

## Basic Research in Japanese Universities

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### 1. Introduction

This is a report on studies conducted to ascertain the state of basic research in universities, which play an important role in promotion of basic research in Japan. In conjunction with the previous survey on basic research in private industry (released in January 1990 as "Basic Research in Major Companies in Japan"), and the study relating to basic research in national testing and research institutes (released in September 1991 as "Basic Research in National Research Institutes"), this study clarifies the trends and issues in basic research in Japan.

The study method and outline of the study are as follows.

### 2. Study Method

(1) Eight professors, involved in the front-line of research at universities, gave lectures along the theme of basic research in universities at the National Institute for Science and Technology Policy. This method allows for more frank opinions to be garnered from presenters in comparison with interviews and questionnaires.

(2) Records of the presentations were analyzed in detail, comments and references made directly about the university, basic research at the university and the special nature of the basic research were extracted, studies made of common themes in the extracted comments, and clarified by further condensing into simple keywords.

(3) Using the clarified images, we revealed the suitability of universities as venues for basic research and the significance of basic research, and collated problems that would impede the promotion in line with the image of basic research and its special nature.

(4) Furthermore, the aforementioned presenters were asked to check this report in its draft stage, to provide their opinions to be reflected in this report.

### 3. Outline of the Study

(1) Universities, Basic Research in Universities and the Special Nature of Basic Research

1) Basic research was summarized into an image as an act which simultaneously contributes to <the joy of knowing>, <the expansion of the stock of shared human knowledge> and <the expansion of the foundations for human resources development>.

2) Universities were summarized as having an image of being a place for "free and spontaneous research activities", "the formation of a stock of knowledge that can be externally accessed", and "educational activities as a duty".

3) As a result, it has become clear that there is a strong mutual affinity between these images of basic research and universities, and that universities can be said to be suitable venues for basic research.

4) The special nature of basic research at universities have been summarized in the following five points.

(having no specificity and being difficult to control), <individuality> (the passion, continuity and foresight of individuals), <accessibility of results>, <prestige>, and <criticism of the existing system>.

5) It has become clear that basic research in universities in Japan is a significant activity which actively contributes to international society, and which should be promoted.

## (2) Problems in Promoting Basic Research in Universities

The following problems have come to light as those that will be detrimental to the special nature of basic research and impede the promotion of the same.

1) Strict Regulations in university funding, personnel and organization management in respect of the <freedom> of development of basic research.

2) Insufficient support system for <individuality>, including foresight, passion and the dull continuity that supports that passion, the inconvenience of obtaining research funds, poor equipment and facilities, difficulties of university management systems and research funding, and many other problems that waste research time and efforts.

3) In respect of the <accessibility of results>, which are not made known internationally. There is a problem of insufficient international personnel exchanges, especially the poor research environment for foreign researchers.

4) In terms of the <prestige> that could be gained from recognition of wider contributions. There is a each of an effective evaluation system.

5) In respect of the <criticism of existing systems>, which should be endlessly conducted, there are problems of research institutes and interpersonal relationships which prioritize consensus rather than debate, and the passive and force-fed education conducted before university, which give rise to less criticism.

## (3) Directions for Problem-solving

Based on the above, we proposed measures appropriate to the special nature of basic research for consideration in the management of basic research in universities.

1) Responding to the aspect of <freedom>

A) Establish a flexible and maneuverable research fund system regardless of the field.

As it is difficult for national budgets to correspond to the large fluctuations in funding demands for basic research, continuing contributions from the government and the private sector should be received and used as basic funds for research funding, and a system put in place that will manage these funds in a flexible and maneuverable manner in accordance with the progress of research without being caught up in the field of the demand for funds.

B) Develop more flexible personnel through the promotion of personnel exchanges between universities and between university faculties and departments.

2) Securing <individuality>

A) Keep lecture time and other time that occupies university researchers down to a minimum, leaving other time as free time for researchers.

B) Expand research funds (university funds), recognize flexible use of research funds, secure research assistants and use external research support services, and simplify clerical duties to create an environment which encourages research.

3) Fortifying <accessibility>

A) Create an environment to encourage international personnel exchanges, especially to allow foreign researchers to conduct research, and gather excellent researchers to build up an atmosphere of friendly rivalry.

B) Support business trips for research presentations and exchanges.

#### 4) Clarification of <prestige>

Introduce an efficient evaluation system.

Establish a method in which there is an assessor (primary assessor) of the researcher, and an assessor of the assessor (secondary assessor). The scientific foresight and opinion of the primary assessor is evaluated by the secondary assessor through the development of the assessed basic research, resulting in the discernment of the level of responsibility of the primary assessor. A system could be considered in which the details of the evaluation shall be made known to the researcher, and the researcher may appeal to the secondary assessor should there be any objections.

#### 5) Maintenance of the <criticism of the existing system>;

A) In addition to expanding subsidies for scientific research funding, the various research funds from private industry, assisting foundations, and other ministries and agencies should be organized and expanded and the opportunities for researchers to select the source of their funding are increased.

B) Take the following measures on the assumption that the following strict assessment will be conducted.

- Free determination by the researchers of the research topic selected and how to proceed with the research.
- Free up joint responsibility going to external research institutes.

#### 4. The Significance of this Study

This report has simplified and condensed the image of basic research in universities into acts which simultaneously contribute to <the joy of knowing>, <the expansion of the stock of shared human knowledge>, and <the expansion of the foundations for human resources development>, and its special nature into <freedom>, <individuality>, <accessibility of results>, <prestige>, and <criticism of the existing system>. By using these as a clue to analyzing the special nature of basic research that has become clearer, the impediments to the promotion of basic research in universities have been shown as the antitheses to the items in the special nature of basic research, with the relationship between the details of each impediment and cause having been clarified in this report.

Furthermore, comment has also been made in this report as to the direction for methods to remove the causes of these impediments.

We hope that the image of basic research and its special nature as shown in this report will be important clues to be used when considering basic research in universities and will further promote the study of basic research promotion program.