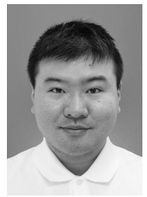
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The English translation of the Grand Prize essay begins on page 19 and ends on page 16.

We Must Dismantle Research Taboos: Creating a Bright Future for Japan With Constitutional Reform and Defense Technology Research



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1. The false peace theory that degrades Japan's technological power

Taking an objective look at security in East Asia, I wonder how many people can sincerely state that Japan exists in peace. North Korea frequently launches missiles, incursions by official Chinese ships into the Senkaku Islands area have become normalized, and security-related tension is growing in the Taiwan Strait. There are also invisible battles, including psychological and information warfare. This critical situation has reached a perilous level with the harshest circumstances in Japan's region since World War II.

In this severe situation, the most pressing task is to drastically enhance Japan's defense capabilities not only for the sake of our nation, but also to protect citizen lives, assets, and territory. This must go beyond simple political discussions, and there is no time to lose. However, throughout the postwar era Japanese educational institutions and academia have a pervasive and deeply rooted belief that defense research should be avoided. They still believe it is wrong to conduct scientific and technological research that could aid in national defense, viewing it as "military research."

These institutions cry out that defense-related technological development is a means of supporting war, and they nip any such attempts by ambitious researchers in the bud. This false theory of peace is divorced from reality. It is the primary factor that destroys Japan's defense foundation from the inside and shows aggressors our vulnerabilities.

National security has undergone major changes today, when technological superiority determines the survival of a nation. Defense is not possible without artificial intelligence (AI), drones, measures against cyber warfare, and other cutting-edge technologies. In terms of the nation and its people, it is the height of irresponsibility to avert our gaze from this reality, to regard defense research as a threat, and to reject this type of research. At this time, we must come to our senses and stop avoiding defense research, a continuous tendency in the postwar era.

2. Military affairs and public welfare are inseparable: military power is required for an affluent nation

The anti-defense and military research faction holds that military research should be banned, but peace-focused research on public welfare should be permitted. This way of thinking seems to disregard the technological structure of the world today and diverge from the global standard. Looking back at the mainstream process from World War II to the Cold War, advanced technologies were developed for military purposes, then put into the private-sector market, where they helped enrich society. Major examples include microwave ovens; the Advanced Research Projects Agency Network (ARPANET), the forerunner of today's Internet; and the Global Positioning System (GPS), an essential part of car navigation systems and smartphones. These military "spin-offs" have been used for the sake of public welfare.

There is an inverse phenomenon now in the 21st century. With military "spin-on," general-purpose technologies are quickly developed by private enterprises and universities with vast amounts of capital, then incorporated into weapons and defense systems.

An example is environmental prediction algorithms and AI image recognition technologies developed by private companies

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for autonomous vehicles. These can be used in autonomous drones, tracking systems, and missile guidance technologies. Research on heat-resistant alloys and composite materials that drastically increase civil aviation gas mileage can be applied to hypersonic guided missile development. Telecommunications research on encryption and increased speed is useful in building defense networks to protect key national infrastructure from cyberattacks.

Technology is not inherently "good" or "bad" – we can choose its features and the objectives for which it is used. If we follow the logic saying all research that can be applied to military purposes must be banned, we will be forced to halt most contemporary research on cutting-edge sciences and technologies like AI, robotics, quantum technologies, semiconductors, and materials engineering. This dualistic view is not logically or technologically possible; it is an irrational argument that will destroy Japan's scientific and technological power.

3. Japan's inability to think clearly stems from the SCJ

Across the globe, Japan is the only nation that has shirked defense research to this degree while binding its own feet and hands. Why has this abnormal state of affairs been ignored for so long? One possible cause is the dogmatic statements released over many years by the Science Council of Japan (SCJ).

The SCJ adopted its Statement on Determination to Never Conduct Scientific Research for War Purposes in 1950, soon after the end of World War II. During the Cold War, it released the 1967 Statement on Not Conducting Scientific Research for Military Purposes. As a continuation of these past declarations, it released the Statement on Military Security Research in 2017, a time when the defense environment was deteriorating dramatically. Regarding the National Security Technology Research Promotion Fund (a research grant program started by the Ministry of Defense [MOD]), in its 2017 declaration the SCJ voiced a powerful sense of wariness about "government intervention in research" and called for universities across Japan to create structures for pre-vetting research content. This statement has served as powerful political pressure on Japanese university administrators. Many universities put voluntary regulations in place in the name of "self-restraint," and have even taken the drastic step of establishing school regulations that entirely prohibit researchers from applying for MOD grants.

However, these decisively malicious leaps of logic purposefully confuse weapon development used to start wars, and defense research for protecting citizen lives and peace. This trend of usurping researchers' freedom to do legitimate, fundamental defense research is a means of regulating speech and thought by forcing principles and positions on others, and it runs contrary to the concept of safeguarding academic freedom. The SCJ has built an abnormal space where researchers who want to contribute to national defense are viewed as warlike by their schools, and are made to retract applications for research funding. This is the main factor that has weakened Japan's defense technology foundation.

4. Three harmful effects of prohibiting defense research

SCJ prohibits military research, and the academic world goes along with this ban that is more than an emotional taboo; it causes harmful effects that are fatal for Japan's existence as a nation.

Number 1. Reduced deterrence, and vulnerability that encourages invasions

Deterrence is the most important power that prevents war in the actual world of international politics. It is a psychological and physical mechanism for making other countries aware that attacks will bring about enormous, unforeseen damage, which dissuades them from invading.

For aggressors, the most suitable targets are nations with considerably inferior technologies and no defense abilities. It is impossible for a nation to maintain peace if it rejects defense technology research and development and neglects to make technical preparations. These actions put the nation in danger and motivate other countries to invade.

Number 2. Flight of skilled human resources (brain drain) and hollowing out of academia

Today, security-related research budgets are the major source of funds to produce cutting-edge technologies. For risky initial investments in fundamental research, many historic innovations have been created through plentiful, long-term investments based on the standpoint of national security.

By rejecting security research as "military research," Japanese academia has cut researchers off from ample research funding and leading-edge equipment. Accordingly, motivated researchers with outstanding skills in fields such as cutting-edge AI and robotics are increasingly fleeing to the United States, Europe, China, and other countries in search of sufficient funding and equitable evaluations. This is referred to as "brain drain." Japan's dismissal of defense research results in a disastrous situation of

backwards priorities, in which superior "brains" are helping other nations enhance their technical capabilities.

Number 3. Dependence on other countries for equipment and loss of strategic independence

Japan must import much of the equipment and alert systems required by the Japan Self-Defense Forces (JSDF) from other countries, mainly the U.S., due to self-imposed limitations on research and development of advanced defense technologies. In fact, a Northern European manufacturer was chosen over Mitsubishi Heavy Industries to provide new armored vehicles.

This goes beyond economic loss, in which enormous amounts of government funds are flowing overseas. Equipment imported from abroad often has internal structures that are "black boxes" and cannot be easily repaired or modified according to Japan's security environment. The JSDF's fighting power would deteriorate significantly if part procurement was cut off during an emergency. Our defense is entirely dependent on other nations' supply networks. It must be stated that Japan is an overly fragile independent nation, which is a shameful state to be in.

5. The common understanding of defense technology research around the world: powerful innovation symbolized by America's DARPA

For major advanced nations, there is no question that the global standard involves combining national security with the technological capabilities of universities and the private sector to dramatically accelerate innovation throughout the entire country. The utmost model for this type of success is the American Defense Advanced Research Projects Agency (DARPA) established in 1958. Without fear of failure, the government rapidly and boldly invested money in high-risk, high-return technologies that could dramatically change the world. The Massachusetts Institute of Technology (MIT), Standford University, and Carnegie Mellon University (which are all elite universities) have produced the world's best research results by unashamedly taking research funding from the U.S. Department of Defense and DARPA. Fundamental research at universities is powerfully upheld by ample research funding and an environment that permits free study. This results in innovative technologies that bear fruit in the private-sector business and defense technology fields, leading to vast industries and huge numbers of jobs. This economic power is then used to strengthen defense capabilities. The U.S. has maintained the world's top economic power and military strength via this system.

The same can be said of other countries that have torn down all barriers between the national defense and technology fields. In addition to the United Kingdom, France, and other European nations, Israel is betting on its survival with military engineers who lead the cyber and IT industries, and China is growing its technological prowess at a staggering speed based on a national strategy of military-civil fusion. Only Japan lacks this ability to think clearly, and its rejection of military research has worsened our research capabilities.

6. The government should give ample support to researchers who are motivated to defend our country

Right now, what policies should Japan focus on to eliminate these absurdities that I have outlined? The answer is that the national government should provide ample support to researchers and projects with a strong motivation to contribute to security and defense, including funding, equipment, and status. The Japanese academic world has unjustly labeled researchers who want to carry out studies that help Japan defend itself as "war collaborators" and similar names, and they have been shamed in their institutions. It is our nation's biggest blunder and disgrace that talented human resources who are trying to work for their country are instead rejected and given no rewards.

The government should take this chance to clarify its stance and position researchers working on defense and dual-use technologies as national heroes. Specifically, grants-in-aid (including the MOD National Security Technology Research Promotion Fund) should be increased to a higher order of magnitude, and selected researchers and laboratories should be freely given research funding totaling hundreds of millions of yen. The government should be responsible for building an environment with the world's top-class experimental facilities, talented researchers, and technicians – places where researchers do not have to struggle every day to find sufficient funding. A "carrot and stick" strategy should be implemented by imposing penalties on university authorities that reject or obstruct grants-in-aid because they are averse to military research, such as cutting subsidies from the national government. Flexible universities and research institutions with a proactive stance on defense research should be given priority when distributing infrastructure improvement and operating funds.

In the field of cutting-edge technologies with direct connections to national defense, we should build a new structure for giving special incentives and honors to researchers with exemplary results. We must send a powerful message to talented

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Japanese researchers who might move to foreign universities and private enterprises, telling them that if they carry out defense research in Japan, they will receive the world's top-class equipment, generous wages, and the pride of defending their country. The most effective way to drastically speed up security and technological innovation is by using government funds to give generous treatment to and develop skilled people who want to help keep Japan safe.

7. Enhanced defense is unattainable without constitutional reform: breaking the fetters of Article 9

An unavoidable obstacle stands in the way of supporting motivated researchers and promoting technological development: Article 9 of the Constitution of Japan. Paragraph 2 declares, "land, sea, and air forces, as well as other war potential, will never be maintained. The right of belligerency of the state will not be recognized." This ambiguous statement was forced on Japan during the postwar occupation. For more than 50 years, it has created a breeding ground for fruitless discussions about the unconstitutionality of the JSDF and dangers posed by research on defense equipment and technology. The United Nations Charter clearly acknowledges the right of self-defense to protect our nation's peace, along with the lives and property of our people – an inviolable right that is intrinsic to a sovereign nation. It is reasonable for a nation to have the ability to defend itself, and to research and develop cutting-edge technologies that uphold this ability.

As long as Article 9 remains unchanged, the government must continue trying to ensure consistency with terrible legal interpretations. This will keep providing a basis for the faction that opposes defense research to say that military research violates the constitution. People will hesitate to get involved in defense studies because researchers are constantly exposed to political risks and fierce criticism, even if the government strongly supports their work.

There is just one path forward to building an environment where motivated researchers can proudly contribute to national defense: we must remove Paragraph 2 of Article 9, add a clear statement about the role of the JSDF, and openly state in the constitution the legitimacy of Japan's right of self-defense and of defense research that upholds this right. In this way, we could fundamentally dismantle taboos that have continually restricted Japan in the postwar era.

The era has ended when we can achieve peace by reciting the unrealistic statement that "war potential will never be maintained." Looking to the future, the most irresponsible action is to avert our gaze from harsh threats we actually face while avoiding discussions on constitutional reform because they will "lead to war."

8. Conclusion: we must banish taboos to make Japan into a major nation for joint military-civilian research

Justice is powerless without strength. Japan will be subject to illegal invasions and pressure from other countries without realistic national power to uphold the lovely ideals of peace and noble morals. Human history shows us this harsh reality. Japan must promptly carry out the following four structural reforms to once again become a major nation and global leader – a genuinely independent state that uses its own power for peace and stability in East Asia.

Number 1. Revision of Article 9: The constitution should clearly state that Japan will use the JSDF and maintain national defense forces, and that defense technologies will be developed as a legitimate national project.

Number 2. Targeted support for researchers as defense partners: We must build a structure to directly give special research funding, equipment, and incentives to researchers and projects aiming to contribute to national security.

Number 3. Total repeal of voluntary restraints in universities and the academic world: The SCJ should invalidate its past statements. Universities should fully repeal their ridiculous rules that reject research grants from the MOD.

Number 4. Stricter security clearance: Japan should establish solid information security legislation of the same level as Europe and the U.S. to prevent the outflow and theft of cutting-edge research results and advanced technical information to China and other hegemons.

We must bring an end to the absurd era in which the term "military research" inspires an excessive response while holding back the researchers who are trying to help our country.

We must openly and boldly utilize the power of science and technology to protect our nation and citizens' futures. The national government should do its utmost to support outstanding human resources who are motivated to defend Japan. This is the only strategy by which Japan can survive this harsh security environment, and it is a historic duty given to those of us alive today, who must fulfill it for the sake of future generations.