestrial "great power" (da guo). This both reflects and pushes the trend towards "globalization of space", breaking the old US/Soviet duopoly of the Cold War era and its Space Race between those two rivals. Currently, just as there is competition and perhaps power transition going on between the US and China down below in the international system and global economy, so there is competition and perhaps power transition going on up above? China's nightmare is that it will be closed out of space by the United States (US). China's space dream is of course the US nightmare. American fears about China's cumulative space advances are that they indicate China's "interest in space dominance"; in which "Beijing is making it clear that it intends to increasingly compete with the United States for pre-eminence in space, both strategically and commercially".ⁱⁱ Such mutual perceptions

create classic security dilemmas between these two great terrestrial powers, a new Cold War and Space Race emerging between the US and China.

This "space power" drive by China was outlined in China's White Paper on Space Activities drawn up in December 2016; with its call "to build China into a space power in all respects, to have an advanced space science and technology industry, to provide strong support for the realisation of the Chinese Dream of the renewal of the Chinese nation".ⁱⁱⁱ Compared to China's previous space White Papers in 2000, 2006 and 2011, the 2016 one was the first to emphasize this "space power" drive.

China's 2016 White Paper on Space Activities went on to trumpet that "to explore the vast cosmos, develop the space industry and build China into a space power is a dream we pursue unremittingly". China's "space dream" (taikong meng) of becoming a significant space power is part of the "China dream" (Zhongguo meng) put forward by Xi Jinping. President Xi has been a keen exponent of Chinese space power dreams. In his publicly shown video call on 24 June 2013 from the Beijing Aerospace Control Center to the three Chinese astronauts aboard the orbiting space module, Xi told them "the space dream is part of the dream to make China stronger"; his exhortation at the

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China Space Day introduced in 2016 was on China “building a great space power” and to “seize the strategic opportunity”; and the following year Space Day 2017 included his call that “developing the space program and turning the country into a space power is the space dream that we have continuously pursued”.^{iv}

China’s increasing space power was portrayed in soothing terms in their 2016 White Paper on Space Activities. “Cooperation” was mentioned 43 times. The White Paper made a point of listing space cooperation agreements that China had with Russia, the EU, France, Italy, Netherlands, Belgium, Brazil, Argentina, Algeria, India, Indonesia and Kazakhstan. It also listed cooperation agreements with the European Space Agency (ESA), the Asia Pacific Space Cooperation Organisation (APSCO), and the United Nations Office for Outer Space Affairs (UNOOSA). The US was conspicuously absent from such cooperative listings.

In China’s 2016 White Paper on Space Activities, “peace/peaceful” was mentioned 14 times – which echoes China’s general terrestrial reassurance rhetoric on “peaceful rise” (heiping juechi) and “peaceful development” (heiping fazhan). The Global Space Exploration Conference held in Beijing in June 2017 came complete with Xi Jinping’s letter of congratulations to it that “China wants to enhance cooperation with the international community in peaceful space exploration and development”.^v Indeed China claims that “unlike” the US it seeks to cooperate with other states in space exploration.^{vi} Of course China wishes to have “peaceful” use of space resources, but as with its terrestrial mantra of “peaceful rise” Beijing naturally wants to achieve rise and resource control peacefully, but then what happens once China has risen, once it achieves advantageous use of space resources?

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There is the claim by Beijing at the UN’s Committee on the Peaceful Uses of Outer Space (COPUOS) that “China always upholds its belief in harmony in outer space” (Cheng Jingye), and that “China is ready to work with the international community to make unremitting efforts to build a harmonious outer space” (Hu Xiaodi). China’s stress on a “harmonious outer space” (hexie de wai taikong) sits on top of its terrestrial stress on a “harmonious world” (hexie shijie) and a “harmonious society” (hexie shehui) in China. Does this harmony discourse reflect genuinely held cooperative Confucian norms by the government; or are they tactical, a “calculative strategy” (Swaine and Tellis) of reassurance in the short term to shape a window of opportunity to complete



economic modernisation and block regime change, but which says nothing about China's longer term intentions once it has completed its power rise?

This again raises the question of China's longer-term intentions, both down below and up above; once it has become a leading great power, once it has become a leading space power, once it has deployed its space assets and established its full space presence. As at the terrestrial level, China also faces a more immediate "trust deficit" issue in space. It has been accused of being "double faced", of its stated rhetoric of cooperation not matching its un-stated intentions of Chinese advantage, of its civilian uses of space power veiling its military use.^{vii}

In the White Paper on Space Activities neither the words "military" nor "defense" appeared. This either represents grounds for confidence in China's intentions and purpose, or repre-

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sents deliberate obscuring reflecting Deng Xiaoping's 1990's maxim of "hide our strength and bide our time" (taoguang yanghui). Space power of course links to military power.^{viii}

Controversially China's 2016 White Paper on Space Activities claimed that "China always adheres to the principle of the use of outer space for peaceful purposes, and opposes the weaponisation of or an arms race in outer space"; yet critics of China's space programme argue that this is precisely what is in play from China. A different side of China's space programme had in fact already been revealed the previous year in the 2015 White Paper on China's Military Strategy, which stated that "outer space has become a commanding height in international strategic competition" and that consequently "China will keep abreast of the dynamics of outer space, deal with security threats and challenges in that domain, and secure its space assets to serve its national economic and social development,



and maintain outer space security”.

Chinese writings on achieving “space dominance” (zhi tian quan) have widely circulated in discussions within the Chinese military, reflecting the Chinese maxim, ironically stemming from John Kennedy, that “whoever controls space [the universe] can control the earth” (shei neng kongzhi yuzhou, shei jiu neng kongzhi diqiu).^{ix}

China’s anti-satellite (ASAT) capabilities involving satellite disruption, denial and destruction capabilities are a particular source of concern for the US satellite array in space, which is particularly important for terrestrial US net-centric military operations. Chinese ground-based lasers were tested in 2006 to dazzle, i.e. blind, US satellites. The next year 2007, China destroyed one of its own inactive weather satellites with kinetic energy interception by a modified DF-21 ballistic missile, a capability demonstrated again in 2010 and 2013. Anti-satellite capabilities continue to be developed by China. China’s ASAT capabilities continue to focus high in US concerns. The annual Pentagon Report to Congress, titled Military and Security Developments Involving the People’s Republic of China, released on 16 May 2018 warned that “China is developing multiple counterspace capabilities to degrade and deny adversary use of space-based assets” and noted that although the Chinese government says little on this area, “Chinese defense academics often publish on counterspace threat technologies”. In the US, the Director of Intelligence Dan Coates told the Senate Armed Forces Committee on 20 March 2018 that “we need to look to the heavens as well as the Earth, in terms of threats to the United States” given that China seeks “to mature their counterspace weapons as a means to reduce US and allied military effectiveness”.



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China's official position is that outer space should be used exclusively for peaceful purposes, and that China is therefore opposed to any militarisation of space. In that line, in 1983 China ratified the 1967 Space Treaty (Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and other Celestial Bodies), whereby nuclear weapons or any other weapons of mass destruction are prohibited in space in general, and with the celestial bodies namely the moon and other planets saved exclusively for peaceful purposes. The nightmare for China is of space-based missile defence systems being deployed by the US in particular, involving space-based sensors and intercept warheads. China is concerned that US deployment of missile defences, especially Star Wars type National Missile Defence (NMD) systems, will negate its own strategic nuclear deterrent, potentially forcing China into an expensive arms race that it cannot currently afford. Beijing's focus on arms control in outer space is then primarily an attempt to block future deployment of missile defence by the United States.

Space programme

The context for China's space programme is the "4 Modernisations" (Si ge xiandaihua) initiated by Deng Xiaoping at the end of the 1970s. This was economics-led, but also included the modernisation of science and technology, and also military modernisation. The space programme involves both science technology and military matters. China's space programme involves matters of soft power prestige alongside hard power economic and indeed military power positioning, resulting in both competition and cooperation with other powers.^x This mixture of motives and outcomes matches China's mixed terrestrial posi-



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tioning. Success in outer space, both in terms of the technology involved and the missions undertaken, is a source of prestige which supports not only the political legitimacy of the Chinese Communist Party but also the prestige of the People's Republic of China.^{xi} Chinese space success is a question of national prestige and national self congratulation, as with the initiation of Space Day in 2016.

One point to make is that China does not have distinctly separate civilian and military space programs. Rather, China's military controls the majority of the country's space assets and operations while state-owned defense conglomerates are the key actors in the commercial space sector. In addition Beijing also

Stars Wars scenarios are looming



provides little transparency regarding its intentions in space, for example, not releasing detailed budget information on its space activities. Here it is worth mentioning that 2017 estimates had around \$10 billion being spent by China on space activities, which was ahead of Russia but still leaves China in second position behind the US which has a space budget of almost \$48 billion.

Initially China's space program was organised by the Second Artillery Corps of the People's Liberation Army, who were responsible for the launch of China's first satellite in 1970. The China National Space Administration (CNSA), set up in 1996, is a subordinate agency of the State Administration for Sci-

ence, Technology and Industry for National Defence (SASTIND). Other major institutions dealing with space in China include the Ministry of Aeronautics and Astronautics Industry (MAAI), the Chinese Academy for Space Technology Research (CASTR) and the International Space Science Academy (ISSA). Still more direct military applications comes with the People's Liberation Army Strategic Support Force (SSF), set up in 2015 to handle space, cyberspace and electronic warfare, within which the Space Systems Department acts as China's de facto Space Force, which has attracted immediate US concern.^{xii}

China's space programme revolves around various assets and platforms, complete with stirring Chinese titles. These range from near space hypersonic craft, rocket launchers, satellites, manned spaceships, space station, moon exploration and indeed further out to Mars and the outer planets.

Stars Wars scenarios are looming with potential near-space strategic bombing capability enjoyed by China's Shenlong ("Divine Dragon") unmanned robotic hyper-sonic space plane under development for China's Strategic Support Force (SSF), a craft that could strategically bomb at will from the higher atmospheric layers. August 2018 witnessed a Changzheng-3 ("Long March-3") rocket carrying the Xing Xong-2 ("Starry Sky-2") hypersonic waverider craft 30 km up into near space, the mesosphere; in order to carry out a successful test flight back down into the upper atmosphere, where it reached Mach 6, or 7,344km/h (4,563mph) hypersonic speed, adding another sub-space item to the SSF arsenal. This gives China offensive capability from near space. Chinese commentary on the successful test flight was that it was "a strategic investment", in which "the test showed

that China is advancing shoulder to shoulder with [i.e matching] the US”, and with the US in mind that it could “break any missile defence system”.^{xiii}

China’s own space rockets have centred on the Changzheng (“Long March”) series; which have steadily increased in range, payload capacity, flexibility and sophistication. Changzheng-1 had a payload capacity of 300 kg. Almost half a century later and Changzheng-5 has payload capacity of 25,000 kg, which matches current European, Russian and US capabilities. This heavy launch capability is complemented by the Changzheng-6 (1000 kg payload capacity) high speed response rocket, and Changzheng-11 (700 kg payload capacity) able to launch on short notice from ships and road vehicles.

China’s satellite programme has accelerated since the first Chinese satellite, the Dongfang hong (“East is red”) circled the earth in 1970 playing its patriotic tune after which it was named. China’s first geo-synchronous communication satellite was launched in April 1984 by the Changzheng-3 booster. As part of



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its scientific drive, China launched the world’s first quantum satellite in June 2017. The technology is said to provide unbreakable secret satellite communications channels, giving Beijing a one-off advantage over the much more extensive US satellite network.

Communications satellites have ambiguous dual purpose civilian and military applications. The Aolong (“Roaming Dragon”) satellite launched in August 2016 has a robotic arm, officially and innocuously for collecting space debris, but which could also be used to reach another satellite and guide it to burn up in the Earth’s atmosphere. Satellites also give China some strategic advantages in terrestrial “core interest” (hexin liyi) areas, for example with the introduction of permanent geo-stationary satellite tracking positions over the disputed South China Sea waters in December 2017.

The commercial aspects of China’s space launchers are in the hands of the state-owned China Great Wall Industry Corporation (CGWIC), a separate entity within the China Aerospace Science and Technology Corporation (CASC), and is the sole corporation authorized by the Chinese government to provide satellites, commercial launch services and to carry out international space cooperation. It operates commercial launch services from the Jiuquan space launch centre and the Xichang space launch centre. A flourishing programme of launching satellites for other countries across Latin America, Africa and Asia has been pursued. China entered this international satellite launch market in 1990 with the launch of the Asiasat-1C satellite, followed in 1992 with the launch of the Arabsat-1C satellite for Saudi Arabia, the Freja satellite for Sweden, and two Aussat satellites for Australia. China’s Beidou (“Northern Dipper”) satellite network, being rolled out since 2000, initially region-





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ally to the Asia-Pacific and now globally, has been Beijing's answer to the US Global Positioning System (GPS). As of November 2018, China has deployed a 15-satellite Beidou array, with a further 23 Beidou-3 satellites undergoing testing or commissioned to be deployed by 2020. Still greater plans are underway, with the China Aerospace Science and Technology Corporation currently starting to deploy the Hongyan ("Wild Goose") global constellation of 300 low-orbit satellites.^{xiv} This widening access for a swathe of countries through China's growing satellite networks represents a further "globalization of space"

Henry Hertzfeld has pursued the outer space-globalisation linkage with general regard to commercial communications satellites, where "the issue of space power is integral to the growth of globalisation" since "the space environment has also contributed greatly to the growing trend toward globalisation through its almost universal coverage of populated areas with communications and observation prod-

ucts and services"; but in which with regard to the US "the nation that leads in commercial space will have an important tool for future economic dominance as well as for space security".^{xv} The key thing is that "China" can be substituted for the "US" in such an analysis, whereby if China now manages to establish leadership in commercial space communications, then terrestrial economic dominance beckons?

Indian commentators see geo-political undercurrents between such satellite offerings. Ajay Lele argues that "what China is doing is not just expansion of its satellite launch industry. It is investing in its geopolitical interests".^{xvi} The Chinese space programme also serves China's economic interests. By launching payloads for other countries, investing in new commercial launching pads on sea, and inviting other countries to work together on China's future space station, China is able to establish the rules for economic cooperation and do things on China's terms – something of a globaliza-

tion of space “with Chinese characteristics”.

The present Chinese National Manned Space Program began in 1992, using the Shenzhou “Divine Vessel” line of spacecraft. China’s astronauts, or taikonauts, have built up a solid body of experience. In October 2003 Shenzou-5 carried the first Chinese astronaut Yang Liwei on a flight of 21 hours, in October 2005 Shenzou-6 carried a two-man crew on a four day flight, in September 2008, Shenzou-7 involved the first (three-person) Chinese space crew, in June 2012 Shenzou-9 involved another three-person crew including the first woman Liu Yang on a nine day flight, in June 2013 Shenzou-10 involved a three person crew docking with the space laboratory Tiangong-1 on a twelve day flight, and in June 2016 Shenzou-11 involved another three person crew docking with the space laboratory Tiangong-2 on a fourteen day flight. As can be seen the focus of the manned spaceflight have shifted from earth orbital flights to involvement with the setting up of the Chinese space station.

China has moved forward with its plans for a space station to be called Tiangong “Heavenly Palace”, that will be assembled in near Earth orbit. It should be noted that the US Congress placed restrictions on NASA cooperating with China in 2011, meaning that China has been blocked from participating in the International Space Station. By then China was already taking practical steps to set up its own space station, with the prototype Tiangong-1 space laboratory module placed in orbit from 2011-2016, and the Tiangong-2 space laboratory module which has been in orbit since 2016. The first units of the larger modular Tiangong space station are scheduled to be lifted into space in 2019 by the Tianzhou (“Heavenly Vessel”) unmanned cargo spacecraft, which were first launched in 2017. Completion of the

Chinese space station is envisaged for around 2022, and with a lifespan of around 10 years. This will leave China in a lead position as the International Space Station (ISS) collaboration between the United States, Russia, Canada, Europe and Japan since operation since 1998 is due for retirement in 2024.

China has announced its hopes for international collaboration, with the European Space Agency already sending astronauts to China to receive training in order to be ready to work inside the Chinese space station once it is launched. In June 2016, China signed an agreement with the UN Office for Outer Space Affairs (UNOOSA) to open the station to experiments and astronauts from UN member states, specifically developing countries that find space too expensive at the moment. This is enabling Shi Zhongjun, China’s Ambassador to UN, to claim that “through the vehicle of the Chinese space station, we would like to build a model of sincere mutual beneficial cooperation among countries in the peaceful



exploration and use of outer space".^{xvii} It remains to be seen whether the U.S. will take similar opportunities for collaboration, even if it is collaboration under Chinese terms?

The China Lunar Exploration Program (CLEP) is powering to the moon, long abandoned by the US after its Apollo moon landings undertaken from 1969 to 1972. China's Chang'e moon programme is appropriately enough named after the Chinese lunar goddess Chang'e. A signal date was December 2013 when the Chang'e-3 moon lander, complete with lunar rover, successfully soft-landed on the Moon. Xinhua's explanatory context for this moon landing was that "the space dream, a source of national pride and inspiration for further development, is part of the dream to make China stronger and will surely help realize the broader Chinese dream of national rejuvenation".^{xviii}

Interest is high over the current Chang'e-4 mission, launched from Xichang space centre

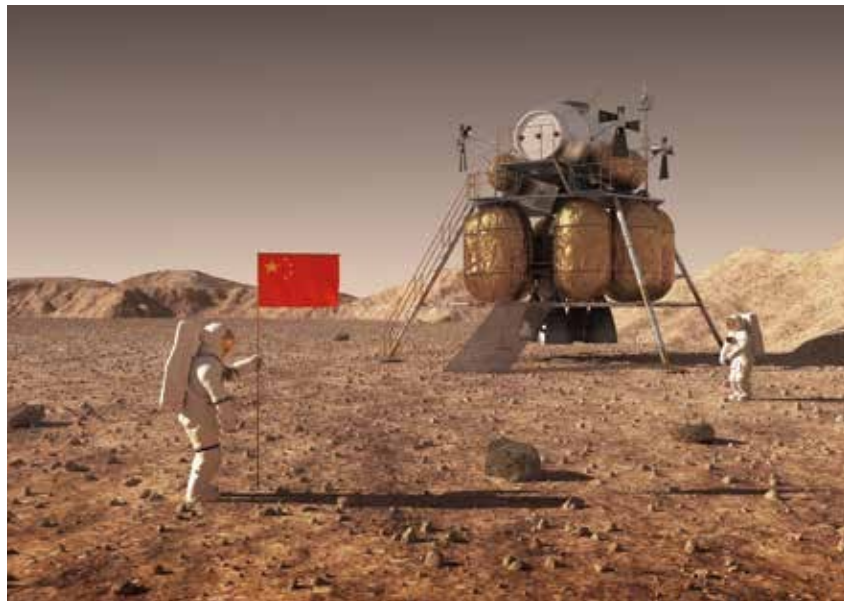
in December 2018 to undertake a moon landing in January 2019.

This will be ground breaking new territory as the moon lander, with its with rover, will land on the far "Dark Side" of the moon, hitherto unexplored and out of communication with earth. This mission will assuredly bring national celebration in China, or at least in the Chinese state media, but equally uncertainties outside about what this indicates about China's accelerating space programme. We can expect Starts Wars type headlines of China embracing the Dark Side! At a time of rising terrestrial economic and military terrestrial tension between the US and China, the Chang'e-4 mission heightens US concerns of being overtaken by China. In terms of China's stress on its international cooperation, the Chang'e-4 probe will carry scientific payloads developed by the Netherlands, Sweden, Germany and Saudi Arabia.

Later on in 2019, Chang'e-5, China's first



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moon sample return mission is scheduled, the first sample-return mission since the Soviet Luna-24 lander back in 1976. Chang'e-5 will be followed by a series of further robotic missions, to establish an eventually Chinese-staffed moon base in the 2030s. This Chinese development is particularly impressive, and reflects its general drive for robotics and artificial intelligence capabilities, all particularly relevant in the wider drive for information revolution and indeed informational warfare. An attempted moon landing is envisaged around 2030, and will represent the first person to walk on the moon since the US astronaut Eugene Cernan back in 1972.

China's interests in the moon have a tacit geo-economic angle; access to lunar natural resources, for use back on earth. Open interest has been shown in China over tapping into deposits of the helium-3 energy-rich element, scarce on earth but abundant on the moon. This could solve terrestrial energy demands, and of course China's own energy imperatives. Further interest is in rare earth metals found in some abundance on the moon; in particular the 15 lanthanides, scandium and yttrium. Already there have been concerns that the distribution of such scarce earth resources is already overly concentrated within Chinese territory, and enables China to deploy a scarce earth resources weapon. There are some similar concerns of scarce earth resources advantages accruing to China through China establishing further control of scarce earth resources on the moon.

The moon is not the end of China's space ambitions. A 2020 Mars mission is envisaged to send an orbiter, around the Red Planet, complete with lander and six rovers for exploration of the Martian surface. The former Soviet Union, United States, European Space Agency and India have all sent probes to Mars, but



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only the US has successfully deployed rovers on the surface, the Curiosity rover in August 2012 and the Insight rover in November 2018. China's six rovers will represent a significant shift upwards of exploration capability. Longer term robotic and eventual human bases are envisaged, echoing China's lunar progression. In turn, Mars is not the end of China's long term projects, with plans to send probes to Jupiter in 2036 and Uranus in 2046.

International space system

The international space system reflects many

of the features of the terrestrial international system, Chinese partnerships with some countries and groupings, and competition with others.

China's terrestrial strategic partnership with Russia is echoed in space with their cooperation. It was no coincidence that in June 2018 Russia and China signed a further Memorandum of Understanding on lunar and deep space exploration amid Moscow's deteriorating relations with the West and China's deteriorating relationship with the US. In effect, in outer space as well as at the terrestrial level, their partnership involves strategic cooperation against the US, now more than ever. Earlier, in March 2018, there had been agreement to establish a joint Russian-Chinese data centre on lunar projects, with mutual cooperation over the Russian mission to launch its orbital mission with lander in 2022, as well as the planned Chinese mission for landing in the region of the south pole of the Moon in 2023. Renewed Russian involvement in the moon, in tandem with China is the combination and development that the US does not want to see happening.

China's big terrestrial push has been with its Belt and Road Initiative (BRI) across Eurasia and the Indo-Pacific. This terrestrial initiative has its space component in the Belt and Road Initiative Space Information Corridor (BRI-SIC), which is underpinned by Chinese communication satellite networking. A Declaration of Intent to cooperate on the Belt and Road Space Information Corridor was signed in July 2018 between China and the United Nations Office for Outer Space Affairs (UNOOSA). This is the so-called Digital Silk Road currently being pushed by China. Unlike other infrastructure projects, this extra-terrestrial side of the BRI advertises China's growing

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high-tech prowess. However, China's Belt and Road Initiative is subject to ongoing concerns about it being a front for China's geo-economic and geopolitical advantage.

China is a member of two regional space organisations. First is the Asia-Pacific Regional Space Agency Forum (APRSAP) established in 1993 under Japanese leadership – which brings together Australia, Bangladesh, Brunei Darussalam, Cam-



bodia, China, Indonesia, Japan, Korea, Laos, Malaysia, Mongolia, Myanmar, Nepal, Pakistan, the Philippines, Singapore, Sri Lanka, Thailand, and the US. However, China has taken the initiative in 2008 in setting up the Asia-Pacific Space Cooperation Organisation (APSCO), based in Beijing, which brings together China with Bangladesh, Iran, Mongolia, Pakistan, Peru, Thailand, and Turkey. This is another vehicle for China's terrestrial regional positioning. Xi Jinping's congratulatory letter to ASPSCO on November 14 2018, the tenth anniversary of the founding of ASPSCO, was suitably focussed on economic development, that "China has been consistently supporting the rational development and exploration of space resources, the protection of the outer space environment and the promotion of the space industry". Pakistan's membership of APSCO coupled with India's non-membership has undertones of China's terrestrial strategic geometry. The APSCO Joint Small Multi-mission Satellite Constellation Program will form part of the Belt and Road Initiative Space Information Corridor.

China has also developed space links with Europe. Germany, France, and Italy (as well as Canada) have already cooperated with China in satellite construction and deployment. China-EU cooperation is also established most notably in the Galileo satellite navigation system since 2003. This has also involved the setting up of the China-Europe Technical Training and Cooperation Centre in Beijing in 2006 including permanent European Space Agency (ESA) staff. US disquiet over Chinese involvement in the Galileo Project has been noticeable. China's development of the laser retro-reflector for the Galileo Project does have potential civilian-military double use undertones. A further cooperation agreement in 2015 has already led to the arrival of European astronauts in China in August 2017, undertaking training to join China's space station when set up in, as envisaged, by 2022.

US disquiet over Chinese involvement in the Galileo Project has been noticeable





China's space programme reflects terrestrial rivalries. Terrestrial rivalry is evident between China and India, the two most significant rising powers. Admittedly a Memorandum of Understanding was signed September 2014 between India and China "to encourage exchange and cooperation in the exploration and use of outer space for peaceful purposes, including research and development of scientific experiment satellites, remote sensing satellites and communications satellites". There have been few signs of any implementation or of tangible cooperation activities. Instead, India remains concerned over Chinese anti-satellite (ASAT) capabilities being used against India's own satellite arrays. China's launch of a satellite in 1970 was the spur for India's first satellite launch in 1975. Similarly, China's launch of the Chang'e-1 robotic lunar orbiter in October 2007 was immediately followed by the launch of India's own lunar orbiter Chandrayaan-1 in November 2008. China's Chang'e-4 mission to the far side of

the moon in January 2019 is being followed immediately by India's Chandrayaan-2 scheduled launch in January-March 2019, including lander operations. India moved ahead of China by already placing its Mangalyaan satellite in orbit around Mars in September 2014; but China's own Mars orbiter mission is envisaged for around 2020, complete with depositing six landers. Trying to match China, India envisages a second Mars mission, complete with lander in 2020/2021.

In another direction there is rivalry between the established space power the US and its space competitor China. Already in 2011 US cooperation with China was formally blocked in a Congress Bill whereby no appropriated funds could be used by the National Aeronautics and Space Administration (NASA) or the White House Office of Science and Technology Policy (OSTP) "to develop, design, plan, promulgate, implement, or execute a bilateral policy, program, order or contract of any kind



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to participate, collaborate, or coordinate bilaterally in any way with China”. The blanket “any kind, any way” nature of the ban was striking. Admittedly, during the Obama administration, a formal Dialogue on Outer Space Security was held in Washington between China and the US in May 2016, but this exchange of views has not been repeated. Instead the Trump administration that took power in 2017 has moved towards a much more assertive policy: China would say aggressively



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and threateningly towards China, while the US would say reactively to the rising Chinese challenge.

Space friction also parallels the emerging economic and military friction between the US and China at the terrestrial level. Vice President Mike Pence’s high profile speech titled Administration Policies Towards China, delivered on 4 October 2018 at the Hudson Institute, was clear that “Beijing has prioritized capabilities to erode America’s military advantages on land, at sea, in the air, and in space”. The close observer will of course note that an “erosion” of US military advantages terrestrially and in space merely reduces the military advantages held by the US, rather than overturning them.

The limited space scope of the Obama years has now been replaced by a much more reassertive US space programme under the Trump administration. The phrase “Make America Great Again” has been applied to space as well as to the terrestrial sphere. President Trump re-established the National Space Council (NSC) in June 2017, chaired by Vice President Mike Pence. Pence has been explicit on US space concerns over China; warning that “China is pursuing a full range of anti-satellite technology designed to threaten our military’s effectiveness exemplifying America’s abdication of leadership in space”, against which the remedy was “pre-eminence in outer space is now under threat—and once again, America must act. Under President Trump, America will lead in space again”.^{xix} This was followed by the Space Policy Directive-1 issued by Trump in December 2017. Titled Reinvigorating America’s Human Space Ex-

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ploration Program, the directive was centred on how “the United States will lead the return of humans to the Moon for long-term exploration and utilisation”.

The US has also moved to formally set up a US Space Force as a separate branch of the military, formally initiated with the Space Policy Directive-4 issued in December 2018, which came complete with future budget funding. Vice President Pence’s speech entitled Administration Policies towards China described this as “initiating the process to establish the United States Space Force to ensure our continued dominance in space”. Again the reader will note the tacit admission of US dominance in space that the US seeks to maintain towards China.

International relations “power transition theory” suggests that the period of transition between a rising power and a threatened es-

tablished power is a particularly fraught time, when the established threatened power seeks to reassert itself against the threatening rising power while it still has the chance. On 27 September 2016, the Space Subcommittee of the House Committee on Science, Space, and Technology held a hearing on “Are We Losing the Space Race to China?” It was replete with US nightmares. The Chairman Lamar Smith introduced the hearing by talking of “the ascendance of China as a leading space faring nation” and that with regard to the current Obama administration’s cancellation of the Constellation moon return” programme in 2009, “by abandoning plans to return to the Moon, the administration invited the rise of China as a leader in space”. The US is seeking desperately to avoid such a loss through Trump’s space programme push. Space has become not the final frontier but the “next frontier for US-China rivalry”, with “Space Race 2.0” now in swing.^{xx} ■

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