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A Beijing think tank offered a frank review of China's technological weaknesses. Then the report disappeared

The study, removed from an institutional website, says scientific “decoupling” would harm China more than the United States

8 FEB 2022 • 6:20 PM • BY DENNIS NORMILE



A Long March 3B carrier rocket carrying an experimental satellite shortly before its launch on 30 December 2021. Although China is advancing, the United States is still “absolutely leading” in aerospace technology, a Peking University report said. LIU GUOXING/VCG VIA GETTY IMAGES

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A prominent Peking University think tank posted a surprisingly frank assessment of China's technological strengths and weaknesses on 30 January—and took it down less than 1 week later. The report, titled *China-US Strategic Competition in Technology: Analysis and Prospects* in Mandarin, warns China has more to lose than the United States if technological cooperation between the countries should wither, a process called “decoupling.” It acknowledges that China still lags the United States in key technologies—particularly high-end semiconductors, operating systems and software, and aerospace.

Although the appraisal itself did not come as a surprise to those following Chinese-U.S. science and technology rivalries, “I found it surprising that they would let this thing be released,” says Denis Simon, a China science policy expert at Duke University. It's rare for China to acknowledge its technological vulnerabilities, Simon says. The report was likely pulled for political reasons, he adds: “It's not a good idea to have a [Peking University] report that states China has weaknesses and is vulnerable.”

The eight-page document, downloaded by *Science* before it was taken down, claims to be an abridged version of an interim report from a study being conducted by Peking University's Institute of International and Strategic Studies (IISS). The study was overseen by IISS President Wang Jisi, with contributions by a Peking University doctoral student and two IISS research assistants. Neither Wang nor the institute responded to emails from *ScienceInsider*. “The authors of the study are well known and respected within and outside of China,” says Brad Farnsworth, an international higher education expert at the consulting firm Fox Hollow Advisory.

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In the report, which lacks supporting data, the team analyzed the implications of such metrics as scientific citations, trends in the movement of researchers, patents, and national spending on R&D. They found:

- “China's overall technological strength has gradually increased. ... However, China still has a long way to go from being a quantitatively strong country in science and technology to being a qualitatively strong country in science and technology.”
- “China still lags far behind the United States in terms of the number of highly cited papers and in paper originality.”
- “Both China and the U.S. face losses from [technological] decoupling, both at the technical and industrial levels, but China's losses may be greater at present.”

The report also notes that China still spends much less on basic research than the United States, both in terms of absolute amount and as a proportion of total R&D funding. And the Chinese brain drain is continuing: “A considerable number of overseas students choose to stay and develop their careers in the United States after obtaining STEM [science, technology, engineering, and math] doctorates in American universities,” the authors write.

The report “makes a refreshingly clear and honest appraisal of China's strengths and weaknesses, and while scientific experts might challenge some of its narrower conclusions, the overall assessment seems about right,” says Farnsworth, who was previously a vice president at the American Council on Education and dealt extensively with Chinese universities.

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The IISS study assesses each country's strength in three areas of technology: artificial intelligence (AI), information technologies, and aerospace. The United States clearly leads in such areas as integrated circuits, computer operating systems, AI chips, and algorithms, the report says. China has strong positions in next-generation mobile communications, facial and speech recognition, and computer vision. When it comes to aerospace, “the United States is absolutely leading,” the authors write. Summing up, China is “following [the United States] in most fields, running side by side in a few, and leading in very few,” the authors write. That conclusion echoes findings in *The State of U.S. Science and Engineering 2022*, published by the U.S. National Science Foundation, which confirms China has overtaken the United States as the world's leader in **several key scientific metrics**.

The fears of a decoupling voiced in the report echo two recent surveys of Chinese scholars in the United States, who also worry about the state of scientific cooperation between the two countries. One was conducted by the University of Michigan's Association of Chinese Professors and another by the Committee of 100, a group of prominent Chinese Americans. Both surveys concluded that current U.S. policies, particularly the Department of Justice's China Initiative to crack down on alleged theft of U.S. intellectual property, are **discouraging Chinese-U.S. scientific cooperation**, to the detriment of the United States.

Guojun Sheng, a Chinese developmental biologist working at Kumamoto University in Japan—who's not directly collaborating with U.S. researchers himself—worryes the relationship between the countries “will morph into one full of paranoid suspicion, unless the two governments come up with a new model of coexistence.”

Simon agrees. “We need new bilateral agreements,” he says. Current cooperative agreements date back 40 years, when China was a developing country. New agreements, recognizing the two countries are closer to technological parity, could tackle issues that have recently plagued the relationship, starting with protections for intellectual property, Simon says.

With reporting by Bian Huihui.

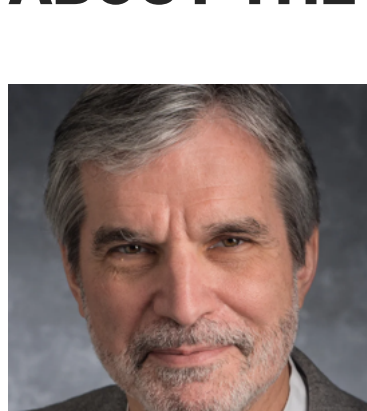
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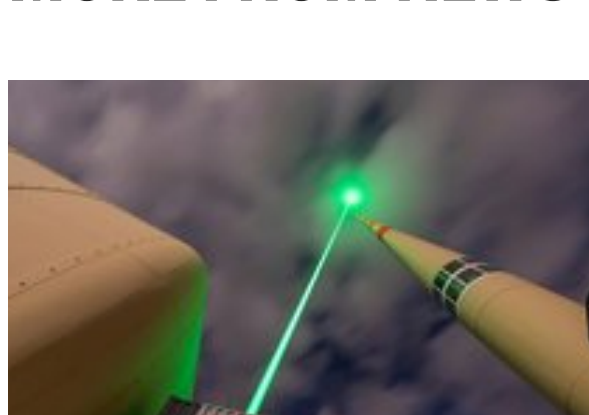


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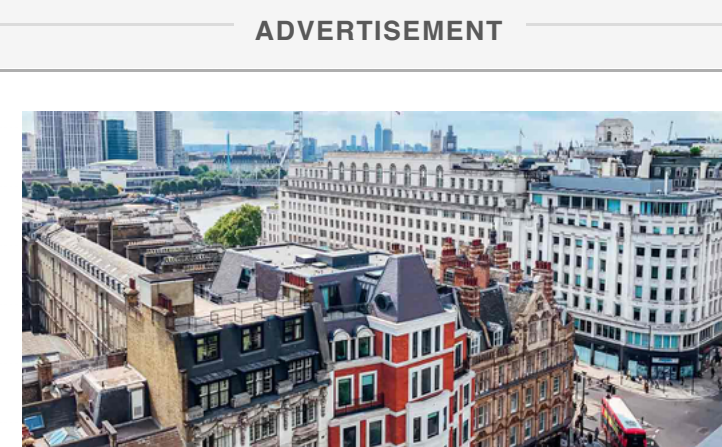
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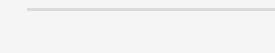
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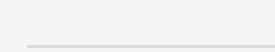
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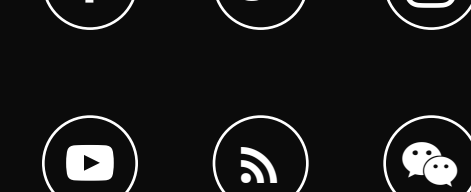
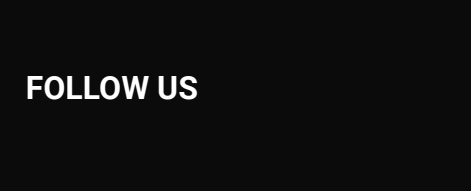
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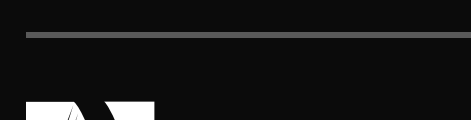
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