

How a Humboldt Foundation fellow joined China's military commission
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Germany's Humboldt Research Fellowships are very popular with visiting Chinese scientists. Back in China, some of them go on to do research for the military, a DW investigation finds. This is not a spy thriller. We have therefore deliberately chosen not to name names. This is a story about the ethical gray zone of scientific collaboration between Germany and China.



Daniel A. Anderson/Zuma/picture alliance61842749_303.jpg

There is a woman, a physicist, specializing in theoretical particle physics. After obtaining her Ph.D in China, she moves to Europe, initially for two years' research at a renowned institute of nuclear physics in Italy.

She then spends three years at two German universities in Hamburg and Mainz. Scientific cooperation with China is politically desired in Germany. The government believes it has "special significance for the long-term stability of bilateral relations."

But what if scientific cooperation is giving the Chinese arms industry a cutting-edge?

Today, the physicist is employed by a Chinese academy best known for its research into nuclear weapons. A scientist who worked with her and other Chinese colleagues in Germany recalls: "They were extremely focused on the technical work. Usually not very visionary, but technically extremely well thought out. And all highly motivated."

Politics was never discussed, he says. Instead, they collaborated on basic research -- the open-ended study of theoretical, rather than applied, knowledge -- the practical uses for which are not always immediately apparent.

"You need the basic research part for many things. Then it's always a question of what you choose to use it for later on."

This researcher has himself spent time at Chinese universities. The standard of scientists there has risen dramatically over the past two decades, he says. "I don't

know what specific goals China has set itself, but basic research is regarded as very strategically important. You see that everywhere.”

China's nuclear weapons program

The China Academy of Engineering Physics (CAEP), where the physicist now works, also carries out a great deal of basic research. Above all though, this top academy is the only place where China continues to develop its nuclear warheads.

The Australian China expert Alex Joske, whose research focuses on technology transfer, says the CAEP has been "involved in several cases of espionage targeting foreign nuclear technology" and is "probably one of the scariest and most concerning parts of China's research system.”

A search for scientific publications by the physicist since she returned to China yields no results. What can be ascertained is that, after spending a total of five years in Europe, she was placed at CAEP via the best-known government grant program. China has hundreds of these.

The Thousand Talents Plan is specifically aimed at top scientists working in other countries, or with considerable overseas experience. It tempts them with large budgets and modern laboratories. Some German researchers have also participated in it.

Research -- in the service of the Communist Party

Under President Xi Jinping, the Chinese Communist Party has invested massively in science, so China can become the leading world power by the year 2050. The state aims to achieve this goal through "military-civilian fusion." According to this doctrine, civilian research must also serve the People's Liberation Army. Patriotism is a researcher's duty.

As early as July 2013, Xi emphasized that "Science has no borders, but scientists have a motherland." He had only been in office a few months at the time. In May 2018, he made clear in a speech to the Chinese Academy of Sciences that "Only by grasping key and core technologies within our own hands can we fundamentally guarantee national economic security, national defense security, and other securities.”

A joint investigation by 11 European media outlets, led by the investigative platforms Follow the Money and CORRECTIV, documents the importance of collaborative research with European universities to China's plans for its own advancement.

In Germany, DW, the Süddeutsche Zeitung, and Deutschlandfunk were part of the journalistic project. We discovered that German scientists have collaborated closely with colleagues affiliated with the Chinese military. Almost 350 joint studies attest this, many of them in sensitive fields like artificial intelligence and quantum science that will decide the future of warfare.

Scientists in profile

For the next stage of the investigation, DW and its partners scrutinized the publicly available data of a number of top Chinese scientists, who - like the physicist - had been in Germany for an extended period during the past 10 years; and who were

conducting research in the fields of mathematics, computer science, natural sciences, and technology. With the help of the Center for Security and Emerging Technology (CSET) at Georgetown University in Washington D.C., we identified 80 people.

We then analyzed 26 particularly striking profiles in detail. All of these scientists now work at elite universities that cooperate particularly closely with the military. 22 of them were, like the physicist, brought back via the Thousand Talents Plan. 12 of them had a fellowship from the Humboldt Foundation, a renowned state-funded body that supports academic research.

From Humboldt Fellowship to Military Commission

One of the fellows, a chemist, conducted research from 2011 to 2014 at two top research institutes in Berlin. In 2015, he went to Liverpool, England, for a further year abroad on a Marie Curie Fellowship from the European Union.

Today, he is a member of the Military Materials Technology Professional Group in the Equipment Development Department of the Central Military Commission - China's highest national defense authority, led by President Xi. One of the chemist's current research interests is laser technology.

Another Humboldt fellow, a plasma physicist, spent three years at the Ruhr University Bochum. In 2018, exactly one year after his return, he won a sponsorship award from the Central Military Commission.

Today, his areas of specialization include artificial intelligence and aerospace propulsion. Since 2020, he has also worked for the China Aerospace Science and Technology Corporation. Its Laboratory 514, where he works, states that it is "engaged in aerospace and national defense metrology." Metrology is the science of measurement, dealing with accuracy and calibration.

Individual cases like these are not, of course, in Germany's interest, admits Enno Aufderheide, the secretary general of the Humboldt Foundation. Nonetheless, he believes that Germany would lose more than China were it to forgo the collaboration.

It is necessary to maintain contact with the world's brightest minds, he says. "The Chinese are very good at understanding Europe, but we are not that good in understanding the Chinese. And that is why we do need this exchange."

Aufderheide also believes it is wrong to reduce Chinese research policy to military-civilian fusion alone: "There's a lot of good, true basic research in China as well."

Next generation for the defense industry

Another case involves the Technical University of Munich. This was where a talented Chinese engineer conducted research for his Ph.D. After returning to China, he was rewarded by the Central Military Commission, first with an innovation award in 2019, then, one year later, with a sponsorship program. One focus of his research is the technology of thermal protection for hypersonic aircraft.

Today, the talented engineer leads at least three major projects that are directly financed by the Military Commission. Two of them are officially designated "important national defense projects." As a professor, he also acts as a point of contact for Ph.D students who want to study in Germany. In an interview with a Chinese regional newspaper in the summer of 2019, he said: "I used to want to carry out the scientific research projects that I liked. Now I hope to train more people for the defense industry."

A professor at the TU Munich, who is still in contact with the engineer, told us he knew nothing about his colleague's connections with the military. "My topics of collaboration with Chinese colleagues have always been civilian applications of combustion research," he said.

DW and its partners tried repeatedly to contact the four Chinese scientists mentioned in this article, but did not receive a response. Two of them have since removed military references from their online resumes.

'Don't feed the hand that bites you'

According to the Max Planck Society, "around one third" of all scientific management positions in China today are held by people who were trained in Germany. These include the chemist who is advancing military materials research and the engineer who is training the next generation for the defense industry.

Didi Kirsten Tatlow is a co-author of the book "China's Quest for Foreign Technology - Beyond Espionage." She believes that Germany's great openness to visiting Chinese scientists is a serious security risk: "In English, I like to say that there's a saying: Don't bite the hand that feeds you. I would actually turn it around and say: Don't feed the hand that bites you."

Tatlow says Germany needs to question the nature of the Chinese system. Is it "something that aims to essentially supplant us, to dominate our own industries in a way that is, I think, politically risky and democratically unsafe for us?"

Protecting freedom of research

In Germany, the constitution prevents the government from encroaching on freedom of research. Universities choose their own partners and projects. "We can't, and don't want to, do all that centrally, from Berlin," explains Jens Brandenburg, Junior Minister in the Federal Ministry of Education and Research.

Germany's aim, he says, is to be "as open as possible and as closed as necessary" in its scientific collaboration with China - the latter especially when it comes to dual-use projects that could also be used for military purposes.

"There is the big challenge that freedom of research is very much restricted from the Chinese side. We are also seeing a strong focus on military or civilian-military use," Brandenburg says.

Nonetheless, he does not believe in drawing red lines: "It is very, very important to me, above all, that we absolutely respect freedom of research in Germany." He

considers his ministry's role to be a purely advisory one: as an authority that raises awareness and educates.

German science confident it can deal with the challenge

But China is a "systemic rival," not an ally. Both the EU and the German government see it this way.

German security sources have told DW and its partners that scientists live "in their own bubble" because, for them, international collaborations "are the currency par excellence." Research requires a lot of money - and China is also willing to invest in foreign research projects. Many universities, the sources suggest, are therefore "a bit submissive" and "a bit naïve."

Professor Katja Becker refutes this. She is the president of the German Research Foundation (DFG). "Naiveté is really not the order of the day, because we are constantly reflecting on these issues," she says.

She states that there are intensive internal exchanges between the universities, and that critical dual-use collaborations are thoroughly scrutinized by both scientific ethics committees and the relevant Federal Office for Economic Affairs and Export Control.

"Military research is excluded from DFG funding," Becker stresses. Yet DFG money has gone to the technical laboratory of a top German scientist who is working with colleagues from China's National University of Defense Technology (NUDT). The NUDT reports directly to the Central Military Commission. It is the premier institution for scientific research for the People's Liberation Army.

A pressing political issue

Becker points out how quickly the German scientific community reacted to the war of aggression against Ukraine. All research cooperation with Russia was immediately put on hold, she says.

"We learned from this that trust and hope are not always well-founded.

Unfortunately." But she still believes that trust is needed, "if we are to address the big scientific questions facing humanity."

China has not condemned the Russian invasion, has criticized the West's arms deliveries to Ukraine, and ignored international economic sanctions levied against Russia.

"We definitely would not break off contacts with China at the moment because of this; there is no reason to do so," the DFG president says.

It is not disputed that the vast majority of the 60,000 or so Chinese researchers in Germany simply want to study. What is a cause for concern, and a pressing political issue for Germany, is the system that coopts their research into the military plans of the Communist Party.

**** Additional reporting: A DW colleague who wishes to stay anonymous for security reasons Editor: Ruairi Casey*