

## ① - ③ Promotion of science and technology that supports the creation of cultural resources

### (1) Promotion of technology that relates to media art

Media technology has evolved from 'painting' to more realistic 'photography,' from 'photographs' to 'movies' with movement, from 'movies' to 'television' seen in real-time, and from 'television' to 'multimedia,' which is bi-directional. In addition, going from 'multimedia' to 'Virtual Reality' with kinesthesia is possible. Moreover, the evolution of music media technology is remarkable.

The latest media art makes good use of the digital techniques of computers and enables the combination of two or more media, collaboration over networks, interaction, and self-propagation using computers.

Now, leading-edge science and technology are tied to culture and the arts, and a new "media art" culture has arisen. Moreover, it is growing up as one big industry, the 'entertainment industry,' which is an original strength of Japan. Its promotion is an urgent issue for Japan.

Moreover, recently, neither GNP (Gross National Product) nor GDP (Gross Domestic Product) are receiving attention, but GNC (Gross National Cool) has been receiving great attention as an indicator that shows power in a country<sup>(6)</sup>. Regarding GNC, the following are expected:

GNC has the ability to influence other countries and is connected with the competitiveness of the industrial products of the country. In order to improve GNC, the unique cultural values of Japan are important. Therefore, it is believed that cultural resources become an important factor to improve GNC. In the past, science and technology contributed to the increase of the GNP and GDP of Japan. In the future, the science and technology that supports the preservation, application, and creation of cultural resources is expected to improve the GNC of Japan.

It is said that Japan has advanced media art such as animation. However, various foreign countries are now catching up; particularly, our response to 3D (three dimensional) and digital technology has been delayed, so it is necessary to promote the active investigation of these expression technologies.

Moreover, a system in which artists, writers, and engineers cooperate on technological developments and which promotes their interactions is necessary to promote the media art.

### (2) Promotion of information-processing technology that supports new media art

The infrastructure concerning information regarding society is advancing, and communication and broadcasting are uniting, while a large amount of electronic information comes and goes freely on

information networks, nowadays. The expressive medium of culture and the arts has diversified and been enhanced from pictures or characters that were drawn on stone or walls with brush and paints, to paper, then to typography, photography, movies, radio, television, and multimedia. Moreover, transmitting technology and using culture and the arts technology have become widespread, and popularization grows. The mountain of 'culture' can rise further, based on the expansion of this foundation.

However, the amount of information that is consumed increases explosively, and when this continues, the processing and fabrication of subject matter information becomes difficult.

Therefore, the research and development of information-processing technology is expected.

Examples of information-processing technology include image synthesis, image editing, color- and texture-rendering technology, interactive search technology, and type-value conversion technology of a workman's craftsmanship and knowledge. The purpose of the research and development of information-processing technology is to allow many people to demonstrate their creativity and to let them transmit, create, and use culture and the arts.

6: In Douglas McGray's essay, "Japan's Gross National Cool," which was published in the June 5 edition of the Foreign Policy magazine, Japan's global cultural influence is argued.

## 2 Science and technology that supports the preservation, application, and creation of cultural resources—issues

### (1) Are people who are related to cultural resources working together? Promotion of further exchange and cooperation between organizations related to cultural resources and the industrial world

The science and technology concerning preservation, application, and creation of cultural resources generally exists only in very limited marketplaces; several types of products are produced, but the amount is small. Therefore, even if one private company independently advances research and development, it does not result in enough technological development. Thus, research and development is centered on government researchers, and the technological developments have been steadily put in to practical use. However, the active introduction of new related fields, into the new science and technology and application to the preservation, application, and creation of cultural resources is insufficient.

Strengthening of the cooperation between researchers, engineers, and those in the field of cultural properties is indispensable in the future. Those in the field of cultural properties should clearly explain what science and technology is necessary for the preservation, application, and creation of cultural properties to the researchers and engineers. Furthermore, the researchers and engineers are useful in this process, because they can cooperate in a way that can be easily understood by those working in the area of cultural properties and can actively offer scientific knowledge in related fields.

Moreover, it is necessary that related research laboratories and private companies work together to advance the investigation and research.

In addition, it is necessary to construct a cross-section of science and technology that covers not only the field of cultural resources but also other applicable fields of science and technology. The abovementioned science and technology overcomes the small size of the marketplace occupied by cultural resources; moreover, it can bring technological innovations to a wide section of society.

It is necessary that the researcher, engineer, and those working with cultural resources exchange and use information mutually through a window of information interchange.

### (2) Are specialized fields limited to currently existing specialized fields? Promotion of the unity of natural science, the humanities, social sciences, culture and the arts, and science and technology

With regard to cultural resources, it is necessary that people understand cultural resources and realize the opportunities to become familiar with cultural resources. From this perspective, using various methods such as information and communication technology, the cultural resources are required to be utilized as well as to be

opened to the public, considering the characteristics and preservation of cultural resources.

Moreover, leading-edge science and technology must be exploited and the opening and application of cultural resources to the public advanced. It is necessary to understand culture and the arts deeply, to not ruin the cultural value of culture and the arts, and to progress with great care in the opening and use of cultural resources to the public.

Humans can reason with sensibility, so it is necessary to create truly attractive cultural resources that appeal to human sensibility. To support the creation of such, there is a demand for fundamental research regarding sensibility and emotion. In particular, it is necessary to unite brain science research and empirical sensibility and emotion research.

It is desired that the researcher and the engineer in various fields related to cultural resources cooperate and settle on a research plan in order to achieve a specific purpose. Moreover, the formation of common basic technology to tie different fields together, the maintenance of a united research infrastructure for collaborative research, and the infusion of research funds and research people and research evaluation irrespective of the existing academic framework are all required. Furthermore, it is necessary to create a new science and technology that unites science, the humanities, social sciences, culture, and the arts, and science and technology.

### (3) Can the present science and technology endure practical use? Research and development of technology that is easy-to-use onsite

Science and technology that is related to the preservation, application, and creation of cultural resources must be applied to actual sites in various places, such as the preservation and application of ruins and landmarks so as to demonstrate its results and usefulness to society.

Therefore, it is necessary that the universities with talent and equipment should become the core, including also administrative bodies that have conducted business concerning cultural properties. The university and administrative bodies should be the foundations of science and technology in the region. Moreover, municipalities, local companies, research laboratories, and citizens should work together and advance the programs corresponding to the facts in the region.

Particularly, the research and development of technology suitable for these purposes is important. It is necessary to consider and understand the sufficient cost—performance value and demand for science and technology in a specific region with regard to the technology. Moreover, it is necessary to consider the natural conditions in the region, situation of the social economy, and backdrop of historical culture.

Likewise, it is necessary to construct a mechanism whereby information on approaches taken to resolve issues and various experiences, including failures, be widely shared in relation to regional issues.