

“Science and Humanity” versus “Science-Based Technology”

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“Academic research” is an intellectually creative endeavor by human beings based on their imaginative ideas and intellectual curiosity and aimed at discovering the true and basic principles behind every phenomenon in nature, humanity, and society. Since ancient times, human beings have asked, “What is the universe, and what are we who ask this?” These questions stem from the insatiable human desire for “knowing.” With questions such as these, humans discovered new principles and laws, developed methodologies for analysis and generalization, and systematized new skills and knowledge. We should continue to explore advanced areas of study, broaden our view of nature, and further extend the horizon of human intelligence in an attempt to build a more unconstrained, happier, and unprejudiced human society.

“Science and technology,” a popular expression these days, is used to mean “technology developed based on the achievements of science.” “Science and humanity,” by contrast, is used to mean the pursuit of knowledge. Academic research in natural science is used to mean research in basic science that does not directly concern itself with technological applications. Therefore, academic research rarely has a measurable effect in the short term, as opposed to “science and technology” where the objective lies in actual usage and application. The achievements of academic research bring fundamental changes to society in the long run. The discovery of quantum mechanics in the early 20th century provided the basis for today’s electronics, while the basis for quantum mechanics originated from the development of mathematics in the 19th century. In the history of science, there are numerous such examples; that is, advances bringing about further advances with time. The achievements of academic research become the basis for subsequent academic development, and the repetitions of this cycle constitute a fundamental element for the continued development of human life and new culture on this planet.

As stated above, academic research focuses on *excavating* and *exploring* new problems, rather than research that seeks to *solve* problems. Compared to projects that are meant to solve a problem within a limited period, the explorations of academic research require significantly prolonged time. Only academic research demonstrating the depth and breadth of such long spans can generate the intrinsic “seeds” necessary for new scientific technologies. In the 21st century, the “century of knowledge,” intellectual assets are the most important national resource any country can possess. Knowledge will drive the sustainable development of people’s lives and economic activities, and will open the way to a hopeful future.

There are various types of academic research, from small-scale and sprouting researches to those conducted by large-scale teams. Regardless of its form, however, academic research is generally based on the original ideas of individual researchers. These ideas then lead to new discoveries. It is crucial to remember that these original ideas are derived from daily discussions and collaboration with other researchers. In order to promote vigorous academic research, it is important to prepare and maintain a place in which researchers can develop their discussions, create ideas, carry out cooperative works, and support those endeavors with sustained measures.

Considering the historical fact that the excavation of problems and the creation of new fields of study have been achieved through dynamic contact between different academic fields, it is important for academic researchers not only to delve deeper into their own academic fields but also to make further exchanges with other fields and to strive to obtain a new and multi-dimensional perspective. Having exactly this perspective, the National Institutes of Natural Science (NINS) conducts world-class academic research in various fields of natural science, including astronomy, materials science, energy science and life science. At the same time, through forward-looking inter-disciplinary cooperation that goes beyond the borders of the existing academic fields, NINS aims to create new research fields in the 21st century and to make vital contributions to society.