

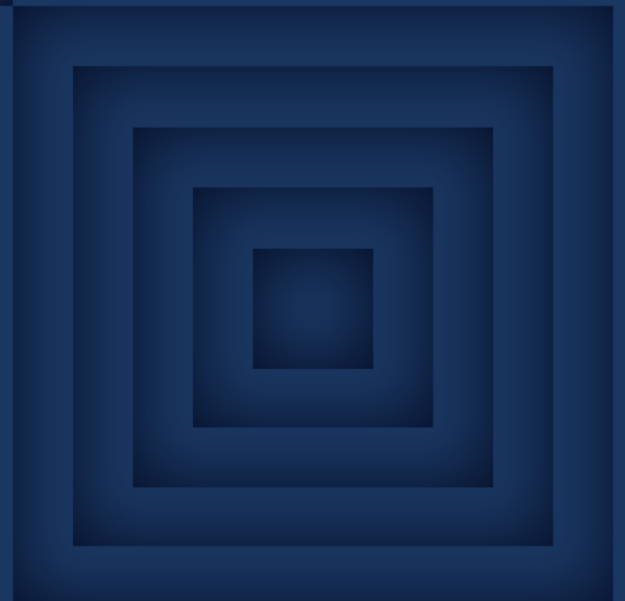
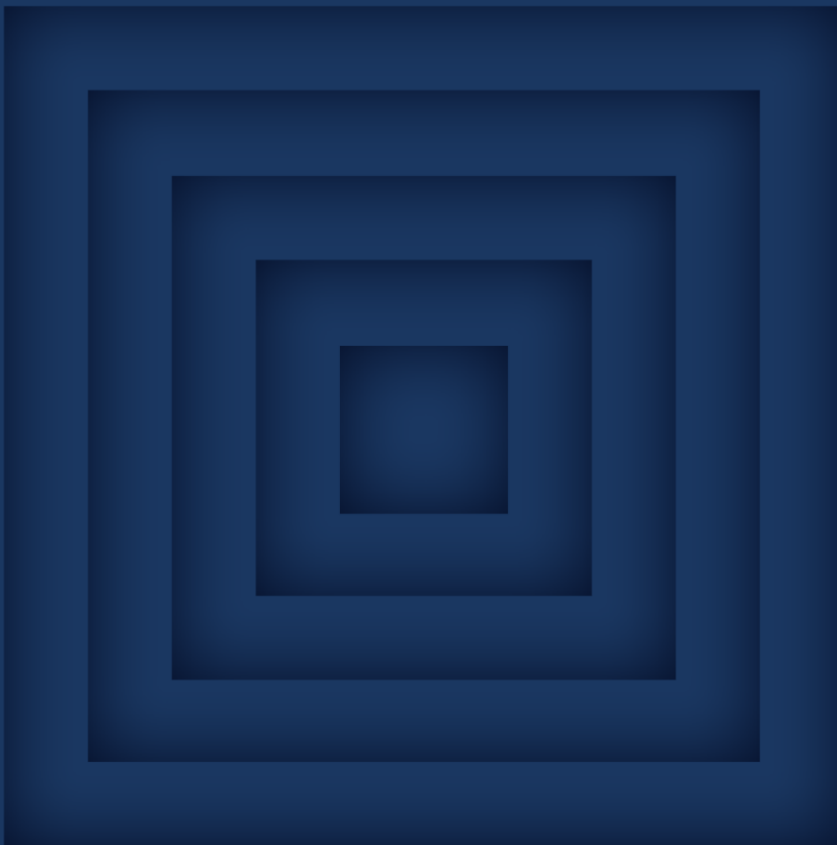


The Hague Centre
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China's military rise and European technology

The policy debate in the Netherlands

Joris Teer
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China's military rise and European technology

The People's Liberation Army is trying to become a “world class” military by leveraging the technological innovations of the 4th industrial revolution. In 2022, China still struggles with important military-technological gaps. Beijing should not be allowed to catch up with the help of European knowledge and technology. Traditionally a free-trading nation with a highly internationalized university system, the Netherlands is now engaged in a policy debate to put a stop to unwanted knowledge and technology transfer. HCSS China analyst Joris Teer outlines the debate so far, provides policy recommendations for the government and highlights a past failure of the Dutch to protect sensitive technology. That episode made the world a far more dangerous place.¹

Dutch nuclear naivety

In 2021, both the father of Pakistan's atomic bomb Abdul Qadir Khan and his Dutch colleague Frits Veerman, who caught him committing espionage, died. Their employer, Stork's Physical-Dynamic Research Laboratory (FDO) in Amsterdam, and the BVD (the predecessor of the Netherlands General Intelligence and Security Service, AIVD) did not want to hear about Veerman's suspicions that Khan stole Dutch ultracentrifuge technology, Dirk van Delft convincingly argues in his book *Splijstof* [fissile material].¹ First, Khan made his homeland unassailable. After all, other countries would be mad to take military action against a country armed with nuclear weapons, despite the acts of violence it commits. After that Khan started his own business. He sold ultracentrifuge technology to North Korea and Iran without permission from his government. Kim-Jong Un now has nuclear warheads. Major powers are trying to stop Tehran from taking the last steps towards the bomb in ongoing negotiations in Vienna.

Pakistan's nuclear bomb is primarily a problem for its archrival India. By contrast, China's impressive military rise, for which Beijing intends to continue to use foreign knowledge and technology in line with its *Made in China 2025*-strategy, the 14th Five-Year Plan and the *China AI 2030*-strategy, has far-reaching implications for European security. Beijing's ambitions are not modest. The People's Liberation Army should be fully modernized by 2035. By 2049, China must be a “world class” military that is able to “fight and win”.² General Secretary Xi also launched a “military-civil fusion (MCF)” campaign, calling on companies

in China's commercial economy to contribute to the development of its defense industry. Beijing is trying to catapult its People's Liberation Army from military-technological laggard to frontrunner. General Secretary Xi describes technology as “the core combat capability”.³ China pays a lot of attention to the development of the technologies of the 4th industrial revolution such as artificial intelligence.

The expansion of China's military power puts stress on the US security umbrella, under which Europe also shelters. As China's pressure on Taiwan grows, Russia first deployed more than 150,000 troops on the Ukrainian border and now continues to carry out attacks across the country. North Korea keeps testing missiles. Iran continues to enrich uranium. US allies in the Middle East and democracies in both Asia and Europe are this decade competing for increasingly scarce US military resources and leadership attention to simultaneously deter Iran, China, North Korea, and Russia. At the same time, China still struggles with serious military-technological gaps. To prevent these shortcomings from being overcome through the transfer of knowledge and technology via European companies and universities, European governments need to implement new policies. However, a series of worrying incidents suggest that the Netherlands and other European states have not learned from the Khan affair.

With, among other measures, a robust “investment test” for companies and an “assessment framework” for universities,

¹ Dirk van Delft, *Splijstof: hoe klokkenluider Frits Veerman atoomspion Abdul Khan betrapte en de Pakistaanse bom er toch kwam*, [Fissile material; how whistleblower Frits Veerman caught Abdul Khan, and the Pakistani bomb was still developed] 2021, <https://webwinkel.uitgeverijprometheus.nl/book/dirk-van-delft/9789044648881-splijstof.html>

² Xi Jinping, ‘Full text of Xi Jinping's report at 19th CPC National Congress - China - Chinadaily.com.cn’, 18 October 2017, https://www.chinadaily.com.cn/china/19thcpcnationalcongress/2017-11/04/content_34115212.htm.

7-11/04/content_34115212.htm., “X. Staying Committed to the Chinese Path of Building Strong Armed Forces and Fully Advancing the Modernization of National Defense and the Military”

³ Xi Jinping, “Full Text of Xi Jinping's Report at 19th CPC National Congress - China - Chinadaily.Com.Cn,” October 18, 2017, https://www.chinadaily.com.cn/china/19thcpcnationalcongress/2017-11/04/content_34115212.htm., “X. Staying Committed to the Chinese Path of Building Strong Armed Forces and Fully Advancing the Modernization of National Defense and the Military”

three Dutch ministries, in collaboration with European and other NATO partners, are trying to put a stop to unwanted knowledge and technology transfer within “high-risk fields”. The plans of these ministries can only be successful on the basis of three initial steps:

- ❖ The establishment of an obligation to notify the government about knowledge and business collaborations with China within “high-risk fields”.
- ❖ A definition of “high-risk fields” focused on the technologies and weapon classes that threaten to make rivals like China’s People’s Liberation Army much more powerful.
- ❖ The founding of a specialized government body that can, if need be, block university collaborations and company take-overs and joint-ventures with Chinese parties within “high-risk fields”. The National Security Council that the government promised to establish in its 2021 coalition agreement may well become a well-qualified agency to execute this task.

The People's Liberation Army in 2022

China's military modernization has been impressive and is moving forward at lightning speed but it is also far from complete. Near its own coast, the power of the People's Liberation Army is unparalleled, at the ends of the South China Sea (China's maritime gate to the world) potent, but far-from-home still modest. That first place is the only one in the world where China is likely to win major battles against the United States. Since the 1990s, China has invested in a record number of long-range missiles and submarines, as well as in mines, and in the modernization and expansion of its fleet. This provides Beijing with relatively inexpensive resources that make it virtually impossible for expensive US aircraft carrier groups to operate near China during an open conflict. For example, the People's Liberation Army developed the world's first anti-ship ballistic missile. Beijing also has a hypersonic missile that is intended to be able to bypass American anti-missile defense systems. The goal: to push the US Navy further and further out of the East China

Sea and South China Sea. The result: an American intervention, for example to repel a Chinese attack on the island republic of Taiwan, is becoming increasingly difficult to carry out.

But Beijing also achieved military-strategic successes further afield. China's military modernization is reinforcing its excessive territorial claims in the South China Sea, the so-called “cow's tongue”. The modern principal surface combatants, such as frigates, destroyers and cruisers, that China is building at a record pace can be used to intimidate its neighboring countries. The creation of artificial islands from 2013 onwards gave China another military-strategic advantage. The People's Liberation Army placed airstrips, anti-aircraft guns and anti-ship missiles on those islands, despite protests of neighboring countries and General Secretary Xi's promises to President Obama not to militarize the islands.⁴ Beijing is now able to credibly threaten to temporarily close the second-most busiest waterway in the world.

China developed its military might with the help of knowledge and technology from European and American companies and universities. Its military modernization took place in the economically and technologically interconnected world from after the fall of the Berlin Wall. Engine technology in China's state-of-the-art destroyers is German-made.⁵ Beijing's hypersonic missiles have been tested in a machine containing US chips.⁶ China partly obtained the means to build the aforementioned artificial islands from European dredging companies, claimed former Clingendael Director Ko Colijn in NRC, a Dutch national newspaper, last year.⁷ At the same time, the Delft University of Technology student publication *Delta* revealed that their university, mainly the aerospace engineering department, is collaborating with four out of the seven leading universities in China that support Beijing's development of military technology.⁸ Jan Swillens, the head of the Military Intelligence and Security Service (MIVD), warned in February

⁴ “How Much Trade Transits the South China Sea?,” ChinaPower Project (blog), August 2, 2017, <https://chinapower.csis.org/much-trade-transits-south-china-sea/>.

⁵ Amanda Rivkin, “German Engine Technology Found in Chinese Warships — Report,” DW.COM, November 6, 2021, <https://www.dw.com/en/german-engine-technology-found-in-chinese-warships-report/a-59740301>.

⁶ Ellen Nakashima and Gerry Shih, “China Builds Advanced Weapons Systems Using American Chip Technology,” Washington Post, 9 April 2021, https://www.washingtonpost.com/national-security/china-hypersonic-missiles-american-technology/2021/04/07/37a6b9be-96fd-11eb-b28d-bfa7bb5cb2a5_story.html.

⁷ Ko Colijn, “Militair actief tegen China én geld verdienen aan baggeren: ongelooftwaardig,” [Militarily active against China and

earning money from dredging: not credible] NRC, 23 September 2021, <https://www.nrc.nl/nieuws/2021/09/23/militair-actief-tegen-china-en-geld-verdienen-aan-baggeren-ongelooftwaardig-a4059477>; Kevin Bond Andrew S. Erickson, “Dredging Under the Radar: China Expands South Sea Foothold,” Text, The National Interest (The Center for the National Interest, August 26, 2015), <https://nationalinterest.org/feature/dredging-under-the-radar-china-expands-south-sea-foothold-13701>.

⁸ Annebelle de Bruijn, “How TU Delft unintentionally helps the Chinese army,” TU Delta, March 21, 2021, <https://www.delta.tudelft.nl/article/how-tu-delft-unintentionally-helps-chinese-army>.

2022 that his organization had already warned eighteen months earlier about 80 students from China who are pursuing their Doctorate Degrees in the Netherlands, and can be traced directly to the defense sector or the People's Liberation Army.⁹

In the UK, top universities such as Imperial College London and the University of Cambridge have more than 1,000 partnerships with Chinese institutes "with deep connections to China's defense apparatus". These British institutions obtained more than 60 million pounds from Chinese organizations that have been sanctioned by the US for developing military technology for the People's Liberation Army.¹⁰ In a joint statement in 2021, Dutch intelligence agencies, the AIVD and MIVD, and the National Coordinator for Counterterrorism and Security (NCTV) warned that Dutch economic security is threatened by the theft of IP in high-technology sectors.¹¹

China's rush to catch-up

At the same time, Beijing is trying to bridge important military technology gaps that it continues to struggle with.¹² In a number of key weapon classes, China still lags behind US and European military competitors. These shortcomings restrain China's ability to successfully carry out an invasion of Taiwan, an island republic seen by Beijing as a renegade province, and to deploy its fleet to intimidate countries in the Indian Ocean or even closer to Europe. Due to China's inability to produce a first-class jet fighter, it lacks control of the air domain, a requirement for a successful invasion of Taiwan especially when the United States also plays a role in the confrontation. In order to expand its airpower, China imported a large number of engines from Russia throughout the last decade.¹³ Anti-submarine warfare also remains a weakness.¹⁴

⁹ "MIVD: Wet Op Inlichtingen En Veiligheidsdiensten Verslechtert Nederlandse Defensie," [MIVD: Law On Intelligence And Security Services Reduces Dutch Defense Capabilities] BNR, February 16, 2022, <https://www.bnr.nl/nieuws/internationaal/10467761/mivd-wet-op-inlichtingen-en-veiligheidsdiensten-verslechtert-nederlandse-defensie>.

¹⁰ George Greenwood, Fiona Hamilton, and Charlie Parker, "British Research 'Could Help China Build Superweapons,'" 2 April, 2022, sec. news, <https://www.thetimes.co.uk/article/british-research-could-help-china-build-superweapons-wzlcrgnsj>.

¹¹ Netherlands Ministry of the Interior and Kingdom Relations, 'Dreigingsbeeld Statelijke Actoren - Rapport - Rijksoverheid.nl', [Threat Assessment State Actors – Report] (Ministerie van Algemene Zaken, 3 February 2021), 4, <https://www.rijksoverheid.nl/documenten/rapporten/2021/02/03/dreigingsbeeld-statelijke-actoren>.

¹² Joris Teer e.a., 'China's Military Rise and the Implications for European Security', HCSS, 11 October 2021, 70, <https://hcss.nl/report/chinas-military-rise/>.

Further from home, military power projection depends on large ship formations, such as aircraft carriers in tandem with other large ships, submarines, and again modern fighter jets. The US has 11 nuclear-powered mega aircraft carriers. China only has two small diesel-powered variants. Both can cover maximally a very short distance without refueling and can only launch jetfighters with either a limited number of missiles or a limited amount of kerosene.¹⁵ Propeller-driven aircraft such as early warning and control aircraft, the eyes and ears of a fleet, entirely cannot take-off from the ski jump on the deck.¹⁶ As a result, China's military means to take Taiwan with ease and the aircraft carrier groups to project power, especially outside of its own region, are still incomplete. The People's Liberation Army is at the moment best comparable to a car with three wheels: 90% of the costs have been incurred, but it cannot (yet) drive.

Research by Datenna, a firm specializing in China market intelligence and investment screening, and journalists shows that Chinese companies affiliated with the defense apparatus are looking for that fourth wheel in Europe. The means: direct investment and joint venture partnerships.

Considering that the development of fighter jet technology remains important to the People's Liberation Army, it should come as no surprise that Chinese (state) companies show an interest in the European aerospace sector. Safran Group, a French company that sells "defense systems and goods" to "armies, navies and air forces" and develops "enabling technologies for rocket propulsion systems", is the minority partner in a joint venture with Shanghai Aircraft Manufacturing Company Ltd. This Chinese state-owned company manufactures and repairs aircraft for China's air force and navy. The parties cooperate intensively to produce

¹³ 'SIPRI Arms Transfers Database', SIPRI, 2021, <https://www.sipri.org/databases/armstransfers>; Teer e.a., 'China's Military Rise and the Implications for European Security', 80.

¹⁴ Yoshihara and Bianchi, "Seizing on Weakness," 68.; Rick Joe, "The Chinese Navy's Growing Anti-Submarine Warfare Capabilities," The Diplomat, 2018, <https://thediplomat.com/2018/09/the-chinese-surface-fleets-growing-anti-submarine-warfare-capabilities/>.

¹⁵ David Cenciotti, "No Match for a U.S. Hornet: 'China's Navy J-15 More a Flopping Fish than a Flying Shark' Chinese Media Say," The Aviationist, September 30, 2013, <https://theaviationist.com/2013/09/30/j-15-critics/>; Gilli and Gilli, "Why China Has Not Caught Up Yet," 185.

¹⁶ Yoshihara and Bianchi, "Seizing on Weakness," 66.; Office of the Secretary of Defense, "Military and Security Developments Involving the People's Republic of China 2020," 52.; Teer e.a., 'China's Military Rise and the Implications for European Security', 70, <https://hcss.nl/report/chinas-military-rise/>.

"Electrical Wiring Connection Systems" (EWIS) for China's commercial aviation industry.¹⁷

In April 2016 Aritex, a leading company in the Spanish aviation sector with customers such as Boeing and Airbus, was bought for 95% by, among others, the Chinese state-owned Aviation Industry Corporation of China (AVIC). "Support and services of military aircraft and engines, guided weapons, military gas turbines [...] are included among the company's main activities". Aritex board of directors has been replaced by Chinese staff after the acquisition.¹⁸ Datenna further shows that China is investing in Europe's nuclear industry. This eventually led to the establishment of European-Chinese joint ventures for further development of the technology in China.¹⁹ Will the People's Liberation Army finally acquire the missing building blocks for a first-class jet fighter and nuclear-powered aircraft carriers in Europe?

The future of war: The 4th industrial revolution

China is also looking beyond its current military-technological gaps vis-à-vis the United States. Through large-scale investment in the emerging technologies of the 4th industrial revolution and new weapon classes, Beijing tries to master the means that determine the future of war. Artificial intelligence, photonics, big data, robotics and autonomous systems, semiconductors, quantum computers, 5G, 6G and biotechnology are the technologies that fundamentally upgrade existing weapon classes and enable new weapon systems.²⁰ These new technologies in combination with a growing multitude of radars and sensors on satellites, fighter jets, spy planes, ships and submarines are changing warfare. Powerful computers collect massive amounts of data, process it into actionable insights, share key findings across a network of weapon systems including tanks and fighter jets.

They "gather information on what needs to be hit, decide priorities and bring them about."²¹

For example, unmanned vehicles such as surveillance and attack drones, provide relatively cheap means to cause large-scale damage. In Azerbaijan's 2020 victory in the war over Nagorno-Karabakh, Armenia found that unmanned aerial vehicles are a revolutionary weapon class in their own right. Combined with long-range weapons, these systems are even more deadly. In the future, these unmanned aerial vehicles will likely be even more powerful when they attack in swarms. New computer systems thus shorten the so-called kill chain, the time between spotting an enemy target and destroying it.²²

In the 21st century, war increasingly extends to space. Modern armies rely to a large extent on the space domain and the satellites there for directing troops and collecting intelligence and communication. A range of new weapons is therefore aimed at blinding, damaging or destroying these systems. Energy weapons, including lasers, and anti-satellite missiles are therefore important military means for Beijing.²³ These weapons can be used, among other things, to blind, damage or destroy opponent's satellites and thus paralyze its military and economy.²⁴

As the 4th industrial revolution unfolds, China knows that the cards are being reshuffled in the defense domain in which the US has so far been dominant. There are several examples of China's search for militarily relevant emerging technologies in Europe. Artificial intelligence, semiconductors, robotics and autonomous systems are of great importance to China. "The fields you just mentioned together cover more than half of the knowledge collaborations with China," said Jan Paternotte, parliamentary leader of D66, the Netherlands' second largest

¹⁷ "Safran Group," Datenna, accessed 22 February 2022, <https://www.datenna.com/EAC-Safran/>.

¹⁸ Datenna wrote: "support and services of military aircraft and engines, guided weapons, military gas turbines, weapon equipment supporting systems and products are included among the company's main activities". "The Acquisition of Aritex," Datenna, accessed op 22 February, 2022, <https://www.datenna.com/the-acquisition-of-aritex/>.

¹⁹ "EDF International," Datenna, accessed February 22, 2022, <https://www.datenna.com/EAC-EDF/>.

²⁰ Artificial intelligence, big data, photonics, quantum technology, robotics and autonomous systems, and semiconductor lithography were rated in an expert survey conducted by HCSS as the most important emerging technologies for the warfare of the future. Hugo van Manen e.a., 'Taming Techno-Nationalism: A Policy Agenda' (The Hague Centre for Strategic Studies (HCSS), September 2021), VII, <https://hcss.nl/report/taming-techno-nationalism/>.

²¹ The Economist, 'Hide and Seek - Defence Technology', Technology Quarterly, 29 January 2022, 3, <https://www.economist.com/technology-quarterly/2022-01-29>.

²² The Economist, The technology of seeing and shooting your enemies. <https://www.economist.com/technology-quarterly/2022/01/29/the-technology-of-seeing-and-shooting-your-enemies>

²³ Matthew Funaiolo, Joseph Bermudez Jr., and Brian Hart, "China Is Ramping Up Its Electronic Warfare and Communications Capabilities near the South China Sea," December 17, 2021, <https://www.csis.org/analysis/china-ramping-its-electronic-warfare-and-communications-capabilities-near-south-china-sea>.

²⁴ Taking such systems offline also threatens "strategic stability". In a strategically stable situation no nuclear-armed state has an interest in initiating an attack with a nuclear weapon because that would likely lead to the destruction of itself too.

party, during a round table in the House of Representatives in which HCSS also took part.²⁵ Lithography and semiconductor giant ASML warned in its annual report that Dongfang Jingyuan Electron, a Chinese competitor, offers products that "potentially" infringe on its intellectual property rights.²⁶

These problems are not unique to the Netherlands. A professor from China at the University of Copenhagen conducted brain research on monkeys that were exposed to extreme heights. He did this together with a laboratory of the Chinese People's Liberation Army.²⁷ The goal: to develop biotechnology (in this case medicine) to prevent brain damage at high altitudes. Winning a war in the Himalayas, where China fought a deadly mini-conflict with India in the summer of 2020, is a key priority of the People's Liberation Army.²⁸ The German Federal Office for the Protection of the Constitution warns that the Chinese hacker group APT27 has launched a large-scale campaign to loot pharmaceutical and technological knowledge from German companies.²⁹

European drones, lasers and robotics are also in high demand. In 2018, a defense company affiliated with the Chinese state bought an Italian military drone manufacturer.³⁰ Datenna also investigated the takeover of Swedish Stjernberg Automation AB, a company that was at the forefront of the production of highly specialized laser technology. China's state-backed Tus Holdings Co., Ltd, bought 66.6% stake in 2017. After the acquisition, Stjernberg set up two new ventures in China and invested in the Zhejiang Huanbei Laser Technology Co., Ltd., a manufacturer

of laser technology and robotics. Stjernberg itself filed for bankruptcy in 2019. In 2021, the entire board of directors of Zhejiang Huanbei Laser Technology was replaced by Chinese staff.³¹ Datenna's investigation further revealed a German-Chinese joint venture collaboration in robotics in which the Chinese party is also a supplier "military scientific research systems and products".³²

An "investment test" for companies, an "assessment framework" for universities, and an espionage law

How do the Netherlands and Europe ensure that our open economy and internationalized university system do not strengthen the military capabilities of geopolitical rivals? Today, unwanted technology transfer is high on the agenda of universities, knowledge institutes, ministries, the European Union, the Dutch House of Representatives and advisory bodies in the Netherlands. The aforementioned department of aerospace engineering at TU Delft no longer accepts PhD students from *China's National University of Defense Technology* (NUDT).³³ The university also launched *Partnering with China – concrete tools for TU Delft*, practical tips for researchers and departments to help them to mitigate the risks of cooperation with China. To help knowledge institutions, HCSS published a *Checklist for Collaboration with Chinese Universities and Other Research Institutions*.³⁴

Dutch universities also requested support from the intelligence services.³⁵ Mr. Dijkgraaf, Minister of Education,

²⁵ "Joris Teer voor Tweede Kamer Commissie over Wetenschappelijke Samenwerking Met China," [Joris Teer at round table of the Netherlands House of Representatives Committee on Scientific Cooperation with China] HCSS, October 15, 2021, <https://hcss.nl/news/joris-teer-tweede-kamer-commissie-over-china/>.

²⁶ ASML, 'Annual Report 2021', ASML, 2 September 2022, 117, <https://www.asml.com/en/investors/annual-report/2021>.

²⁷ Kirsty Needham and Stine Jacobsen, "Monkey-Brain Study with Link to China's Military Roils Top European University," Reuters, November 18, 2021, sec. World, <https://www.reuters.com/world/exclusive-monkey-brain-study-with-link-chinas-military-roils-top-european-2021-11-18/>.

²⁸ Li Jiayao, "China Upgrades Oxygen Supply Facilities for Border Troops in High-Altitude Tibet - Ministry of National Defense," Ministry of National Defense of the People's Republic of China, February 9, 2021, http://eng.mod.gov.cn/news/2021-02/09/content_4878887.htm.

²⁹ Reuters, "Chinese Hackers Target German Pharma and Tech Firms," Reuters, January 26, 2022, sec. World, <https://www.reuters.com/world/chinese-hackers-target-german-pharma-tech-firms-2022-01-26/>.

³⁰ James Marson and Giovanni Legorano, "China Bought Italian Military-Drone Maker Without Authorities' Knowledge," Wall Street

Journal, November 15, 2021, sec. World, <https://www.wsj.com/articles/china-bought-italian-military-drone-maker-without-authorities-knowledge-11636972513>.

³¹ Datenna, 'Stjernberg AB', Datenna, geraadpleegd 22 February 2022, <https://www.datenna.com/EAC-Stjernberg/>.

³² Datenna, 'EAC-Robowatch', Datenna, geraadpleegd 22 February 2022, <https://www.datenna.com/EAC-Robowatch/>.

³³ Annebelle de Bruijn, "TU Delft Rector: 'We do not always have an answer to what we can and cannot do with China'," TU Delta, June 5, 2021, <https://www.delta.tudelft.nl/article/tu-delft-rector-we-do-not-always-have-answer-what-we-can-and-cannot-do-china>

³⁴ Frank Bekkers, Willem Oosterveld, and Paul Verhagen, "Checklist for Collaboration with Chinese Universities and Other Research Institutions (The Hague Centre For Strategic Studies (HCSS), 31 January 2019), <https://hcss.nl/wp-content/uploads/2021/01/BZ127566-HCSS-Checklist-for-collaboration-with-Chinese-Universities.pdf>.

³⁵ Representatives of the Dutch universities, specifically the rectors of TU Delft and Utrecht University, made this appeal in the House of Representatives, among others. "Wetenschappelijke Samenwerking Met Onvrije Landen," [Scientific Collaboration With 'Unfree Countries'], Debat Gemist, October 14, 2021, <https://debatgemist.tweedekamer.nl/debatten/wetenschappelijke-samenwerking-met-onvrije-landen>.

Culture and Science, launched new National Guidelines and a Helpdesk for Knowledge Security at the end of January 2022. The second initiative enables universities and companies to consult experts from the intelligence services, the AIVD and the MIVD, via the Netherlands Enterprise Agency (RVO), on topics such as "IT/cyber, collaborations with foreign institutions and admission of foreign PhD students and researchers."³⁶

At the same time, Minister Dijkgraaf, Minister of Justice and Security Yeşilgöz-Zegerius (J&V) and Minister of Economic Affairs (EZK) and Climate Adriaansens jointly state that "self-regulation" of universities and other knowledge institutions is not sufficient. That is why an 'assessment framework' will come into effect in 2023 to prevent unwanted knowledge and technology transfer within so-called high-risk research fields, or 'the knowledge fields in which the risks to national security are greatest'. For a start, the government is investigating a variant of the "assessment framework" that only applies to countries outside the European Union, the so-called "third countries".³⁷

The preparation of this framework runs parallel to the development of the "investment test", a means to test the investments in risk areas of commercial enterprises from outside the European Union. The government has indicated that one fundamental question has so far remained unanswered for both the investment test, the assessment framework and future export control policy, namely what is the definition of 'high-risk fields'?³⁸ Simultaneously, Minister Yeşilgöz-Zegerius presented a law for consultation to criminalize multiple forms of espionage. This includes engaging in and inciting others to "engage in espionage

activities for a foreign government" that endangers "vital interests," including the national security and safety of individuals. The maximum prison sentence is six years.³⁹

The European Union also took several initiatives. For example, in October 2020, the EU launched a framework for screening foreign direct investment.⁴⁰ In doing so, it encouraged Member States to introduce their own investment screening schemes. In addition, the European Commission published a working paper called *Tackling research & innovation foreign interference* in January 2022.⁴¹ The European Union is also investing almost €100 billion in its own technology base through the Horizon Europe programme.⁴² In this way, the EU tries to be a technological frontrunner and at the same time ensure that knowledge does not leak away to rivals via the member-state with the lowest knowledge security standards.

In order to put a stop to unwanted technology transfer, coalition parties, experts and the Advisory Council on International Affairs (AIV), the official body advising the Dutch House of Representatives and the government in the Netherlands on international issues, have put forward proposals that go further than the government's plans. The VVD, the largest party in the Netherlands, for example, judges that the "capacity for self-correction" of educational institutions is "insufficient".⁴³ One measure the party proposes is setting up a public register in which foreign

³⁶ Robbert Dijkgraaf Netherlands Minister of Education, Culture and Science, 'Kamerbrief over voortgang en vooruitblik aanpak kennisveiligheid hoger onderwijs en wetenschap - Kamerstuk - Rijksoverheid.nl' [Letter to parliament on progress and outlook for the approach to knowledge security in higher education and science] (Ministerie van Algemene Zaken, 31 January 2022), 4–5, <https://www.rijksoverheid.nl/documenten/kamerstukken/2022/01/31/voortgang-en-vooruitblik-aanpak-kennisveiligheid-hoger-onderwijs-en-wetenschap>.

³⁷ Robbert Dijkgraaf, Netherlands Ministry of Education, Culture and Science, 'Kamerbrief over voortgang en vooruitblik aanpak kennisveiligheid hoger onderwijs en wetenschap - Kamerstuk - Rijksoverheid.nl' [Letter to parliament on progress and outlook on approach to knowledge security in higher education and science] kamerstuk (Ministerie van Algemene Zaken, 31 January 2022), 5, <https://www.rijksoverheid.nl/documenten/kamerstukken/2022/01/31/voortgang-en-vooruitblik-aanpak-kennisveiligheid-hoger-onderwijs-en-wetenschap>.

³⁸ "A final list of "high risk fields" will be politically endorsed and updated periodically." Robbert Dijkgraaf Ministry of Education, Culture and Science, 6.

³⁹ Netherlands Ministry of Justice and Security, 'Strafbaarstelling spionage gemoderniseerd - Nieuwsbericht - Rijksoverheid.nl',

[Criminalization of espionage modernized] news item (Ministerie van Algemene Zaken, 28 February 2022), <https://www.rijksoverheid.nl/actueel/nieuws/2022/02/28/strafbaar-stelling-spionage-gemoderniseerd>.

⁴⁰ European Commission, 'EU Foreign Investment Screening Mechanism', Text, European Commission - European Commission, October 2020, https://ec.europa.eu/commission/presscorner/detail/en/ip_20_1867.

⁴¹ Directorate-General for Research and Innovation (European Commission), *Tackling R&I Foreign Interference: Staff Working Document* (LU: Publications Office of the European Union, 2022), <https://data.europa.eu/doi/10.2777/513746>.

⁴² "Horizon Europe," Text, European Commission - European Commission, accessed February 22, 2022, https://ec.europa.eu/info/research-and-innovation/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe_en.

⁴³ VVD Member of Parliament and spokesperson on Education, Culture and Science Hatte van der Woude, "Haal alles boven water over Chinese invloeden," [Find out everything about Chinese influence] AD.nl, February 11, 2022, <https://www.ad.nl/ opinie/haal-alles-boven-water-over-chinese-invloeden~a331945f/>.

funding of public institutions must be reported.⁴⁴ A China researcher, a sinologist and a geopolitical analyst in an op-ed in the Dutch Financial Times called on the government to establish “clear ground rules” for universities and companies. They also mentioned the fact that in Canada, Australia and the United States researchers are obliged to report with which foreign parties they work.⁴⁵ In addition, the VVD also wants to screen outgoing investments through joint venture partnerships. The Netherlands must then take a pioneering role in promoting such measures at the European level as well, the party argues.⁴⁶ D66 has called for a comprehensive parliamentary investigation [parlementair onderzoek] into the influence of China in the Netherlands.⁴⁷ In its latest advisory report on autonomous weapon systems, the Advisory Council on International Affairs calls for cooperation in developing an EU export control and investment screening policy for dual-use technologies coordinated with NATO partners.⁴⁸

Potential solutions

The aforementioned actions to combat military-technological knowledge and technology transfer from the Netherlands can only succeed on the basis of three initial steps:

- ❖ **Produce an overview of Dutch business and university collaborations with China in high risk fields by instituting an obligation to notify the government.**⁴⁹ There is no comprehensive overview of collaborations currently taking place with China within risk areas. The cited incidents are only a selection based on journalistic sources, open-source research and claims of

governments and intelligence services. A notification obligation helps the Dutch government to determine whether the incidents cited are just the tip of the iceberg or the iceberg itself.

- ❖ **Define “high-risk fields” based on the military-technological gaps geopolitical rivals, such as China, struggle with and the technologies they want to use to master the warfare of the future.**

Investment screening experts and security and defense analysts can map out the whole picture of technologies China is looking for. Together they can make an analysis of the sectors and forms of cooperation in which unwanted knowledge transfer takes place most on the one hand, and an analysis of which military technologies the People's Liberation Army needs on the other. In addition, security analysts can determine how the threat assessment for the Netherlands will change if China overcomes specific military-technological shortcomings. Such an impact analysis could, for example, focus on whether the probability of success of a Chinese attack on Taiwan increases when the People's Liberation Army acquires specific new capabilities.

- ❖ **Mandate a specialized and central government body with a clear vision of the Dutch national interest to - if necessary - block corporate takeovers and commercial and university collaborations.** The National Security Council announced in the coalition agreement could be

⁴⁴ ‘VVD wil openbaar register om buitenlandse invloed op wetenschap zichtbaar te maken’, [VVD wants public register to make foreign influence on ‘the world of science visible’] ScienceGuide, 25 January 2022, <https://www.scienceguide.nl/2022/01/vvd-wil-openbaar-register-om-buitenlandse-invloed-op-wetenschap-zichtbaar-te-maken/>.

⁴⁵ Three experts, namely Ingrid d’Hooghe, Henk Schölte Nordholt and Alex Krijger, stated in the Dutch Financial Times that Australia, Canada and the United States oblige their researchers to report with which foreign parties they collaborate. They argued that the government should set down “clear ground rules” about “what forms of cooperation are permissible.” These should then also apply to “commercial parties that export technology or lobby for the benefit of Chinese companies.” Ingrid d’Hooghe, Henk Schulte Nordholt, and Alex Krijger, “We hebben snel spelregels nodig voor universitaire samenwerking met China,” FD.nl, January 26, 2022, <https://fd.nl/opinie/1428143/we-hebben-snel-spelregels-nodig-voor-universitaire-samenwerking-met-china>.

⁴⁶ The VVD argues in favor of screening outgoing investments. BNR De Strateeg, ‘China’s Ontembare Militaire Ambities’, 17 January 2022, <https://hcss.nl/podcast/chinas-ontembare-militaire-ambities/>.

⁴⁷ Sjoerd Sjoerdsma en Jan Paternotte, ‘D66 wil parlementair onderzoek naar Chinese inmenging’ [D66 wants parliamentary investigation into Chinese interference] NRC, 15 November 2020,

<https://www.nrc.nl/nieuws/2020/11/15/d66-wil-parlementair-onderzoek-naar-chinese-inmenging-a4020103>.

⁴⁸ AIV/CAVV, ‘Autonome Wapensystemen - Het belang van reguleren en investeren’, [Autonomous Weapon Systems - The importance of regulating and investing] publication (Den Haag: Adviesraad Internationale Vraagstukken (AIV) & Commissie van Advies Inzake Volkenrechtelijke Vraagstukken, 3 December 2021), 9, <https://www.adviesraadinternationalevraagstukken.nl/documenten/publicaties/2021/12/03/autonome-wapensystemen>.

⁴⁹ As mentioned earlier, this idea was also propagated by the VVD where universities are concerned. Three experts, namely Ingrid d’Hooghe, Henk Schölte Nordholt and Alex Krijger, also stated in the Dutch Financial Times that Australia, Canada and the United States oblige their researchers to report with which foreign parties they collaborate. They argued that the government should set down “clear ground rules” about “what forms of cooperation are permissible.” These should then also apply to “commercial parties that export technology or lobby for Chinese companies”. Ingrid d’Hooghe, Henk Schulte Nordholt, and Alex Krijger, “We hebben snel spelregels nodig voor universitaire samenwerking met China,” [We quickly need rules for university cooperation with China] FD.nl, January 26, 2022, <https://fd.nl/opinie/1428143/we-hebben-snel-spelregels-nodig-voor-universitaire-samenwerking-met-china>.

a logical authority to fulfill these tasks.⁵⁰ From its central position, this council can give substance to a well-balanced vision of national and European interests based on, among other things, national threat analyses. Such a body can then, based on insights gained by defense and investment screening experts, help to ensure that an investment test, tightened export control policy, a means to screen outbound investments and an assessment framework for universities are applied with surgical precision. The goal: to stop unwanted technology transfer and at the same time not disrupt knowledge collaborations, student exchanges and trade outside the risk areas. In this way, the international character of university life and the openness of the economy can be preserved in the Netherlands as much as possible.

Return of hard competition between great powers

The post-Cold War era is over. Hard competition between great powers has once again become one of the most important features of our world. Unlike the Soviet Union at the time, Chinese state or state-sponsored parties have close commercial and academic ties to the rest of the world. A well-grounded vision of how the Netherlands safeguards its security interests within these relations is therefore urgently needed.

Are the measures proposed by the aforementioned parties enough to prevent unwanted military technology transfer? That remains uncertain. What is certain is that China's impressive modernization of the People's Liberation Army - partly propelled by our knowledge and technology - is making Europe less safe. President Biden sent more troops to Central and Eastern European countries in February 2022 to protect NATO countries. Due to neglect of the armed forces, European countries will certainly not have the means to do this themselves in the coming years. At the same time, China is again flying aircraft into Taiwan's Air Defense Identification Zone (ADIZ). In response, the US president sent

two aircraft carrier groups into the South China Sea for training.⁵¹ The strides that Beijing does make in its military rise increasingly require vital US military resources and attention that Europeans would prefer to see spent in Europe at the time of a continuing Russian attack on Ukraine.

As the People's Liberation Army modernizes, the American balancing act becomes increasingly difficult to sustain. China wins quantitatively: Beijing can scale-up production much further as Chinese shipyards built 40 percent of all ships worldwide in recent years.⁵² China is lagging behind in terms of quality. But the military-technological catch-up race has started. The challenge for the Netherlands and Europe is to ensure that China does not use European technology to catapult itself to first place. In addition, it is conceivable that military-technology cooperation and arms trade between China and Russia will intensify further as a result of the sanctions and the isolation from the West in which Moscow will find itself in the coming years. In this new world Dutch security is no longer the sole domain of the ministries of foreign affairs and defence.

Universities also acknowledge the urgency of this issue. During the aforementioned round table in the Dutch House of Representatives, Dean of Delft University of Technology Tim van der Hagen praised the simplicity and clarity of the North Korea and Iran sanctions regimes. This regulation imposes far-reaching restrictions on companies and universities in order to ensure that Pyongyang and Tehran do not have access to nuclear and ballistic missile technology. "Such schemes [where the government defines what is 'toxic'], if limited in scope, would help us. Then we can put on our website, so to speak: the TU Delft does not do collaborations [in these areas], because that's what the Netherlands – or even better – Europe has decided" says van der Hagen.⁵³ One thing is certain. If the Dutch government had been this strict for Stork's Physical-Dynamic Research Laboratory in the 1970s, Pakistan would not have obtained the essential technology to develop a nuclear weapon in the Netherlands.⁵⁴

⁵⁰ VVD, D66, CDA, ChristenUnie, 'Coalitieakkoord "Omzien naar elkaar, vooruitkijken naar de toekomst"' [Coalition agreement "Looking after each other, looking ahead to the future"] publication (Ministerie van Algemene Zaken, 10 January 2022), 40, <https://doi.org/10/coalitieakkoord-omzien-naar-elkaar-vooruitkijken-naar-de-toekomst>.

⁵¹ Ben Blanchard, "U.S. Carriers in South China Sea, Taiwan Reports Further Chinese Incursion," Reuters, January 24, 2022, sec. Asia Pacific, <https://www.reuters.com/world/asia-pacific/two-us-carriers-enter-schina-sea-counter-malign-influence-2022-01-24/>.

⁵² United Nations Conference on Trade and Development, 'Beyond 20/20 WDS - Table view - Ships built by country of building, annual',

Unctadstat, 2021, <https://unctadstat.unctad.org/wds/TableViewer/tableView.aspx?ReportId=89493>; Teer e.a., 'China's Military Rise and the Implications for European Security', 79.

⁵³ Tweede Kamer Der Staten-Generaal, 'Wetenschappelijke samenwerking met onvrije landen', Debat Gemist, 14 October 2021, <https://debatgemist.tweedekamer.nl/debatten/wetenschappelijke-samenwerking-met-onvrije-landen>.

⁵⁴ PVV MP Harm Beertema also cited the Khan affair as an example of unwanted technology transfer during a Round Table on "knowledge cooperation with unfree countries" in the House of Representatives. Tweede Kamer Der Staten-Generaal.

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