

Keynote Speech of **APRU Presidential Retreat and 19th Annual Presidents Meeting**

## Universities Look towards the Future

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Distinguished Guests, Ladies and gentlemen

### 1. Introduction of SCJ

It is my great honor to be invited to the 19<sup>th</sup> APRU Presidents Meeting. I am Takashi Onishi, President of the Science Council of Japan. The Science Council Japan is the national science academy of Japan. Our 210 council members form the core of the academy, with a total membership of around 2,000, covering all the academic disciplines of humanities, social sciences, life sciences, physical sciences and engineering. Our host Professor Hirano is one of our council members.

### 2. Problems facing universities

Since most of our council members currently work at universities, our academy, like other academies in the world, is well placed to appreciate the vital role universities play in our society.

However, you may well be aware that our universities currently face a myriad of challenges to tackle and overcome. Some of these challenges will perhaps be familiar to universities around the world including the member universities of APRU, but some others are specific to universities in Japan.

#### 2-1 Common problems facing universities around the world

One of the common problems is the increase in demand for university education. UNESCO estimates that more than 200 million students are currently enrolled at higher education institutes worldwide, and the numbers are increasing rapidly. At the same time, UNESCO also states that the number of students studying abroad has doubled over the last 12 years, to around 4.5 million and will be 8 million in 2025. So the trend of increasing numbers of young people seeking higher education, even beyond national boundaries, is clear to see.

This growing popularization and globalization of higher education demands that universities can provide at least two key things, which are standardization and individualism. The standardization of technical terms, curriculum and even teaching language is desirable for students to be able to study whatever , wherever and whenever they want. At the same time, however, each university must demonstrate its unique character in terms of its teaching methods, research style or extra curricula activities, so as to distinguish it

from the others. Of course, some of the courses offered in overseas universities may be more accessible to students who make the effort to understand the local language and culture.

## 2-2 Peculiar problems for Japanese universities

I would like to turn now to consider the serious challenges facing universities in Japan, whether national, public or private.

First of all, the decline in the population of Japan, which will begin this year in the national census for the first time after the World War Two and is predicted to continue for the foreseeable future, is of course creating a downwards pressure on the number of university students. Today, there are 1.2 million 18 year olds in Japan, but this number is expected to be halved by 2060.

Secondly, the huge fiscal deficit that the Government of Japan is grappling with means that there is an ongoing tendency to reduce funding, whether the operating expense grant for national universities or subsidies to private universities. This trend is accelerating due to the rapid increase in government expenditure allocated to care for the elderly, such as health care or pension expenditure, which is in turn being exacerbated by Japan's ageing society.

### 2-3 Strategies to tackle population decline

What should we do to tackle these serious and continuous problems? Of course, they cannot be solved so simply. The population and fiscal problems we now face are the fruit of some long term underlying trends which are deeply rooted in Japanese society. Therefore, society must first recognize these problems before it can begin to work together to solve them. In this light, solving these problems might be beyond only the power of universities. Nevertheless, Japanese universities may be able to contribute by adapting to cope with the pressures placed upon them.

As for how to counteract the declining university population, there are various strategies. Of the existing population of high school graduates, more of them may be persuaded to go to university. Other groups with potential for growth in terms of student numbers include mature students and foreign students. These changes could potentially offset the reduction in the number of 18 year olds in Japan.

Regarding the first of these points, only 51% of each year's population go on to university in this country, which is much lower than the 62% average of OECD countries. Similarly, the proportion of mature students who enter the student body after the age of 25 is only 2% in Japan, significantly lower than the 21.1% average amongst OECD countries. Finally the number of foreign students studying in Japanese universities has remained in recent years at 140 thousands behind USA, UK, Australia, France, China and Germany.

To conclude, Japanese universities may still prosper if they can maximize the potential intake of a cohort, mature students and foreign students. Of course, these are challenging goals, but they are worth challenged.

### 2-4 Strategies to tackle fiscal problems

What about the fiscal problem? This is a particular challenge for national universities which are basically

supported by the national budget, through university operation expense grants. In response, Japanese universities need to adopt a two-pronged strategy.

Firstly, universities should reduce in size comparably to the reduction of the young population. However successful they are in recruiting a higher proportion of high school students, it may not be feasible to maintain the existing capacity of universities when one considers the projected halving of the 18 year old population in Japan by 2060. This strategy could be considered one of adaptations, because we are trying to adapt our universities to reflect the reality of a shrinking population.

Secondly, we should strive to state the case for continued support for universities in the debate over budget priorities. Therefore, it is crucially important to raise awareness as much as possible about the indispensable value of universities to society. Here, the ageing of the population casts a shadow, because the elderly are naturally less concerned with higher education than the young. Their concerns are likely to gradually shift to prioritizing welfare or healthcare policies. Universities, and all researchers, must intensify their appeal on behalf of the important roles of research and education in society. This is particularly true in a society like Japan where, lacking abundant natural resources, we depend more on science and technology to develop society.

### 3. The direction universities should take

#### 3-1 Industry-University Collaboration

President Toshio Hirano, President Hiroaki Nakanishi and myself are members of the Japanese Government's Council for Science, Technology and Innovation, or CSTI for short. CSTI is chaired by the Prime Minister of Japan and consists of Cabinet Ministers, scientists and experts, some of whom are drawn from the industrial sector. The CSTI acts as the headquarters for science and technology policy of this country. It was only a few years ago that the 'I for innovation' was added to the original name of the Council for Science and Technology Policies, or CSTP. By formally adding "innovation" to the new name for the CSTI, the Government of Japan tried to widen its remit to include not only science and technology in themselves, but also in terms of their application and practical use.

Illustrations of this new direction can be seen in the SIP and ImPACT policies launched by the CSTI to apply research results to developing industrial products or practical social systems. SIP stands for Cross-Ministerial Strategic Innovation Promotion Program, and ImPACT stands for Impulsing Paradigm Change for Disrupting Technologies Program. Both policies focus on the practical application of basic or applied research, including pursuing basic and applied researches themselves. These two programs appointed more than 20 program directors or managers to conduct the design, production and management of research activities comprising many scientific research elements.

I believe that this innovation oriented policy is not peculiar to Japan, and that many governments in the world are now trying to develop their economy and industries through the promotion of science and technology. This strategic shift has a strong effects on universities.

Scientific research activities conducted in universities are expected to be more connected to economic and

industrial activities outside them. Industry-university collaboration is already a well-worn term, but there is still room for improvement in this respect. Research funds provided by universities and industry can be merged to create more joint research projects. Some researchers themselves could be jointly hired by universities and industries. Even doctoral students could be employed by industries to continue to work in the company securely after completing their university program. Put simply, above and beyond their role of providing skilled human resources to society, universities should make themselves more accessible to society as centers of research.

### 3-2 Science for Society

Of course, as president of Science Council of Japan, I would like to stress the importance of basic scientific research conducted in universities. At the same time, I would like to mention that we have to show how universities are contributing positively to the society which funds them. Therefore, we have to make a lot of effort to reorganize and redefine the roles of various scientific disciplines taught and pursued in universities to better clarify what they provide to society.

### 3-3 Future Earth

If I may, I would like to offer an example. Our academy is promoting a scientific research program called “Future Earth”, which was originally proposed by the International Council for Science, or ICS. The Future Earth program, in order to raise awareness about the crisis of irreversible deterioration of the global environment, requires scientific research in the observation of a wide range of earth environments or in the relationship between human activities and the global environment. It is similar to the scientific research required to realize sustainable development. However, Future Earth sets a high value on using the findings from scientific observation of the earth to suggest what changes society can implement to avert the coming crisis. Of course, history teaches us that there is a limit to how much society will heed the warnings of science.

Therefore, Future Earth requires an inter-disciplinary approach in which various scholarly disciplines should work together. But at the same time, Future Earth also emphasizes the need for a trans-disciplinary approach, whereby various groups in society should work together based on a common understanding of the crisis. This trans-disciplinary approach suggests new paths for developing existing scientific disciplines. What is necessary to make people change their way of life, and what new industries will be required to produce the things people need without wasting precious materials and energy? These questions can be answered through trans-disciplinary collaboration and challenge by researchers to find solutions for them.

Through giving a start to the new program of Future Earth, we understand the attitude of universities to positively exchange a pile of knowledge they have with the society to seek new themes of research or to apply the knowledge to the society.

## 4. Conclusion

Osaka University has provided many illustrious graduates to the world. Among them, one of the most familiar to Japanese people today is Yukichi Fukuzawa, whose face we can see every day on Japan’s highest value bank

note. He studied in Teki-Juku, the forerunner of Osaka University. He was the founder of Keio University and also founder of the original science academy of Japan. It is no exaggeration to say that he was a man who laid the foundations of modern civilization in this country.

Now, the times are changing. In such a time of change for universities, and for the world in general, we need another Yukichi Fukuzawa, we need the founders of a new era. Perhaps they will emerge from Osaka University again, or from another university. I have absolute faith in the power of universities, that by producing new leaders and innovative research results, they can change society for the better.

Thank you for your attention.